



Loss Control Department  
*Technical Information Paper Series*

**Life Safety:**  
*Evacuation and Accessibility  
Planning for the Disabled*

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TIPS Series S 970.033 Printed in U.S.A.

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# Life Safety

## *Evacuation and Accessibility Planning for the Disabled*

### ***Understanding the Needs of the Disabled***

Disasters change lives forever. For the 49 million Americans who have disabilities, and for millions of others around the world, surviving a disaster can be the beginning of an even greater struggle. Whether an individual who has a disability requires assistance in evacuating a building, uninterrupted electricity to power a respirator, life-sustaining medication, mobility assistance, or post-disaster recovery services, emergency response personnel must be prepared to address the needs of that individual, during an emergency and in the hours and days that follow a disaster.

When the needs of people with disabilities are addressed in the emergency preparedness process, the overall effectiveness of the Emergency Preparedness Plan (EPP) is enhanced. Advance planning will allow quick response to any emergency, and can reduce the threat to disabled individuals who require assistance, and to those who are assigned to provide that assistance.

### ***The Americans with Disabilities Act: Impact on Life Safety Planning***

The Americans With Disabilities Act (ADA) is a comprehensive federal law prohibiting discrimination against people with disabilities in employment, public transportation, telecommunications and public accommodations. This protection is similar to that provided under the Civil Rights Act of 1964, to persons on the basis of race, sex, national origin, and religion.

Title III of the ADA, "New and Existing Public Accommodations and New Commercial Facilities," requires that buildings and facilities be made accessible. The *ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)* establish physical accessibility guidelines for existing and new construction, as well as for alterations or renovations for places of public accommodation and for new commercial facilities. Major building features subject to the regulation range from alarms to toilet facilities. The ADAAG use the "American National Standards for Building and Facilities: Providing Accessibility and Usability for Physically Handicapped People" (ANSI A117.1) and Uniform Federal Accessibility Standards (UFAS) as their models. The ADAAG provide technical guidance for building owners, and serve as the yardstick or code by which accessibility compliance is measured within Title III of the ADA.

## ***Life Safety: Evacuation and Accessibility Planning for the Disabled***

Evacuation *planning* is the key to mitigating the impact of disasters on the disabled. To protect the health and safety of the disabled, the following components of evacuation planning should be thoroughly reviewed:

- roles and responsibilities
- evacuation routes
- areas of rescue assistance
- accessible facilities
- post evacuation activities
- education and training

The ADA requires that “reasonable accommodations” be made to meet the needs of the estimated one in five people in this country who are disabled. To protect the health and safety of disabled individuals, an organization must emphasize the life safety components of the ADAAG and incorporate them into the EPP.

The life safety components of the ADAAG that should be thoroughly reviewed include; alarms, accessible routes, area of rescue assistance, doors, entrances, ramps, and stairs.

### ***References***

1. Blanck, Peter David. *Disaster Mitigation for Persons With Disabilities: Fostering a New Dialogue*. Northwestern University: Annenberg Washington Program in Communications Policy, 1995.
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3. *A Guide to Emergency Preparedness Planning: Hazard Assessment and Risk Evaluation; Emergency Preparedness, Response, and Recovery*. Hartford, CT: The Hartford Loss Control Department, c1996.
4. “People With Disabilities Need a Heightened Awareness.” *Safety and Health*, 151 (5): 79, May, 1995.
5. United States Department of Justice. Office of the Attorney General. *ADA Accessibility Guidelines for Buildings and Facilities*. *Federal Register*, vol. 56, no. 144, July 26, 1991, pp. 35605-35690.

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# Emergency Preparedness Planning

## *Life Safety: Evacuation Planning for the Disabled*

### ***Designate Roles and Responsibilities***

- Establish a clear chain of command. Identify personnel who have the authority to order and direct an evacuation.
- Designate individuals for the *buddy system* to assist the disabled in an evacuation.
- Designate wardens to account for personnel and visitors.
- Designate personnel to continue or shut down critical operations while an evacuation is underway.
- Establish a data base of disabled individuals and *buddy system* designees, their location within the facility, and notations on any special assistance requirements. This information should be readily available to internal and external emergency response personnel.
- Coordinate plans with the local emergency management office and various outside agencies.

