

## ABSTRACT

# IMPACT OF NEAR GROUND EXPLOSION AGAINST HIGHRISE Building Roof Slab BUILDING ROOF SLAB

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*This research was conducted to know the impact of near ground explosion against high-rise building roof slab. Blast loading on the ground within certain distance from building regarding to terrorist acts by bomb blast in front of Australia Embassy. Blast loadings are an exceptional dynamic load that is able to weigh down a building structure other than normal load. Blast loadings are rarely counted as design loads in building structural planning. In this research, a set of slabs is modeled with partial fixity boundary conditions on its sides and variations of geometry which given blast load on the ground at the nearest distance possible to building. The main system responses that are observed are the transversal deflections at midspan and the internal stresses of the plate, particularly the maximum principle stress, minimum principle stress and maximum shear stress. Three loading phases are included in the analysis, namely: the positive phase, the negative phase, and the free vibration phase. Analyses are carried out utilizing a numeric approach termed the Modified Bolotin Method. The results are presented as stress contours that are then compared between each model. Based on the results from this research, the slab without stiffener has larger value of plate deflection and stress than the slab with stiffener. Small dimension of stiffener doesn't affect the slab response to deflection, but be able to reduce the stress that occurs on the slab. The slab with adequate stiffener dimension can increase slab response to deflection and stress.*

**Keywords:** *Localized blast load, Thickness, Modified Bolotin Method, principle stress*