

INCREASED MITIGATION OF BLAST WAVES BEHIND SHIELDING WALLS

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Explosions in urban environments can cause damage to buildings such as window failures or more severe structural damage such as partial or total collapse. Although conventional buildings are usually not designed to withstand large blast loads, it is possible to improve the performance of such structures. Apart from a proper structural design, it is also important to accurately predict the blast loads on the structural components. Using a numerical tool helps predicting the structural loads from an explosion at a distance taking into account surrounding buildings, walls and other objects in the environment. Apollo Blastsimulator – a CFD (Computational Fluid Dynamics) code developed by Fraunhofer EMI for simulations of explosions and blast waves – has been used to calculate these loads.

This paper will present how different wall configurations can mitigate the blast loads behind a shielding wall in front of a building. This is a continuation and development of previous work [1], [2] where the effects from wall heights and distances, and the impact from different charge heights were analysed. These results are compared to calculations using a simplified model based on Zhou and Hao [3].

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