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Investigation of Steel Infill Panels under Blast Impulsive Loading

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Abstract : If an infill panel does not have enough ductility against the loading, it breaks and gets damaged before depreciation and load transfer. As steel infill panel has appropriate ductility before fracture, it can be used as an alternative to typical infill panels under blast loading. Concerning enough ductility of out-of-plane behavior the infill panel, the impact force enters the horizontal diaphragm and is distributed among the lateral elements which can be made from steel infill panels. This article investigates the behavior of steel infill panels with different thickness and stiffeners using finite element analysis with geometric and material nonlinearities for optimization of the steel plate thickness and stiffeners arrangement to obtain more efficient design for its out-of-plane behavior.

Keywords : blast loading, ductility, maximum displacement, steel infill panel
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