

# Wave Barriers for Reduction of Train-Induced Vibrations

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## ABSTRACT

The finite/infinite element method, which has the advantage of being versatile and accurate, is used to investigate the effectiveness of different vibration isolation countermeasures in reducing the ground vibrations induced by trains moving at speeds that may surpass the Rayleigh wave speed of the surrounding soils. The vibration isolation countermeasures considered herein include the installation of open trenches, in-filled trenches and wave impeding blocks (WIB). The finite/infinite element approach developed by Yang and Hung (2001) is employed in this study. This approach allows us to consider the load-moving effect of the train in the direction normal to the two-dimensional profile considered, and therefore to obtain three-dimensional results using only plane elements. The moving train is simulated by a sequence of moving wheel loads that may vibrate with certain frequency. Concerning the effect of isolation, the performance of the three types of barriers at different train speeds and excitation frequencies.

