Experimental investigation of 50 MPa reinforced concrete slabs subjected to blast loading [

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text (article)

Analítica

This paper presents results from blast tests conducted on four 50MPa concrete slabs with reinforcement ratios of 0,175% and 0,37%. Two of the slabs were retrofitted with 50 mm thick foam in order to investigate the potential of using the foam as a strengthening option. The slabs were simply supported on two sides. Non-confined PBX (Plastic bonded explosive) was molded with the form of a cylinder measuring 20 cm in height and 10,5 cm in diameter. The explosive was detonated at 2 m stand-off distance. The equivalent TNT mass of the explosive ranges from 2,58 to 2,72 kg for the four tests. Accelerometers, displacement and pressure gages were used to measure blast wave parameters and global response of the slabs. A high-speed digital camera in conjunction with a rugged notebook recorded images. Qualitative and quantitative results are included. Slabs retrofitted with foam showed a different pressure pattern as recorded by the sensors and resulted in higher displacement, acceleration and linear momentum
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