

Seismic Performance of Existing Buildings Concrete Shear Wall

S. A. Hossain¹, A. Bagchi²

¹Ph.D. student (Structural and Earthquake Engineering),
Department of Building, Civil and Environmental Engineering
Concordia University, Montreal, Canada

Lecturer, Department of Civil & Environmental Engineering and Construction Management
College of Engineering, University of Texas, Tyler, USA

shossain@uttyler.edu

²Professor and Chair, Department of Building, Civil and Environmental Engineering
Concordia University, Montreal, Canada

Ashutosh.Bagchi@concordia.ca

Abstract - This article presents a study on the seismic performance of reinforced concrete shear wall buildings with focus on shear strength of walls that are designed using the seismic design provisions of the National Building Code of Canada. A set of buildings, four, six and eight storeys with a simple configuration and different heights have been considered here. While the static and linear dynamic analyses indicate the robustness in the design but dynamic time history analysis indicates deficiency in the shear capacity in the plastic hinge region. It is observed that a dynamic amplification factor for shear on flexural walls governs the shear demand. Here, a simple method has been proposed to estimate the amplified shear demand and to enhance shear resistance of a structural wall economically to avoid unintended shear failure.

Keywords: Reinforced concrete, Shear wall, seismic demand, dynamic analysis.