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Investigation on Blast Resistance of Precast Reinforced Concrete Floor Slab NICOLA BONORA, DOMENICO GENTILE, GIANLUCA IANNITTI, ANDREW RUGGIERO, GABRIEL TESTA, University of Cassino and Southern Lazio, MANUELE BERNABEI, LUIGI CASSIOLI, SILVANA GROSSI, Italian Air Force — The knowledge of the effective blast resistance of civil infrastructures is a fundamental information for risk assessment and modelling consequences of terrorist attack in high population density urban environment. In this work, blast resistance of precast reinforced concrete floor slab, commonly used for commercial parking, was investigated performing blast tests, detonating bare explosive charge of RDX 80-20 in contact with the slab. The charge mass, and the stand-off distance, was varied in order to generate different damage extents, from visible to fully breached condition. Numerical simulations were performed considering all slab structural elements. Failure model for concrete was calibrated on breach size and shape observed in the experiments. The explosive and blast wave-structure interaction were simulated using arbitrary Lagrangian-Eulerian method (ALE) and particle blast method (PBM) for comparison.

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