MITIGATIONS TO DEFEAT CLOSE-IN DETONATIONS AGAINST REINFORCED CONCRETE WALLS

P. Papados[1], V. Chiarito[1], R. Walker[1], J. Minor[1], J. Ray[1] & T. Coleman[2]

[1]U.S. Army Engineer Research and Development Center (ERDC), Geotechnical and Structures Laboratory, 3909 Halls Ferry Road, Vicksburg MS 39180-619, USA
[2]Science and Technology Directorate, U.S. Department of Homeland Security, Atlantic City International Airport NJ,08405, USA

A series of analyses and experiments helped identify and verify specific failure modes of reinforced concrete walls subjected to near-contact detonations. As a result, several mitigation concepts were developed and evaluated in a preliminary phase of analysis and experimentation. A further study used these results to develop at least two proposed designs to mitigate against the blast-load effects from near-contact detonations. This paper presents a summary of the numerical analyses conducted to predict the behavior of the proposed mitigation designs and the comparable experimental results. At least two structural measures survived near-contact detonations. Permission to publish was granted by Director, Geotechnical & Structures Laboratory.