

Safety of Built Infrastructure: Single Degree of Freedom Approach to Blast Resistant RC Wall Panels

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Abstract : The 21st century has witnessed growing concerns for the protection of built facilities against natural and man-made disasters. Studies in earthquake resistant buildings, fire, and explosion resistant buildings now dominate the arena. To protect people and facilities from the effects of the explosion, reinforced concrete walls have been designed to be blast resistant. Understanding the performance of these walls is a key step in ensuring the safety of built facilities. Blast walls are mostly designed using simple techniques such as single degree of freedom (SDOF) method, despite the increasing use of multi-degree of freedom techniques such as the finite element method. This study is the first stage of a continuous research into the safety and reliability of blast walls. It presents the SDOF approach applied to the analysis of a concrete wall panel under three representative bomb situations. These are motorcycle 50 kg, car 400kg and also van with the capacity of 1500 kg of TNT explosive.

Keywords : blast wall, safety, protection, explosion

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