

Simulating Contact Charge Against Steel Jacketed Reinforced Concrete Beam-Column

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Critical infrastructure and high profile development are often vulnerable to the threat of Improvised Explosive Devices (IEDs). There is a need to build resilience in primary structural elements against such threats so as to reduce the risk of inappropriate or progressive collapse. To mitigate against the effects of an IED placed in contact with columns, reinforced concrete columns are steel jacketed to provide confinement to the concrete core, and to add on to the resilience of the columns against close-in effects such as cratering, breaching and spalling. The design of structural elements against close-in detonation (for scaled distance $< 1.2 \text{ m/kg}^{1/3}$) requires the use of numerical models (ASCE 59-11, 2011). In this paper, the design of a steel jacketed reinforced concrete beam-column is accomplished with the use of LS-DYNA, validated to the results from a full scale blast test.