



Temperature Measurement in One Concrete Bridge

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Summary

This paper presents instrumentation of one pedestrian bridge in Podgorica that is equipped for monitoring of temperature changes and strains in order to better understand thermal effects on the bridges. All instruments are embedded in structure during the construction of the bridge. Data acquisition is started in October, year 2006. The experimental part of research is finished at the end of June 2007. Montenegro should be adopt Eurocodes as national standards in the future, and for their successful implementation will be necessary to define national parameters in National Annexe which will be according with our climate area or we will adopt the parameters that are already offered as a solution in the code EN 1991-1-5. The results of experimental studies will be used in defining the national parameters that should define the National Annex of code EN 1991-1-5 which is in preparation.

Keywords: bridges; concrete; box cross section; measurement; temperature effects, strain.

1. Introduction

Montenegro is located in the south part of Europe and Podgorica is capital town of Montenegro. Podgorica is on 42 m under the sea level and has Mediterranean climate. The winters are temperate and summers are hot. Absolute minimum shade air temperature ($T_{\min}$) is -9.7°C and absolute maximum hourly shade air temperature is 44.8°C , for measurement period from years 1949 to August 2007.

In order to better understanding thermal effects on the bridge in Mediterranean climate, one pedestrian bridge in Podgorica is equipped for monitoring temperature changes and strains. All instruments are embedded in structure during the construction of the bridge. Author of this paper is main designer and supervisor of the bridge construction. This situation enabled that we can realise relative difficult equipment embedding. This paper presents one part of experimental results obtained by measurements of temperature and strains along three characteristic cross sections of pedestrian concrete bridge “Zabjelo” in Podgorica.

2. Bridge description and embedding measurement equipment

Site measurements of temperatures have been carried out on pedestrian bridge located at 4 km south of Podgorica, Fig. 1.



Fig. 1: Pedestrian Bridge “Zabjelo” in Podgorica