### ***Establish Evacuation Routes***

- Designate primary and secondary evacuation routes and exits.
- Provide evac-chairs and other accessories at designated locations along evacuation routes.
- Ensure that evacuation routes and emergency exits are
  - clearly marked
  - well lit
  - wide enough
  - clear and unobstructed at all times
  - unlikely to expose disabled personnel to additional hazards.
- Install emergency lighting in case of a power outage during an emergency.

### ***Areas of Rescue Assistance***

- Establish locations for areas of rescue assistance. These designated locations can be any of the following
  - corridor
  - elevator lobby
  - exit balcony
  - area in a room
  - stairway landing
  - vestibule
- Each area of rescue assistance should provide at least two accessible areas or one for every 200 occupants of the floor, each being not less than 30 inches by 48 inches.
- Area of rescue assistance spaces should not encroach on any required exit width.
- Each stairway adjacent to an area of rescue assistance should have a minimum clear width of 48 inches between handrails.
- A method of two-way communication, using both audio and visual means, should be provided between each area of rescue assistance and the primary entrance.
- Each area of rescue assistance should be identified by two signs, one stating "Area of Rescue Assistance," and the other displaying the international symbol of accessibility.
- The signs in the areas of rescue assistance should be illuminated when exit sign illumination is required.
- Signs should be provided next to the communications system, explaining instructions on the use of the area of rescue assistance.

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continued

***After An Evacuation***

- Designate assembly areas where personnel should gather after an evacuation.
- Obtain an accurate head count after an evacuation.
- Determine the names and last known locations of personnel who are not accounted for.
- Access to appropriate facilities (i.e., beds, toilets, and other necessities) must be monitored and made available to individuals with disabilities. Affected individuals may require bladder bags, insulin pumps, walkers, or wheelchairs. Ensure that emergency response personnel are trained in the use of such equipment.
- Establish procedures for further evacuation in case the incident expands (e.g., consider transportation needs of the disabled should a community-wide evacuation be necessary).

***Provide Evacuation Education and Training***

- Establish, document, post, and distribute evacuation policies and procedures (e.g., wheelchair evacuation procedures for *buddy system* individuals).
- Provide emergency information, such as checklists and evacuation maps. Post evacuation maps in strategic locations.
- Ensure that policies, procedures, and educational materials are appropriate for the disabled population in your organization. For example, written materials must be produced on cassette tape, on CD-ROM, or in large print for people who have visual impairments.
- Train emergency response personnel on how to support the independence and dignity of persons with disabilities in the aftermath of an emergency.
- Train employees in evacuation procedures. Conduct sessions at least annually or when:
  - Disabled employees are hired or when any employee becomes disabled
  - New *buddy system* assignments are designated
  - New equipment, materials or processes are introduced
  - Procedures are updated or revised
  - Exercises show that employees performance must be improved
- Exercise evacuation planning procedures with the local fire department.

# Emergency Preparedness Planning

## *Life Safety: Accessibility Planning for the Disabled:*

### *Alarms*

**Alarms (ADAAG § 4.28).** An alarm is a warning system that indicates that there is an emergency.

#### ***General Requirements***

- When emergency warning systems are provided, they should include *both* audible and visual alarm signals.
- Audible and visual devices must be located and oriented so that they can spread signals and reflections throughout a space or raise the overall light level sharply.

#### ***Audible Requirements***

- Audible emergency alarm signals must produce a sound that exceeds the prevailing equivalent sound level in the room by at least 15 decibels or exceeds any maximum sound level with a duration of 60 seconds by 5 decibels, whichever is louder.
- Sound levels shall not exceed 120 decibels.

