



THE FIRE PROTECTION RESEARCH FOUNDATION

STAIR DESCENT DEVICE PERFORMANCE FOR FIREFIGHTERS Project Statement

Background

The use of Stair Decent Devices (SDDs) by firefighters to evacuate individuals with disabilities from high-rise buildings has been publicized since the attacks on the World Trade Center in 1993 and 2001. SDDs are now present in many high-rises, and are incorporated into evacuation plans. Quantitative study on how well they work for firefighters has not been performed, however.

For the first time, significant reference to stair descent devices appears in the National Fire Protection Association Life Safety Code, in the recently released NFPA 101-2009 Annex. Annex entries are not mandatory unless adopted by an authority having jurisdiction, but provide specific guidance if this takes place. While the entry in Annex A indicates the increasing use of stair descent devices, the entry language illustrates the need for research to determine what exact demands are made on firefighters while operating them.

The use of stair descent devices has received significant attention, particularly since the 1993 and 2001 attacks on the World Trade Center. Discussions regarding the devices are largely anecdotal, however, and no testing methods are in place or being developed.

Purpose and Aims

This project will provide quantitative data on the demands made on firefighters as they use stair descent devices (SDDs), and on device performance over time so that the devices are operational when needed.

Tasks

ergonomic evaluation of evacuation equipment used by firefighters in high-rise buildings data will be gathered on firefighter muscle activity and heart rate. Several different SDDs will be used, representing 3 different design approaches, during trials where stairway width and landing size are varied, where regular and urgent travel is encouraged, and where an obstacle is present.

Schedule: Three year study; completion 2013

Implementation:

This project is being conducted by the University of Illinois at Chicago in collaboration with the University of Ohio. The Foundation provides Advisory Services to the project through the administration of a Technical Panel which provides comments on the technical plan and interim and final reports.