

MASTER'S DISSERTATION AT STRUCTURAL MECHANICS

DEPARTMENT OF CONSTRUCTION SCIENCES | FACULTY OF ENGINEERING | LUND UNIVERSITY



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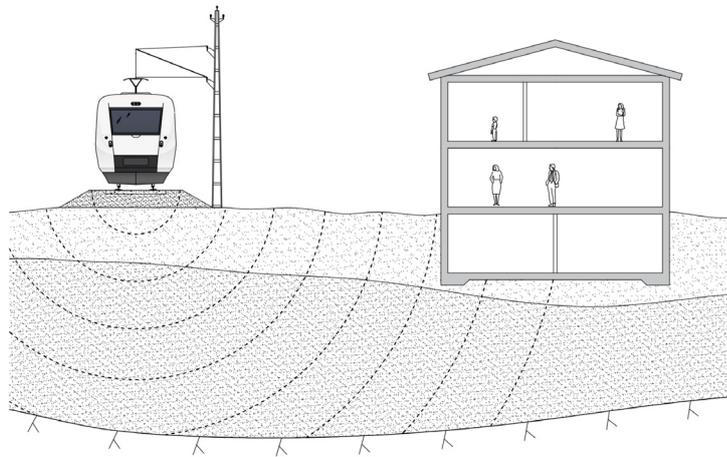
EXAMINER

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**THE WORK IS PERFORMED AT
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STRATEGY FOR PREDICTING RAILWAY-INDUCED VIBRATIONS IN BUILDINGS



BACKGROUND

Urban densification is a way of accommodating population growth. Land adjacent to railways can potentially be used for constructing residences and other buildings. There are plans of re-vamping existing railways as well as opening tramway systems. Under these circumstances, nearby buildings will be exposed to vibrations. If not analysed correctly, noise and vibrations may become a nuisance for the residents.

When planning new buildings near railway traffic or making changes to existing railways, the vibration levels need to be evaluated. It is necessary, even at an early stage of planning, to assess the extent of the vibrations and state requirements for the building in order to avoid having to make costly changes at latter stages.

OBJECTIVE AND METHOD

Ground vibrations induced by railway traffic will be studied. The aim of the thesis is to develop a strategy for analysing vibrations in nearby buildings. The developed method will be general, and could be used in early stages of planning. It can include necessary controls to perform, recommendations of calculation methods to use and other recommendations based on field measurements or literature. Requirements for the buildings in terms of foundation and structural design may also be addressed.

Field measurements of vibrations in the ground and/or in buildings near railways will be carried out. Numerical calculations using the finite element method will be performed. Conclusions from measurements, literature, and numerical simulations will be used to establish the strategy for predicting the railway-induced vibrations.

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