#### ***Visual Requirements***

- Visual alarm signals are electrically powered internally illuminated emergency signs that must flash as a visual emergency alarm *in conjunction with* the audible emergency alarm signals.
- Visual alarm signals must be installed in restrooms, hallways, lobbies, and in general usage areas (e. g., meeting rooms) and where deaf individuals may work to ensure that they are warned when an emergency alarm signal is activated.
- The lamp should be a xenon strobe type or equivalent.
- The color should be clear or nominal white (i.e., unfiltered or clear filtered white light).
- The maximum pulse duration should be two-tenths of one second (0.2 sec) with a maximum duty cycle of 40 percent.
- The intensity should be a minimum of 75 candela.
- The flash rate should be a minimum of 1 Hz and a maximum of 3 Hz.
- The appliance should be placed 80 inches above the highest floor level within the space or 6 inches below the ceiling, whichever is lower.
- In general, no place in any room or space required to have a visual signal appliance should be more than 50 ft. from the signal (in the horizontal plane). In large rooms and spaces exceeding 100 ft. across, without obstructions 6 ft. above the finish floor, such as auditoriums, devices may be placed around the perimeter, spaced a maximum 100 ft. apart, instead of suspending appliances from the ceiling.
- No place in common corridors or hallways in which visual alarm signaling appliances are required should be more than 50 ft. from the signal.

*These guidelines are based on the federal requirements for complying with the ADA. Local codes may vary; check local requirements before undertaking any new construction or alterations. Final decisions about whether or not to make alterations to a facility should be made after consulting with your legal and professional advisors.*

## Emergency Preparedness Planning

### *Life Safety: Accessibility Planning for the Disabled: Accessible Routes*

**Accessible Routes (ADAAG § 4.3).** An accessible route is a continuous path connecting all accessible spaces in a building. Interior accessible routes may include corridors, floors, ramps, elevators, and lifts. Exterior accessible routes may include parking aisles, curb ramps, walks, ramps, and lifts.

- At least one accessible route (e.g., walks, halls, corridors, aisles, skywalks, tunnels) within the boundary of the facility, must be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve.
- The accessible route should, to the maximum extent feasible, coincide with the route for the general public.
- The minimum clear width of an accessible route must be 36 inches except at doors where the minimum clear width must be at least 32 inches.
- Ground and floor surfaces along accessible routes and in accessible rooms and spaces including floors, walks, ramps, stairs, and curb ramps, should be stable, firm, and slip-resistant.

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## Emergency Preparedness Planning

### *Life Safety: Accessibility Planning for the Disabled: Areas of Rescue Assistance*

**Area of Rescue Assistance (ADAAG § 4.3.11).** An area of rescue assistance is an area with direct access to an exit where people who are unable to use stairs may remain temporarily in safety to await instructions or assistance in an emergency. Areas of rescue assistance are required in new buildings that do not have automatic sprinkler systems.

- An area of rescue assistance can be one of the following: area in a room, corridor, elevator lobby, exit balcony, stairway landing, and vestibule.
- Each area of rescue assistance should provide at least two accessible areas or one for every 200 occupants of the floor, each being not less than 30 inches by 48 inches.
- Area of rescue assistance spaces should not encroach on any required exit width.
- Each stairway adjacent to an area of rescue assistance should have a minimum clear width of 48 inches between handrails.
- A method of two-way communication, using both audio and visual means, should be provided between each area of rescue assistance and the primary entrance.
- Each area of rescue assistance should be identified by two signs, one stating “Area of Rescue Assistance,” and the other displaying the international symbol of accessibility. These signs should be illuminated when exit sign illumination is required.
- Signs should be provided next to the communications system, explaining instructions on the use of the area of rescue assistance.

