

RESULTS FROM BLAST TESTING OF COLD-FORMED STEEL TRUSS MODULES

M. Weaver¹, M. Newberry², and M. Pellock³

¹*Karagozian & Case, Inc., 700 N. Brand Blvd., Suite 700, Glendale, CA, 91203, USA;* ²*Syscom, 104 Research Road, Building 9742, Tyndall Air Force Base, FL, 32403, USA;* ³*MiTek, 16023 Swingley Ridge Road, Chesterfield, MO, 63017, USA*

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A series of open-air blast tests were performed to demonstrate the ability of MiTek® Ultra-Span® cold-formed steel (CFS) trusses to resist blast loads. CFS truss modules of 11-m by 11-m in plan and consisting of 23 trusses each were positioned at 9-m and 25-m from a central detonation point. Each module utilized different types of trusses (e.g., monoslope, gable, girder) with truss spans, members, connections, and orientations with respect to the shock varied within each module. Stub walls consisting of precast concrete blocks and metal deck were constructed to serve as truss bearing points. The truss modules were exposed to three explosive charges of different magnitude. Pressure, displacement, acceleration, and bearing reaction forces were measured using a total of 40 gages interspersed between the two modules. This paper provides insight into how these test structures were designed, records the defining characteristics for each test, and summarizes the results obtained. Based on the results of these tests, observations are made concerning the design of Ultra-Span, and more broadly CFS, trusses for blast loads.