



National Storm Shelter Association/Texas Tech University Door Performance Demonstration Project Overview

The National Storm Shelter Association (NSSA), working with the Debris Impact Test Facility at Texas Tech University, is addressing a serious problem in the storm shelter industry: installing substandard, untested doors in above ground site-built storm shelters. The death of a person in Arkansas is a wake-up call for the storm shelter industry, hopefully now receptive to reliable information supported by professional demonstration.

Mike Vaughn, President of NSSA, and Tom Bennett, Past President, extracted the failed door from the storm shelter in Mayflower, Arkansas in which a person was killed, and brought it to the Debris Impact Facility at Texas Tech. A complete forensic analysis of the door has been performed to accurately characterize it and to describe its failure, comprising Phase 1 of this project. An advisory group present for the analysis includes Jim Bell of ASSA ABLOY, Heide Claus of Deansteel, and Timothy Marshall of Haag Engineering. We will publish and widely distribute results.

In Phase 2 of the project, we will utilize the state-of-the-art debris launcher and high-speed photography equipment at Texas Tech to characterize and vividly demonstrate the failure mechanism of doors that are unable to carry tornado-induced wind pressures and debris impacts. We will also show successful performances.

Finally, we will develop strategies and hardware to modify untested, substandard doors that have been installed that lead users to a false sense of security. We will devise methodologies to improve door performance, demonstrate improved performance, and publish the results.

The project will be managed by Dr. Ernst Kiesling, Executive Director the National Storm Shelter Association. Larry Tanner, Research Assistant Professor and Manager of the Debris Impact Facility, will serve as Principle Investigator. Startup funding will be provided by the Debris Impact Facility at Texas Tech. Financial assistance is needed to produce a dramatic demonstration of the consequences of using substandard doors in tornado shelters. Financial assistance will be acknowledged in publications and reports. A detailed research plan and budget will be forwarded upon request. Contact Ernst.Kiesling@ttu.edu to participate.