

SAFE EGRESS AND EVACUATION FOR PEOPLE WITH MOBILITY IMPAIRMENTS

Barrie-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. The best way to plan for safe evacuation of everybody is through a 'risk assessment' process. A risk assessment involves identifying any hazards or potential dangers, and doing whatever it takes to reduce these risks to an acceptable level.

DIFFICULTIES IN MOVEMENT

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.

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, and the buildings are not equipped with appropriate equipment and facilities for evacuating people with disabilities, then the building management will need to give consideration to restricting access for some people to areas from which safe egress can be guaranteed. Another approach is for those requiring assistance with mobility to move or be moved to safe areas, where they are protected from the fire, and wait for rescue by the Fire Services. People are often uneasy about being left behind in a building when everyone else is leaving.

MANAGEMENT RESPONSIBILITY

It is a common misconception that management responsibility ends with getting people with disabilities to the safe areas on upper floors 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.

Ensuring safe, independent and dignified evacuation in an emergency is a complex issue, requiring consideration of a broad range of factors, including the design and usage of a building, the training of staff and the provision of appropriate equipment and facilities. This requires consideration of the needs of everyone using the building, particularly the specific requirements of people with disabilities and people of all ages and sizes. Those responsible for building management and for ensuring safe evacuation in the event of an emergency must develop and implement plans to ensure that everyone can safely and quickly exit a building when required prior to the arrival of fire services at the scene.

EVACUATION CHAIRS

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 ski-belt system and 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 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.

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.

Evacuation chairs have a load capacity limit, so care must be taken with larger people to make sure that the chair is safe for the intended user. Some evacuation devices are battery powered, and can be used to bring somebody downstairs or upstairs, from a basement level or underground car park. These devices can sometimes slow down other people who are leaving the building, depending on the size of the stairs. The powered devices can also be particularly useful when dealing with heavier people. Battery powered devices need to be charged regularly to make sure they are available to use when required.

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

- look out for barriers if any, 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 type of evacuation chairs for the building (suitability for the staircases and overcome barriers along the evacuation route to 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 need for wheelchairs to be available for onward transportation outside the building or for personal chairs to be brought to the egress floor at the same time;
- 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;
- the fact that it might be very difficult or impossible for a wheelchair user to transfer to an evacuation chair or that some people might be unwilling to transfer for personal reasons;
- where an evacuation lift is not provided, and people are unable or unwilling to use an evacuation chair, then the building management will need to give consideration to restricting access for some people to areas from which safe egress can be guaranteed.

Reluctance to use an evacuation chair may arise from a lack of confidence in the staff or equipment, or from concerns about aggravating a particular condition or injury. Evacuation chairs are not customised to fit individual users' needs and there may be some discomfort experienced during the evacuation. In such cases, the development of a PERSONAL EMERGENCY EVACUATION PLAN (PEEP) provides an opportunity for discussion and evaluation of options. The building management will need to make every effort to instil confidence in the person with a disability that those operating the evacuation chairs are fully trained and capable.

EVAC+CHAIR®

Evac+Chair is an evacuation chair internationally accepted as the leading product for 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.

Evac+Chair have a series of models to overcome challenges in stairway evacuations. All chairs are designed to move people with mobility difficulties down the stairs. In some model, the chairs can be used to move the disabled up from basements, and in other model, the chair can move over rough terrain during evacuations.

EVAC+CHAIR model 300H

This is the basic model of the Evac+Chair series. The descent of the chair is under the force of gravity and chairs are fitted with a ski-belt system that allows the rate of descent to be controlled by a single person. This model is not designed for upwards escape. Payload 182 kg.

EVAC+CHAIR model 300H-AMB

Same model Evac+Chair 300H with larger heavy duty rear wheels for moves easily over rough terrain. It is controlled by a single person for descent. This model is not designed for upwards escape. Payload 182 kg.



EVAC+CHAIR model 600H

Add on feature to standard model Evac+Chair 300H with retractable rear and front grab handles provide lifting and carrying capability for difficult access and increased load capacity. It is controlled by a single person for descend and is suitable for carry by 2 to 4 operators. This model can be used for upwards escape, such as would be the case for basements. Payload 182 kg.

EVAC+CHAIR model 600H-AMB

Same model Evac+Chair 600H with larger heavy duty rear wheels for moves easily over rough terrain. Add on feature with retractable rear and front grab handles provide lifting and carrying capability for difficult access and increased load capacity. It is controlled by a single person for descend and is suitable for carry by 2 to 4 operators. This model can be used for upwards escape, such as would be the case for basements. Payload 182 kg.

IBEX TranSeat 700H

This model of Evac+Chair can descend and ascend stairs without carrying or heavy lifting. Some efforts are needed by two persons when controlling the chair for descend or ascend. This model can be used for upwards escape, such as would be the case for basements. Payload 159 kg.

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. To enable the safe egress of people with disabilities particular emphasis needs to be placed on the training of staff in the following areas:

General evacuation procedure training

All staff requires a level of training on the emergency procedures that have been put in place for the building. This should form part of induction training for new staff.

Specific evacuation procedure training

Those staff who are given particular responsibilities in an emergency evacuation, such as fire wardens, will need more in-depth training to enable them to complete their duties successfully and safely. Staff members with PEEPs will require appropriate training and support to ensure the PEEP can be implemented safely.

General disability awareness

It is important that staff who will be required to intervene in an emergency evacuation have an understanding of general disability issues. This will enable them to appreciate the difficulties faced by people with disabilities and to anticipate the type of assistance that might be required. Of particular importance is an understanding of cognitive and mental health impairments and an appreciation of "hidden" disabilities that might be overlooked. Staff should be trained in techniques

to minimise the panic that some people with cognitive or mental health impairments may experience in the event of an emergency evacuation, and the importance of providing and reiterating clear instructions on evacuation procedures.

Assisting with mobility

Staff will need specialist training on particular aspects of assisting with mobility. Examples might include the transfer of people from a bed or personal wheelchair into an evacuation aid, or the safe use of an evacuation chair used to descend stairs. Manual handling training is also required so that staff know how to safely manage heavy or awkward loads.

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.

Evacuation Drills

The manufacturer of Evac+Chair recommends that the emergency evacuation plan and procedures be tested twice yearly and that a full evacuation be carried out once each year. Testing procedures and running evacuation drills demonstrates that the emergency evacuation plan is valid, enables fine tuning of the plan and ensures that staff are familiar with the steps to take and have had a chance to practice. It is important for procedures testing and drills to reflect actual evacuations. This may include having people with disabilities involved in the exercises or having role players. The maximum benefit is achieved from testing and drills if a debriefing takes place after each and the learning that results is used to review the plans and procedures.

Drills can be either announced or unannounced and it is preferable that both take place. Announced drills are useful for training purposes but unannounced drills will enable the effectiveness of the procedures to be tested. It must be remembered that drills do not always accurately reflect the situations that can arise in a real emergency such as the presence of smoke, flame or injured people. Allowances need to be made in the emergency plan for these eventualities. It is essential that accurate records of all drills are kept to comply with health and safety legislation and to ensure that any corrective action required is implemented.

***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:

Emergency --> Building Owner --> Persons With Disabilities --> PWD Holding Point --> Evacuation Lift --> Place of Safety