



Defining a Bridge Maintenance Strategy – Some Practical Constraints

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Abstract

In order to maintain approximately 1500 engineering structures, the road office of Grisons in Switzerland has to repair or replace between 30 and 50 structures each year. Timing and scope of interventions is mainly driven by the condition state of the structures and options to coordinate construction works with fulfilling other requirements on the same road. A sustainable maintenance plan has not only to ensure structural safety and serviceability in the long term; but a high road availability and a reduction of overall maintenance costs are of similar high priority and further issues to consider. This contribution shows also, how budget, capacities, structural condition as well as changes of road geometry requirements and load bearing capacities influenced the definition of the asset specific bridge maintenance strategy.

Keywords: Inspections, Condition Assessment, Bridge Maintenance Strategy.

1 Introduction

A maintenance strategy defines the criteria on how to determine when and to which extent repair works shall be carried out. In practice, the definition of the maintenance strategy is complex, since it depends on many asset specific issues. There are large uncertainties related to the following questions: When shall an intervention for a structure take place in order to reduce its life cycle cost? How much do repair costs increase when the intervention is carried out later than the ideal point in time? What are the additional costs for other parts of the road system, if they are rehabilitated together with the structures? Are there other costs to be considered, e.g. for traffic disturbances or for the historical value of existing bridges? How accurate are condition and cost predictions? Are future budgets, human resources

and planning or construction capacities ensured? Might priorities for roads change?

This contribution exemplarily describes the relevant issues that are involved during the preparation of the maintenance strategy for engineering structures in the Canton of Grisons. This case study shown from an owner's point of view gives a wide perspective, which may help other owner's representatives, researchers and young professionals in setting their work in a more holistic frame considering the real complexity of bridge asset management especially in mountainous regions.

2 Engineering structures

The Canton of Grisons is located in the mountainous region of South East Switzerland. Its road office is responsible for approx. 1500 km of roads, which provide access to 14 valleys with the main roads and reaching every municipality by