

# A STUDY OF GROUND VIBRATION FROM TRAINS USING A THREE-DIMENSIONAL LAYERED GROUND MODEL WITH TRACK

In this report, a model which combines a three-dimensional layered ground with a two-dimensional, layered-beam track is used to find potential solutions to the problem of low-frequency, feelable vibration generated by freight trains.

The mechanism of wave propagation is studied in some detail. This leads to the theoretical testing of a number of ideas for reducing the response to a unit amplitude force on the track at a point on the surface of the ground a distance from the track. The methods are shown to be promising. However, in each case, the benefit that is likely to be achievable depends on the soil and substratum properties at particular sites.

The report recommends that further work should be done to address areas of uncertainty which remain, and that more investigation should be undertaken of the dynamic properties of treated soils and the compacted ground under the track.