

Assessment of Total Evacuation Systems for Tall Buildings

BACKGROUND

Building evacuation strategies are a critical element in high rise building fire safety. Research to date has focused on elevators and exit stairs; however there is a need to apply this research to relocation and evacuation systems which may include combinations of these two exit strategies as well as new egress components such as sky bridges for tall buildings.

RESEARCH OBJECTIVE

The objective of this research is to study possible improvements to life safety of tall buildings through an investigation of occupant relocation and evacuation strategies involving the use of exit stairs, elevators, sky bridges and combinations thereof. It consists of a review and compilation of existing information on this topic, and the conduct of one or more case study simulations of a multi component exit strategy. This review will provide the architectural design, regulatory, and research communities with a more thorough understanding of the current and emerging evacuation procedures and possible future options.

TASKS

1. Literature Review: compile and summarize the significant literature and modeling studies on exit strategies from tall buildings which combine both horizontal and vertical strategies (stair, elevator, skybridges, other). Compile available evacuation plans from existing tall buildings.
2. Simulation: Construct a model case study tall building which includes both horizontal and vertical exit paths and simulate exiting in response to a set of emergency scenarios defined in collaboration with the project technical panel. This simulation-based research will use Egress Simulation Model(s) selected in collaboration with the technical panel.
3. Analysis: Identify the critical features of emergency egress strategies and factors that influence them.
4. Report: Summarize the simulation results and analysis and provide recommendations for specific additional studies that can build on this work to develop a set of guidelines for mixed (using at least two of the three, or all three strategies noted above) emergency evacuation procedures for high rise buildings.