
Long-term operational modal analysis of a steel-concrete composite bridge

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Abstract

Selected results collected in the continuous dynamic monitoring of a steel-concrete composite bridge are reported in the paper. The investigated bridge belongs to Autostrada Pedemontana Lombarda (APL), a motorway aimed at optimizing the road connection between Milan, Monza, Como and Varese (Lombardy, Northern Italy). After a concise description of the bridge and its monitoring system, the paper presents and discusses the dynamic characteristics identified in preliminary tests and verified at the beginning of the continuous monitoring. Subsequently, the focus is moved on the data collected over approximately eight months, with particular attention to the influence of environmental parameters on the variations of natural frequencies and mode shapes. It is further noticed that the strategy adopted for the OMA-based health assessment of the bridge will be extended to various bridges managed by APL, as part of a project funded by the Italian Government.

Keywords: Automated OMA, Dynamic monitoring, Environmental and Operational effects, Statistical Pattern Recognition

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