Protection Techniques For Explosive Demolition of RC Pillar

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ABSTRACT

Safety concern is one of the most important parameters in the design of building demolition by explosive blasting. Accidents were sometimes reported due to the flying chips of fragmented materials in building demolition work in urban area. Laboratory experiments were performed to investigate the failure behavior of reinforced concrete pillars under blast loading and to develop an effective protection technique. Sixteen reinforced concrete pillars were constructed with two sizes: 450×450×1800 mm and 600×300×1800 mm. The failure behavior and the flying chip velocities were observed by means of a high-speed camera. Protection scheme was designed and the effects of several protection materials were investigated. Two kinds of non-woven fabrics and wire net were tested as protection materials. The results showed that reinforcing bar was one of the important factors to determine specific charges, and that mesh size of wire net and tied-up method affected the protection of flying chips. Control of gas effects is also a key to the control of flying chips. It was recommended to use both wire net and non-woven fabrics as primary and secondary protection materials. Such protection scheme was successfully applied to the explosive demolition of 16 and 17-story apartment buildings.