

RESPONSE OF BURIED STRUCTURES TO SIMULATED NUCLEAR GROUND MOTION

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This Paper addresses the response of shallow-buried rectangular reinforced concrete structures to air-blast-induced ground motion. Four structures having internal dimensions of approximately 4x4 ft and span/thickness ratios of 4 and 10 were fabricated and tested. Steady state sinusoidal sweep tests were performed on the structures over the frequency range of 100 Hz to 1000 Hz. The tests were performed both with and without earth cover.

Results of the tests indicate expected resonances in the vibration of the uncovered structures and highly damped response for the embedded structures. High explosive simulation technique (HEST) testing of these structures is planned.

A series of finite element structure-medium interaction calculations was carried out concurrently with the test program. As a part of the calculation, embedded and in vacuo modes were extracted and compared with those obtained experimentally. The calculational results will be used for improving assessments of the ultimate strength of the structure in an airblast environment.