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Moment-Curvature Approach for Blast and Collapse Analysis of RC frames

*SeokJun Ju[1] and Hyo-Gyoung Kwak[2]

[1), 2)] *Department of Civil Engineering, KAIST, Daejeon 305-600, Korea*
[1)] zoon1400@kaist.ac.kr, [2)] kwakhg@kaist.ac.kr

ABSTRACT

In this paper, numerical approach based on the moment-curvature relation of RC sections is introduced to simulate the behavior of RC frames under blast loading. Dynamic increase factors for moment-curvature relation is constructed to consider strain rate effect. Moreover, dynamic hysteretic moment-curvature relation is proposed to describe hysteretic behavior of RC sections. Empirical direct shear stress-slip relation is adopted to describe the direct shear failure mode of RC members under extreme loading condition. Comparative studies with the blast experiments for RC beams and columns have been conducted to confirm the validity of the proposed model. Finally, parametric studies have been conducted to describe the collapse behavior of RC frames.

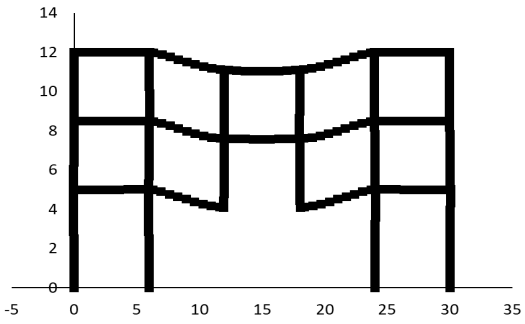

Fig. 1 A numerical result for the RC frame example

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[1)] Graduate Student
[2)] Professor