

Enhancing the performance under close-in detonations with polymer reinforced CRC

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ABSTRACT

Compact Reinforced Composite, CRC, is a high-strength cement-based composite possessing an enormous flexural and energy-absorbing capacity due to close-spaced high strength steel reinforcement and a high-strength cement-based fiber DSP matrix. The material has been used in various construction projects including as protection for explosion hazards. In connection with explosive impact, the fraction of shear reinforcement needed to obtain full flexural capacity is controlled by the stand-off distance. For close-in detonations, a high fraction of shock reinforcement is needed to obtain full flexural capacity without breaching. This paper introduces an efficient method for implementing high fractions of polymer shock reinforcement into a CRC element. Experimental tests and a preliminary finite element analysis were performed to assess the potency of this material.

KEYWORDS

CRC, reinforcement, shock, polymer, finite element.
