

# **DYNAMIC FORCES AND VELOCITIES OF DEBRIS OF BREACHED REINFORCED CONCRETE WALLS FROM NEAR-CONTACT DETONATIONS**

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Debris resulting from the breach of a wall and the particles within the debris field move at undetermined velocities when a reinforced concrete wall is subjected to near-contact detonation. The fractured and pulverized concrete material moving at different undetermined velocities from the breach will apply an undetermined impulse and thus induce unpredictable dynamic loads when impacting another wall situated directly behind the breached wall. Measurements from a series of scaled ranges,  $Z$  (defined as the standoff divided by the cube root of the explosive weight), of near-contact detonations experiments show the effects of the post breach debris velocities on the wall behind the breached structure. The overall measured loads on the wall are directly compared to the equivalent numerical predictions. Important insights were gained from this study and reported in the paper such as the variation of the debris velocities with respect to the scaled range,  $Z$ , and the corresponding dynamic load. Permission to publish was granted by Director, Geotechnical & Structures Laboratory.