



## Results of the visual inspection of 600 bridges in Chile

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### Summary

In the frame of a contract between the Chilean National Highway Authority, APIA XXI IAC S.A. and the Universidad Austral de Chile, all bridges of the Los Rios Region have been inspected for structural, functional and durability damages or deficiencies. The total number of bridges inspected is 600 and includes 95 composite bridges, 98 reinforced and prestressed concrete bridges, 238 timber bridges, 168 hybrid timber-steel bridges and 1 steel bridge. The overall service conditions of the bridges are relatively low, mainly due to non-conformity with today's standards. These defects often affect the traffic safety, which requires immediate repair actions. 88% of all bridges require immediate or short-term repairs. Due to limited funding it is not possible to fulfil these demands at once. It is very important to implement a regular maintenance program in order to increase the level of service conditions.

**Keywords:** inspection; operation; maintenance; monitoring; information technology; durability.

### 1. Introduction

In Chile there is no generally established procedure for the maintenance of the road bridges. The maintenance tasks are done ad hoc and specifically in those cases where an emergency is detected.

Considering the economic value and the social importance that have the bridges within the road network, this situation is not satisfying, because the lack of regular or continuous maintenance accelerates the deterioration.

In order to improve the bridge maintenance management of one of the regions of Chile, the "Región de Los Ríos", the local bridge authority contracted the firm APIA XXI IAC S.A. and the Institute of Civil Engineering of University Austral of Chile (UACH) for the detection of the maintenance demands of all bridges under their custody. This contract included a visual inspection, whose methodology and results are exposed in this paper.

### 2. Methodology

The methodology used for the determination of the service conditions of the bridges is divided into 4 steps: the analysis of the existing records, the visual inspection, the evaluation of the detected damages, and the processing of the documented information.

#### 2.1 Visual inspection

The visual inspection of the bridges shall permit the determination of the bridge conditions. Its goal is the detection of evident defects/damages using all existing access facilities, but without the use of special access equipment, like boats, cranes, divers, etc. Additionally, the visual inspection of all bridges of one region allows statistical analysis about the general maintenance conditions and the identification of design details that are advantageous or inappropriate with respect to the bridges'