DAMPING QUALITIES OF CERTAIN BUILDING MATERIALS EXPOSED TO AIR-INDUCED GROUND PRESSURE WAVES IN SAND

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Norwegian Defense Research establishment (NDRE) has for some time been concerned with different aspects of protection against the effects of ground pressure waves particularly in granular soil materials. Wave transmission and wave reflection from rough concrete surfaces of different geometry in sand have been investigated. Currently we are working with wave interaction and damping qualities of certain building materials for the purpose of influencing the wave loading on a protective structure in sand. We are using the NDRE 400 mm diameter shock tube to generate a sweeping air shock over the surface of the sand filled (compacted) container connected to the shock tube.

Previous tests gave data on wave transmission and normal reflection from a horizontal concrete surface for the air induced ground pressure wave in sand. These data represent the undisturbed wave loading function on the surface and one wanted to see what changes in this could be obtained by placing a horizontal layer of energy absorbing building materials on/over the reflection surface. This report will mostly deal with the experimental results for different types of materials.

The measured results will also be evaluated in light of a granular theory and a dynamic reaction model for sand.