



## Performance-based assessment of Nahr Al-Fidar bridge

**Nisrine Makhoul** 

Notre Dame University, Louaize, Lebanon

Contacting author: <a href="mailto:nmakhoul@ndu.edu.lb">nmakhoul@ndu.edu.lb</a>

## Abstract

Nahr Al-Fidar Bridge is in Fidar village, which is located near Byblos City, Lebanon. The bridge reconstruction was carried out swiftly during 2006-2007, due to its importance as a vital commercial artery. Indeed, no traffic disruption is allowed on the bridge, since it leads to great economic losses. At the time being, even though the bridge has only accomplished about 10 years of its service life, it is being overloaded.

The paper aims to assess the performance of Nahr Al-Fidar bridge. To that purpose, first, the case bridge is introduced, and a visual inspection took place to identify current the state of the bridge. Second, the performance indicators are evaluated for this bridge, by means of the visual assessment, and the key performance indicators are assessed. The aim is to check if the bridge meets the pre-specified performance goals. Finally, a quality control plan is implemented for Nahr Al-Fidar bridge.

**Keywords:** Bridge; performance; existing; performance indicator; key performance indicator; assessment.

## 1. Introduction

Worldwide, emerged the need for development of efficient management of roadway bridges, which are the most critical components of road infrastructures. Their management is of great importance to modern societies since an efficient transportation network helps safeguard flourishing economies, society welfare.

The Condition assessment of roadway bridges was extensively investigated in the last few years, more specifically through the usage of visual inspection techniques, structural health monitoring systems and non-destructive testing.

Information obtained of the assessed bridge state condition is then compared with goals which were previously established. This procedure resulted in numerous methodologies which are currently available to evaluate bridge condition [1]. Recently, in order to simplify the communication between owners, operators and consultants, the concept of performance indicator was proposed. It is verified that Quality Control (QC) plans should always address the assessed performance indicators and pre-specified goals. However, these latter values are even more difficult to obtain as they are highly subjective. Therefore, in order to standardize this procedure, the COST TU1406 [1] entitled « quality specification for roadway bridges, standardization at European level» was commissioned to take specific actions to achieve this goal.

Many benefits will be obtained if improved strategies for roadway bridges management are implemented such as: improved quality of provided service and greater user satisfaction