

Structural Collapse Blast Mitigation

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ABSTRACT

Protection of occupants of buildings from terrorist bomb attacks can be enhanced by an appropriate balance between better security procedures, including the enforcement of increased standoff distances, and the use of blast hardening and mitigation techniques. The Defense Threat Reduction Agency (DTRA) is responsible for the development of technology to protect people inside of buildings from terrorist bombs through blast mitigation techniques. Injuries and deaths from bomb attacks on buildings can usually be attributed to two main causes: structural collapse and flying debris. This program focuses on mitigating these effects by the development of vulnerability assessment methods and design guidance.

This paper will focus on the development of blast mitigation techniques for structural collapse. Full-scale field testing on a typical flat-slab structure, and full-scale component laboratory and field testing on columns will be discussed. General results from tests conducted on reinforced columns retrofitted with composites will also be presented in this paper.