

SAFE EGRESS AND EVACUATION FOR PEOPLE WITH MOBILITY IMPAIRMENTS

Barrier-free access to buildings for people with disabilities has attracted considerable attention in recent years. A great deal of work has been done to improve the accessibility of public buildings for people with disabilities. However, the improvement in the accessibility of buildings also presents a considerable opportunity to implement measures to ensure prompt and safe evacuation for everybody in the event of an evacuation or emergency situation.

DIFFICULTIES IN MOVEMENT DURING EMERGENCY EVACUATIONS

People with mobility impairments can be greatly affected during emergency evacuations. They may find it difficult to move to other areas of their floor when the evacuation happens. This might be due to their personal abilities, such as their speed of walking when using crutches, or their age. It might be due to the situation around them. Perhaps fire doors that are normally held open will close during an emergency. People with impaired mobility may find that crowds rushing around them make them unsteady. They may need handrails for support on corridors, ramps or stairs and they may need to rest before they reach the assembly point.

Ascending or descending stairs remains the most difficult part of escape travel for people with mobility impairments. Moving down from upper floors or coming up from a basement in an emergency situation can take much longer for people with reduced mobility than for other people.

People with hidden disabilities such as heart conditions, asthma or other breathing difficulties who rely on lifts to get into the building may have severe difficulties in moving up or down stairs when the lift is out of service during evacuations. The combination of the additional physical exertion, stress and smoke can cause significant problems for these people, whose disability is often hidden.

FIRE SAFETY REQUIREMENTS FOR PERSONS WITH DISABILITIES (PWD)

In addition to the current fire safety provisions stipulated in the Fire Code 2007, additional fire safety features such as PWD holding points, ramps, evacuation lift and evacuation planning have been incorporated to facilitate the evacuation of PWDs during an emergency.

A PWD Holding Point is a temporarily safe space for PWDs to await assistance for their evacuation and shall be provided on all storeys including all basement levels, except first storey or storey at grade level.

The use of passenger lifts for emergency evacuation is not advised due to the potential for people to be trapped if the power supply is interrupted and the dangers of the lift being opened inadvertently on the fire floor with the potential to expose occupants to danger. The use of an evacuation lift will always be the best option for the vertical escape of those who require assistance.

In buildings where an evacuation lift is not provided, for those requiring assistance with mobility to move or be moved to safe areas or PWD Holding Points, where they are protected from the fire, and wait for rescue by the Emergency Response Team. People are often uneasy about being left behind in a building when everyone else is leaving.

For non-residential buildings that are not installed with lifts, building owners are also required to develop evacuation plans and such plans would have to cater for evacuation of PWDs.

MANAGEMENT RESPONSIBILITY

Building owner could do more than just complying with the basic fire safety requirements for PWD. Evacuation procedures shall be planned by the building owner. Planning includes identifying and providing the needs of PWDs to facilitate safe evacuation, and making arrangements for assistance during emergency. The building owner must keep the following information:

- (a) The number of PWDs;
- (b) The location of the PWDs;
- (c) The nature of their disabilities; and
- (d) The PWD Holding Point(s) in which they are allocated.

Vertical evacuation takes place in a high rise by way of evacuation lifts and stairs. The method depends on a person's physical status. Able-bodied person can walk out by themselves, but those confined to wheelchairs or those with hidden physical disabilities need assistance. Evacuation lifts are designated to facilitate evacuation for persons with disabilities. Fire lift is intended to provide a vertical means of access for fire fighting and rescue operations. Fire lift shall not be designated as evacuation lift unless there is more than 1 (one) fire lift provided in the building. The process of vertical evacuation is highly labour intensive and can be chaotic without proper coordination.

Procedures shall be tested at least once a year and involve both horizontal, if provided, and vertical evacuation. Management shall ensure that the staff, designated to help PWDs in the event of fire, are fully trained to execute the evacuation procedure:

Building with evacuation lift –

PWDs requiring assistance shall move or be directed to the PWD Holding Point in the evacuation lift lobby. The trained staff shall attend to PWDs from PWD Holding Point and direct them to use the evacuation lift to the final exit.

Building without evacuation lift –

On hearing the alarm, PWDs requiring assistance shall be moved or be directed to the nearest PWD Holding Point inside the staircase. The trained staff, after completing their search, shall proceed to the PWD Holding Point and assist the PWDs down the stairs to the final exit in a safe and dignified manner.

EVACUATION CHAIRS/EVAC+CHAIR

For building without evacuation lift and for non-residential building that are not installed with lifts, evacuation chairs complement the fire safety requirements for persons with disabilities and facilitate the safe egress and evacuation for persons with mobility impairment.

Where wheelchair users need to be evacuated up or down stairs, it is not considered safe to evacuate them in their own chairs as this poses unacceptable risks to those providing assistance as well as the person in the chair. Commercially available evacuation chairs are designed to allow people with disabilities, particularly those with mobility difficulties, to be helped to move down and, in some case, up stairs from basements during an evacuation.

Evacuation chairs are manually powered, and rely on gravity to move the user down stairs. These chairs can be used where it is not safe to use lifts to evacuate, and where an evacuation chair is less risky than having a disabled people remaining behind at a refuge area. These chairs usually require one or two operators to guide the chair down the stairs. Evacuation chairs are designed to fold into a compact size, and can be mounted to a wall at or near a stairwell.