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# Emergency Preparedness Planning

## *Life Safety: Accessibility Planning for the Disabled:*

### *Doors*

#### **Doors (ADAAG § 4.13)**

##### ***General Requirements***

- An accessible door must have a 32 inch clear opening measured between the face of the door and the door stop on the latch side.
- Provide 18 inches or more of clear space on the operable side of the door.
- A doorway with two independently operated door panels must have at least one active door panel with 32 inches clear opening maneuvering space.
- A door should be provided where revolving doors occur along the accessible route.
- The floor must be level at all doors in the accessible route.
- All thresholds should be level or have a bevel of not more than 1:2.
- Where two doors occur in a series, provide a vestibule of at least 48 inches plus the width of the opened door swinging into the space.

##### ***Hardware***

- All door handles, locks, and latches must be operable with one hand and without twisting the wrist.
- Hardware should be mounted no higher than 48 inches above the finished floor.
- The door closer must take at least three seconds to move from 70 degrees open to a point 3 inches from the latch.
- Interior doors must have an opening force of 5 pounds or less.

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## Emergency Preparedness Planning

### *Life Safety: Accessibility Planning for the Disabled: Entrances*

**Entrances (ADAAG § 4.14).** An entrance is any access point to a building used for the purpose of entering. The principal entrance of a building is the main door through which most people enter.

- The accessible entrance must be connected to accessible parking, passenger loading zones, and public streets or sidewalks.
- The accessible entrance should connect to an accessible route to all accessible elements or spaces within the building.
- The accessible entrance must not be a service entrance unless the service entrance is the only entrance.
- Where vertical level changes between 1/4 and 1/2 inches occur along the route, the edge must be beveled with a slope of 1:2 or less.
- Where vertical level changes at the entrance are greater than 1/2 inch, provide a ramp, curb ramp, or platform lift.

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## Emergency Preparedness Planning

### *Life Safety: Accessibility Planning for the Disabled: Ramps*

**Ramps (ADAAG § 4.8).** A ramp is an accessible route with a running slope greater than 1:20. (1:20 is the ratio of the rise to the run of the ramp (Y:X). An example, if Y = 1'-0" and X = 20'-0", the slope = 1:20).

#### ***Ramp Characteristics***

- The maximum slope of a ramp in new construction should be 1:12 or less.
- The maximum rise of any run should be 30 inches or less.
- The cross slope of the ramp should be no greater than 1:50.
- The ramp surface must be non-slip.
- All grating openings must be 1/2 inch or smaller and must be placed perpendicular to the usual direction of travel.
- The clear width of the ramp must be at least 36 inches.
- A level landing must be provided at the top and bottom of each run.
- The landing must be at least as wide as the ramp and at least 60 inches long.
- Where ramps change direction, the landing must be at least 60 by 60 inches.

#### ***Ramp Accessories***

- A handrail on either side must be provided if the ramp rises more than 6 inches or is longer than 72 inches.
- The handrails must be continuous and fixed so they do not rotate or rock.
- The top of the handrails must be between 34 and 38 inches above the ramp surface.
- At the end of the handrails, there must be at least 12 inches of level handrail beyond the top and bottom of the ramp segment.
- The diameter of the handrail must be between 1-1/4 and 1 1/2 inches.
- All wall-mounted handrails must be mounted with exactly 1-1/2 inches between handrail and wall.

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**Emergency Preparedness Planning**  
*Life Safety: Accessibility Planning for the Disabled:*  
*Stairs*

**Stairs (ADAAG § 4.9)**

***Step Characteristics***

- All steps must have uniform riser height and tread width in any one flight.
- All risers in accessible routes must be closed.
- Treads should be a minimum of 11 inches, measured from nosing to nosing.
- The nosing should not project more than 1-1/2 inches.
- Outdoor stairs must be designed so that water does not accumulate on the walking surfaces.

***Step Accessories***

- Stairways must have continuous handrails on both sides of all steps.
- At the end of the handrails, there must be at least 12 inches of level handrail beyond the top and bottom.
- All wall-mounted handrails must be mounted with exactly 1-1/2 inches between the handrail and the wall.
- Mount top of handrails between 34 and 38 inches above the nosing.
- The diameter of the handrail must be between 1-1/4 and 1-1/2 inches.

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