

Quality Control Plans for Girder and Frame Bridges

Poul Linneberg

COWI A/S, Kongens Lyngby, Denmark

Snezana Masovic, Rade Hajdin

University of Belgrade, Belgrade, Serbia

Contact: pli@cowi.com

Abstract

Infrastructure managers work every day according to some kind of Quality Control Plan (QCP) in order to ensure a desired quality with minimum traffic interruption balancing cost, risks (implicit or explicit) and performance. These QCPs vary significantly among European countries, which urges the establishment of a common European guideline. COST TU1406 Working Group 3 has the aim of providing a detailed explanation of the steps towards the establishment of a QCP. The approach is generic and evaluates performance values with due attention to: 1) Structure and its constitutive element incl. background material such as birth certificates, 2) Time-dependent Performance Indicators (PI) from observations (e.g. spalling) with due reference to the underlying deterioration processes (e.g. alkali-silica reaction) and 3) Related Key Performance Indicators (KPI) based on the Dutch risk-driven maintenance concept RAMSSHEEP [1]. This paper outlines QCP's for concrete girder and frame bridges.

Keywords: Quality control plans, performance indicators, deterioration processes, demand processes, inspection, maintenance.

1 Introduction

Roadway bridges are long living objects and even if they are of high initial quality, they may not meet quality requirements after some time due to deterioration processes (e.g. corrosion) and/or change in demands (e.g. traffic loading).

Quality Control Plans (QCPs) should define at which interval the quality controls are necessary and for which conditions more detailed investigations or corrective actions are necessary.

In case of roadway bridges, performance indicators are established for their components. These indicators can be qualitative or quantitative

and they can be obtained during principal inspections, through a visual examination, a non-destructive test or a temporary or permanent monitoring system. Then, obtained indicators are compared with performance goals, in order to evaluate whether the quality control plan is accomplished.

It is verified that there is a large disparity in Europe regarding the way these indicators are quantified and how such goals are specified. Therefore, COST Action TU1406 has brought together, both research and practicing community in order to accelerate the establishment of a European guideline in this subject.