

Assessment, Upgrading and Refurbishing – A consolidated approach

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Summary

Switzerland can be seen as an example of an industrialized and densely populated European country. Its national highway network gets old, and therefore assessment, upgrading and refurbishing of highway structures like bridges become an important issue. At first, these three terms are questioned, replaced by more meaningful ones and a superior single term is proposed. Then the main steps to keep an infrastructure in good shape are explained. Special emphasis is placed on the different formats to verify the structural safety of an existing structure and preceding procedures like the updating of data. Anticipation of future needs and considerations on the network level will become more important and have consequences for decisions on the optimal intervention. Three recent examples illustrate the general statements.

Keywords: Examination, existing structures, highway network, maintenance planning, road bridge, sustainment, updating, verification format.

1. Introduction

Most European countries started developing their national controlled-access highways for high-speed vehicular traffic in the 1950 and 1960's. The first sections have been selected according to the greatest demand already at that time. In the meantime the national networks have grown together and have formed a European road system. Those first sections have become the backbones of the networks of today and their interruptions have large consequences. After 40 to 60 years of service, also structures like bridges without initial deficiencies need to be upgraded or replaced to serve for further decades. Since the structures involved have become indispensable in the meantime, such operations have to be executed under full service.

This paper shows exemplarily, how this challenge is met in Switzerland. Chapter 2 tries to clarify the involved terminology and reduce the variety of used terms to the necessary ones. Chapter 3 defines the examination of an existing structure and possible reasons to execute one. Chapter 4 to 6 cover the three procedures an examination consists of. The *condition survey* (chapter 4) is only treated superficially since other contributions of the conference go in more details. The *condition evaluation* is covered in more detail (chapter 5) with emphasis on the updating of data that are used to verify structural safety. For this verification, different available formats are presented and exemplified. The *recommendation of intervention methods* depends on the requirements considering what a heavily loaded highway system has to meet in future. Chapter 7 shows that decisions cannot be taken regarding each single structure, but have to take into account their position and importance in the network. In chapter 8 three recently or almost completed projects are described, where all these issues matter. Chapter 9 ties to draw general conclusions.

2. Terminology

Dealing with existing structures has developed during the last decades in different parts of the world. Coordinated standards are still missing, and the same matters are called differently by different communities.