

EFFECTS OF CLOSE RANGE BLASTS ON STEEL FRAMES. EXPER-IMENTAL TESTING AND NUMERICAL VALIDATION

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Abstract: During last decades, there was an increased interest from research and design professionals to provide effective strategies in protecting buildings and other assets from the direct effects of blasts or other incidents. Experimental tests, conducted over a large range of distances and charge weights, helped at developing analytical approaches and charts which can be used to calculate blast parameters. Due to the lack of test data and inapplicability of common scaling rules, in the last years special attention was devoted to close-in blasts, located in the proximity of the structural elements. Such explosive charges may cause extreme local damage of the elements or even complete loss of load bearing capacity. In the study presented in the paper, two types of beam-column assemblies have been tested under explosive charges detonated close to the specimens. Numerical models, developed using Extreme Loading for Structures software, were validated using the test data collected in the experimental program.

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