**4. H. Al-Thairy, Y.C. Wang , A Simplified Analytical Method for Predicting the Critical Velocity of Vehicle Impact on Steel Columns, Journal of Constructional Steel Research, 92, (2014) pp. 136-149..**

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**Abstract**

This research develops a simplified analytical method to predict the critical velocity for vehicle impact on steel columns under axial compressive load. The method is based on the energy balance principle with a quasi-static approximation of the column behavior. The energy terms for the column include energy absorption through both elastic and plastic deformations and the work done by the axial compression load through shortening of the column. The vehicle response under impact is represented by a linear spring until the frontal structure of the vehicle has deformed to the engine box and rigid thereafter. This paper will present a comprehensive set of numerical simulation results, using ABAQUS/Explicit, to check validation of the simplified analytical method for the various energy terms and the final result of column critical velocity.

Keywords: Vehicle impact, Critical impact velocity, Steel column, Simplified method, Axial loads, Transverse static resistance**.**