

Colleen Dansdill, Civil Engineering

Year in School: Junior
Faculty Mentor: Dr. Hani Salim, Civil Engineering
Funding Source: Air Force Research Lab and Applied Research Associates

Evaluation of a steel sheet system for blast retrofit under static pressure

Blast resistant design has come to the forefront of engineering concerns in the wake of recent terrorist threats to the United States. The focus of this research project is on the use of steel sheathing as a method of blast retrofit design. Research has been done to ascertain the steel strength, analyze the response of the steel sheathing to static pressure, explore strength and ductility limits, investigate connection details, and develop an analytical model of the static resistance function, which was verified by experimental data. Subsequently, a single degree of freedom dynamic model has been used to analyze the response of a blast retrofitted wall system. A series of three experimental tests - component beam (8 tests), and connection (12 tests) - investigated the responses, to failure, of steel sheets. Finally, the results from the research and dynamic modeling are implemented into a user-friendly blast design code, which is the topic of research of another undergraduate student.