RESPONSE OF REINFORCED CONCRETE WALLS TO BURIED EXPLOSIONS IN SAND

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At Mabs -79, results were presented from model tests concerning the influence of wall mass and stiffness on the reflected pressure, when buried structures in sand were subjected to close underground explosions.

Since then similar tests have been made in a larger scale, 0.43, and with more realistic walls. For this purpose a special device was built that makes it possible to test the shock effects from both underground and aboveground charges. Reinforced concrete walls with 2 x 2 m span, freely supported, were used. The thicknesses used were 0.15m and 0.30 m and the reinforcement ratio 0.30, 0.54 and 1.0%. A charge weight of 10 kg was used throughout the tests and the scaled distance was between 0.63 and 1.25,/kS**1/3.

The pressure, acceleration and displacement were recorded in four points of the wall. Also the force on the abutment was recorded in three points. The free field accelerations and pressures were recorded at the

same scaled distances that were used in the wall tests. Among the results are a knowledge of the pressure distribution over the wall surface as a function of time and an expression for scaled deformation work/unit area , Ea/Q**1/3, of the wall as a function of scaled distance. This parameter seems rather independent of the wall properties. The expression is of the type:

Ea/Q**1/3 = C * (r/Q1/3)**-n