Evacuation chairs are internationally accepted as the stairway evacuation for persons with reduced mobility, who would have difficulty leaving the building when the lifts is out of service due to breakdown, under maintenance, power outage or in an emergency evacuation due to fire and terrorist threats.

The use of an evacuation chair will require the transfer of a wheelchair user from their personal chair to the evacuation chair. This can be difficult for some people depending on their particular condition and may require assistance. A transfer board can help the wheelchair user to safely transfer into the evacuation chair. Suppliers of the chairs provide training on their operation, which needs to be given to a sufficient number of people to ensure adequate levels of trained personnel are available at all material times.

All evacuation chairs are designed to move people with mobility difficulties down. In some model, the chairs can be used to move the disabled up from basements, and in other, the chair can move over rough terrain evacuation route during evacuation.

There are evacuation devices which are battery powered, such as wheelchair stair lift, intended to transport a heavier person or person with a wheelchair between 2 or more levels/storeys by means of a guided carriage moving along a flight of stairs, either in upward or downward direction, from a basement level or underground car park. These devices if installed inside a protected staircase, any protrusion of the device in its operating position may encroach into the escape path of building occupants, depending on the width of the stairs can sometimes slow down other people who are leaving the building. Battery powered devices need to be charged regularly to make sure they are available to use when required.

CONSIDERATIONS WHEN USING EVACUATION CHAIRS

If evacuation chairs are to be used the following points must be considered:

- look out for barriers along the evacuation route to assembly point, such as escape from basement, small drain, kerb, step or the rough terrain surface that can pose a difficulty for certain evacuation chairs;
- get the RIGHT model of evacuation chairs for the building (suitability for the staircases and overcome barriers along the evacuation route to assembly point);
- the evacuation chair can be used for onward transportation outside the building to the assembly point;
- the location and number of evacuation chairs required depends on the number of people anticipated to require assistance and other factors, such as the density of distribution of people around the building and the number of floors served by each stair. It would be good practice to provide a minimum of one Evac+Chair within each refuge;
- the time required for transfer to and from the chair;
- the acceptability of use of evacuation chairs in fire drills;
- the need for training on transferring and operation of evacuation chairs.

STAFF TRAINING

The presence of trained staff to assist with the evacuation of a building can add considerably to the level of safety achieved and reduce the time taken to escape. Staff intervention can have a very real impact in situations where visitors who are not familiar with the building are present, where people have mobility problems or where people are involved in activities to which they are very committed.

Effective staff intervention can reduce response and recognition time for people with disabilities and can enable staff to safely assist those who need help with getting around. In some situations staff intervention is absolutely essential, for example, where a person who uses a wheelchair to move around needs to descend an escape stairway to get to safety.

Staff can also be trained in the appropriate and safe use of evacuation chair, first aid and fire fighting equipment. However, only competent and willing personnel should be encouraged to attend this specific training.

An important aspect of staff training is to ensure that there are sufficient people trained to provide adequate cover at all material times. This means that sufficient numbers of trained staff must be available to cope with contingencies such as absences due to holiday or illness, out-of-hours use of buildings, or abnormal occupancy levels. At times, it may be possible to have unusually high numbers of people with disabilities in a building simultaneously. In such circumstances it is essential that the appropriate number of trained staff is available. A further imperative for staff training is that it is refreshed at regular intervals and that a system is in place to ensure that staff turnover does not create gaps in cover.

CONCLUSION

It is a common misconception that management responsibility ends when they comply with the minimum fire safety requirement for PWD or the responsibility ends with getting people with disabilities to the safe areas or PWD Holding Points and the Fire and Rescue Service will do the rest. Whilst fire fighters will no doubt do whatever is necessary to save life, it is of enormous benefit if the evacuation of people with disabilities is started before the fire service arrives at the scene, so that fire fighters are free to concentrate on other aspects of dealing with the incident. It is the responsibility of the building management to make every effort to get everyone to safety.

Sources of Information:

MCYS Singapore - By the end of 2012, Singapore will become a signatory to the United Nations Convention on the Rights of Persons with Disabilities, along with 153 other countries that have made the pledge. The move would commit the country to guaranteeing equal rights for disabled people in areas from the workplace to education and health care.

Workplace Safety and Health (Risk Management) - The regulations require Employers to have the responsibility to conduct a risk assessment in relation to the safety and health risks posed to any person include the Persons With Disabilities (PWD) who may be affected by his/her undertaking in the workplace.

Institution of Engineers Singapore - Employer is mandated by law to equip special disaster prevention measures and evacuation aid for disabled workers at a working place in a building. All buildings except those of Purpose Group I and II buildings are required to have appropriate fire safety features and evacuation planning strategies to facilitate the evacuation of disabled workers during an emergency.

Fire Code administered by SCDF does not specifically address fire safety provisions for persons with disabilities (PWD) (e.g. how PWD are notified during a fire emergency; their response to a fire incident; the provision of appropriate features to assist them; and what planning strategies are in place to help ensure orderly evacuation). The Fire Code only stipulates fire safety requirements in buildings with the objectives of minimizing property damage and injury to people and facilitating fire-fighting and rescue operations.

SCDF's guidelines and concept on Fire Safety Requirements for the evacuation of Persons With Disabilities (CD/FSSD/12/02/03/01):
Emergency --> Building Owner --> Persons With Disabilities --> PWD Holding Point --> Evacuation Lift --> Place of Safety

Evac+Chair International – Evac+Chair Conference in 2010 & 2012 held in UK