IIS 054

Experimental Studies on Steel-Fiber Reinforced Concrete Filled Steel Tube Columns

Yunfeng Zhang
Assistant Professor, Center for Advanced Technology for Large Structural Systems, Department of Civil and Environmental Engineering, Lehigh University, Bethlehem, PA

Jian Li
Graduate Student, Center for Advanced Technology for Large Structural Systems, Department of Civil and Environmental Engineering, Lehigh University, Bethlehem, PA

Abstract

In this project, a testing program for steel-fiber reinforced concrete (SFRC)-filled steel tube columns will be carried out. The testing program will include: (i) confined behavior of axially loaded SFRC materials, (ii) stress-strain behaviors of axially loaded SFRC-filled steel tube columns, and (iii) behaviors of eccentrically loaded SFRC-filled steel tube columns. A comparative study of regular concrete-filled steel tube columns will also be carried out under identical conditions (except for the addition of steel fibers). In addition, various events at different stages of loading will be monitored using piezoelectric material-based acoustic emission (AE) techniques. The experimental modal analysis technique will also be investigated in this project for its appropriateness in damage detection for concrete-filled steel tubular members.