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Vertical Vibration Mitigation along Railway Lines

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Abstract : This article presents two innovative solutions for vertical vibration mitigation barriers including experimental and numerical investigations on the completed barriers. There is a continuing growth of exposure to noise and vibration in people´s daily lives due to the quest for more mobility and flexibility. In previous times neglected, immissions caused by vibrations can lead, for example, to secondary noise or damage in the adjacent buildings. Also people can feel very affected by vibrations. But unlike in new construction, in existing infrastructure and buildings action can be taken almost only on the transmission path of those vibrations. In the following two solutions were shown how vibrations on the transmission path can be mitigated. These are the jet grouting method and a new installation method (patent pending) by means of a prefabricated hollow box which is filled with vibration reducing mats and driven down to depth, are presented. The essential results of the numerical and experimental investigations on the completed wave barriers are included as well. This article is based on the results of a field test with the participation of Keller Holding, which was executed in the context of the European research project RIVAS (Railway Induced Vibration Abatement Solutions), and on a thesis done at the Technical University of Dresden with the involvement of BAUGRUND DRESDEN Ingenieurgesellschaft mbH and the Keller Holding GmbH.

Keywords : jet grouting, rail way lines, vertical vibration mitigation, vibration reducing mats
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