

Rights of Access + Rights of Egress = Lowest Risk In Evacuation & Rescue

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[Back to Article Index](#)



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Feature Article

With the Disability Discrimination Act and Health & Safety legislation in place, building owners and employers must provide adequate means of escape for all occupants of buildings. In the event of an emergency evacuation - it can happen any time, every building occupant, visitor, employees have a right to egress, which is the responsibility of building managers and employers.

Historically Building Regulations in most countries have focused on provision of equal access rather than equal egress as most tall buildings are designed for 'defend in place' strategy. Hence, most high-rise buildings are not designed to ensure that everyone in the building has equal opportunity to evacuate quickly when the use of lifts is considered inappropriate for use in extreme emergencies.

Basic Ethical Problem

In considering growing ageing population worldwide, it is important to realize that in the context of high rise evacuation, it is estimated that 30% of the total building population who may have difficulty or no ability to walk down stairs unassisted during emergency evacuation. Protecting this group of occupants while they remain in place waiting for rescue could be a viable option for high-rise buildings. However, this exposes the risk to this group of people as to what the effects will look like in the event of a major fire evacuation or other critical happening including tornado, earthquake, terrorist threats, and even extended power outages that require partial or total building evacuations. Current building design cannot be 'unsafe' in terms of evacuation of people with disabilities, but more could be done to provide alternative means of egress to ensure the ground level quickly and safely in the event that the emergency is out of control.

High-Rise Evacuations

In general, high-rise buildings present many very unique and difficult challenges during emergency evacuation, rescue, and fire suppression. Evacuation process may take many hours to get people out of a tall building during a fire, especially if the normal means of egress, such as lifts, are not working and/or several stairwells are impassable because of smoke, heat or flames.

The initial reports of the events of September 11th last year have shown a successful evacuation of so many of the building occupants who had the ability to walk down the stairs before the building collapsed. Yet, the fatality figures were high and it leaves us all with some soul-searching respect to trying to visualize what it must have been like for those who tried to escape but have no ability of walking down stairs unassisted.

Fire authorities recognize the difficulties of evacuating people from high-rise buildings, especially elderly and disabled people in extreme emergency situations. The building managers and emergency services



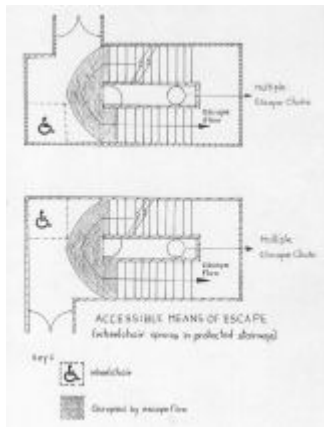
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today will face new challenges to do more to ensure safer and quick escape of all building occupants and rescuers in a major emergency. Fire departments deem that a building's fire safety manager should be responsible for the safe evacuation of all people, which is not dependent on the fire brigade. Some fire departments have even approved the use of fire lifts for evacuation of people with mobility impairments, while others deem this method too risky.

Whilst life safety is of paramount importance so is the ability to evacuate the total building population in the shortest possible time if an extreme emergency arises. An international standard should be adopted by building authorities to provide a clear definition of building management responsibilities as well as the provision of egress means to allow the manager to ensure the safe evacuation of all mobility-impaired people in the event of total evacuation.

Emergency Preparedness

No one likes to contemplate the possibility of a high-rise evacuation. Following the September 11 incidents in the U.S.A and all the recent terrorist threats, the owners of private and public tall buildings worldwide are aware of the significant importance of emergency preparedness for mass evacuation. They are looking into ways and means to improve their ability to empty the total building population in the shortest possible time in the event of a worst conceivable scenario for their buildings.



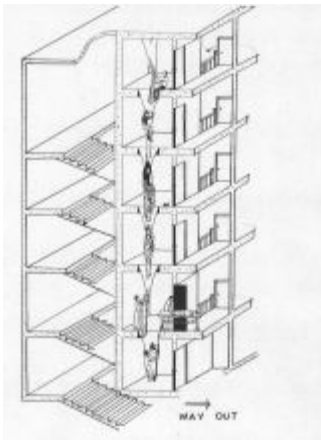
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Just as we accept the daily use of lifts to gain access to every floor in high-rise buildings, so too there are ways that must be taken to ensure that all building occupants can also get down and out in the absence of lifts in an emergency evacuation. A safer strategy would be to get as many people evacuated out of a blazing high rise in a predetermined evacuation time rather than having to depend on firefighters to perform height rescue operations. The use of escape chutes is the only acceptable way of guaranteeing life safety prevention.

