PEDESTRIAN BRIDGE EVALUATION AND MODELLING SUBJECTED TO RUNNING LOAD CASES

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Summary

This paper presents the dynamic measurements performed at two pedestrian bridges in Sweden subjected to different loading scenarios. Using accelerometers, the natural frequencies, the experimental mode shapes, and damping properties were determined for each bridge. Analysis were performed using the generalized single degree of freedom theory, the finite element method and the coupled system approach taking into account the flying phase of the running load. Additionaly, a simplified sensitivity analysis is presented in terms of accelerations due to the pedestrian transient event of a running load case. Results indicate that there is an excellent agreement between the aforementioned modelling strategies and, that it is possible to have human structure interaction under running load scenarios.

Keywords: vibrations, footbridges, dynamic performance, human structure interaction.

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