

12TH INTERNATIONAL
BRICK/BLOCK
Masonry
CONFERENCE



Ham

**RETROFITTING OF STEEL FRAMES-INFILL
MASONRY WALLS USING FIBERGLASS
COMPOSITE LAMINATES**

A.A. Hamid¹, M. Elgaaly², Z. Hakam³,

^{1,2}Professors, Civil and Architectural Engineering Department,
Drexel university, Philadelphia, PA, USA 19104

³Ph. D. student, Civil and Architectural Engineering Department,
Drexel university, Philadelphia, PA, USA 19104,

ABSTRACT

Many existing steel frame buildings do not meet today's seismic design standards for new construction. Observations of post-earthquake damage indicate their vulnerability, cracking, spalling and possible collapse of infill masonry walls are common. Inadequate seismic performance of infilled steel frames is a major concern particularly in areas of moderate and high seismicity. A research program sponsored by the National Science foundation of the United States has been initiated at Drexel university to experimentally investigate the effectiveness of retrofitting infill concrete masonry walls using fiberglass Composite Laminates (FCL) to enhance their strength and deformation characteristics and to demonstrate the ability of the proposed technique to improve the seismic performance of infilled steel frames. This paper outlines the scope of the test program and presents results of Phase 1 which aims at investigating the effect of FCL on enhancing the strength and deformation characteristics of hollow concrete masonry assemblages tested under in-plane axial compression and off-axis compression at different angles from the bed joints.