Although current fire regulations do not require buildings to provide escape chutes for escape or rescue purposes, building owners in many countries have installed escape chute systems to meet their evacuation requirements as part of emergency preparedness. The combined use of escape chutes and stairways for mass evacuation would take much lesser times to complete.

Technology and Innovation

Since 1982, evacuation via escape chutes has been an alternative method of escape to staircase in multi-storey structures; it provides the answer to make means of egress available to all people. The escape chute works on the principle of gravity, using the stress and friction method. It does not need a power supply, is usable by all people, regardless of their size, shape and weight, and allows even disabled or injured and unconscious people to be safely and effectively brought to ground level in the event of a fire in a multi-storey structure. It is estimated that over a million people have tested the escape chute evacuation from



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stories and higher.

There are several types of escape chutes, reusable preparedness so to help evacuate occupants in building and rescue purposes in the timeframe possible, while maintaining safety:

Multiple-entry: The multiple escape chute system is installed inside protected vertical shaft enclosure in a new building or retrofitted in existing building. The installation is constructed in accordance to international fire code that provides protection from fire effects for evacuees so that it can be used safely for emergency egress. The chute is permanently available at each level inside the fire protected shaft, a segment of chute per floor, from the highest floor to the ground floor along the same vertical line with no length and height constraints. Evacuation takes place inside the building and occupants can gain access to the chute at each floor where several levels can be simultaneously evacuated.

Single-entry: The one-entry escape chute is installed in old or existing building whereby there is no possibility of incorporating the multiple-entry chute. It is designed for installation at window, balcony and rooftop multi-floor buildings from two storeys upward to maximum of 200m height; best serves the occupants of that particular floor. This external chute is constructed of three layers, and this three-way protection protects the evacuees once inside the chute from fire, heat, and smoke during evacuation.

In countries where no fire regulations are enforced, there will be situations where the minimum number of exits in a building or floor(s) may not be enough to cater for the occupants due to a change of occupancy classification or an increased in occupant load over the time. In many situations, escape chutes are acceptable by fire authorities as a practical alternative exit in buildings where it is not possible to provide additional exits or increase the size of existing exits for mass rapid evacuation.

Accessible Means of Escape Method

Current fire regulations do not require buildings to provide facility for emergency egress, however building owners in many countries have adopted a solution in making their buildings egressible for everyone during evacuation. It offers worry-free solution and reduces the risk of injury to the disadvantaged who have difficulty or have no ability to use stairs getting out of the building.

This emergency egress design is a unique and integral part of the enhanced staircase development. It exceeds the current vertical exit provision and further enhanced the safety of evacuation in tall buildings. This egress design requires the ability of incorporating the facility of multiple escape chute system at the core of the stairwell inside the enhanced staircase enclosure. The use of escape chute and exit stairs to evacuate building populations faster. It simultaneously grants occupants their right to evacuate while giving priority to firefighters.

Given this means of egress is designed in accordance to international code to prevent entry of fire and smoke into the enhanced stair enclosure with the multiple-entry escape chute system, this enclosure becomes a safe zone for refuge after a fire starts. When fire occurs, mobility-impaired people and the disabled will have to make their way, with assistance, and take temporary refuge inside this stair enclosure while waiting for rescue. They can either choose to use the chute inside the stair enclosure to slide down to the ground or to be assisted by helpers down the stairs. Such an emergency exit system for persons who use wheelchairs or are otherwise unable to use stairs would not only save the lives of people with disabilities but also of rescue workers who would not have to put themselves at risk to rescue disabled people in tall buildings.

Conclusion

The development of code and standards will make it possible for all buildings to become conducive for access and egress to everyone. We need to adopt a universal approach to equal egress design would give mobility-impaired people the same ability that able-bodied people have. Vertical exits, making high rise evacuation quicker and relatively safe.

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