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Blast retrofit of concrete walls using polymers

Blast Retrofit of Concrete Walls using Polymers By Rhett Johnson Civil and Environmental Engineering Research Advisor: Dr. Hani Salim Abstract: Due to the demand for safety against explosion threats for military facilities or many other types of offices, a new field of engineering research has developed. With this new field has a goal of designing retrofits for high threat structures using existing materials and construction methods. One method that has gaining popularity for retrofitting infill walls is the use of flexible sheets that can be installed on the interior side of an exterior wall to absorb the momentum and debris of the wall after a blast attack. The focus of this research project will be to look at the overall characteristics of a processed composite polymer as an optional material for retrofitting in blast resistant design. The testing will include devising a way to attach the polymer to the structure, either mechanically or by chemical bonds. Quasi-Static resistance functions will be developed for use in predicting the blast behavior of the material. Summaries and final comparisons will be drawn between this polymer and other similarly tested materials used in this application; this will include economics, usability, and performance.