

Sustainable Bridges – Results from a European Integrated Research Project

Björn PAULSSON

Civil Engineer
UIC
Paris, France
Paulsson@uic.asso.fr

Jan OLOFSSON

Department Manager
SKANSKA
Göteborg, Sweden
Jan.Olofsson@skanska.se

Hans HEDLUND

Adjunct Professor
SKANSKA
Göteborg, Sweden
Hans.Hedlund@skanska.se

Brian BELL

Sr. Techn. Engineer Bridges
Network Rail
London, U.K.
Brian.Bell@networkrail.co.uk

Björn TÄLJSTEN

Professor
Luleå Univ. of Technology
Luleå, Sweden
Bjorn.Taljsten@ltu.se

Lennart ELFGREN

Professor Emeritus
Luleå Univ. of Technology
Luleå, Sweden
Lennart.Elfgren@ltu.se

Summary

In the paper reflections on the efficiency and dissemination of a European project on Sustainable Railway Bridges are given as well as examples of results and how they now are implemented. Four guidelines and 35 background documents are now publicly available at the project home page.

Keywords: bridges; railways; condition assessment; resistance assessment; monitoring; strengthening; full scale tests; guidelines; implementation.

1. Introduction

In Europe there are more than 1 million bridges, many of them older than 50 years and quite a few of the railway bridges even have an age of more than 100 years. These bridges represent a large value. Often there is a wish to increase speed and loads on existing bridges and then the question is if a bridge can be strengthened to fulfil the demands, or if it has to be replaced with a new one?

This was the background for a European integrated research project within the 6th Framework Programme named “Sustainable Bridges”. The project was carried out between 2003 and 2007 with 32 partners from 12 countries and with a gross budget of more than 10 million Euros. Skanska Sverige AB provided the overall co-ordination of the Project, whilst Luleå University of Technology undertook the scientific leadership [1].

The aim of the project was to help to increase the use of the European railway network. For bridges, this can only be achieved by allowing higher axle loads on freight vehicles and by increasing the maximum permissible speed of passenger trains. In turn, any strengthening or maintenance work on the existing bridge stock to help in meeting this challenge must be undertaken without causing unnecessary disruption to the carriage of passengers and goods, and without compromising the safety and economy of the working railway.

2. Background and Objectives

In a sustainable society, rail transport should play a far greater role than it does today. In order to facilitate this, the capacity of the existing railway needs to be increased.

The objective of the project “Sustainable Bridges – Assessment for Future Traffic Demands and Longer Lives” was to concentrate on the part played by bridges in meeting this need and was focussed onto three specific goals:

- Increase the transport capacity of existing bridges allowing higher axle loads (up to 33 tons) for freight traffic at moderate speeds or by allowing higher speeds (up to 350 km/hour) for lighter passenger traffic.
- Increase the residual service lives of existing bridges up to 25%.
- Enhance management, strengthening and repair systems.