

Mississauga Accessibility Design Handbook



Janice M. Baker, CA
City Manager and Chief Administrative Officer

City of Mississauga
300 City Centre Drive
MISSISSAUGA ON L5B 3C1

Tel: 905-896-5550
FAX: 905-615-3376
janice.baker@mississauga.ca



Leading today for tomorrow

Message from the City Manager and Chief Administrative Officer

I am pleased to introduce the City of Mississauga's Accessibility Design Handbook. This new resource can be used as a reference tool as we work towards making Mississauga a "barrier free community." Based on the human rights principles of respect, dignity and inclusion, these guidelines are a key component of the City's Accessibility Plan.

The Accessibility Advisory Committee formed a subcommittee to develop the accessibility design guidelines for the City. This committee consisted of representatives from the Community Services Department, the Planning and Building Department, the Transportation and Works Department and select members of the Accessibility Advisory Committee. The guidelines in this handbook will assist project designers to incorporate the accessibility criteria into their designs before they are built. Together, we can further the goals in the City's Accessibility Plan.

The Accessibility Design Handbook is the result of the collaborative effort among community and professional experts working with City staff and Members of Council. My appreciation to everyone involved in this project!

A handwritten signature in black ink, appearing to read "Janice Baker".

Janice Baker
City Manager and Chief Administrative Officer

Acknowledgments

The City of Mississauga thanks those who contributed to the production of this valuable resource.

The Accessibility Advisory Committee

City of Mississauga Accessibility Staff Working Group
Facilities & Property Management Division
Development Section – Planning & Administration Division
Design Section – Planning & Building Department
Building Engineering & Inspection Section - Planning & Building Department
Infrastructure & Environmental Planning Section– Transportation & Works Department

City of Mississauga Accessibility Contact:

Diana Simpson Accessibility Coordinator
905-615-3608, TTY 905-615-3411
diana.simpson@mississauga.ca
Facilities & Property Management Division
300 City Centre Drive, 4th Floor
Mississauga, Ontario
L5B 3C1
Fax: 905-896-5939

For alternate formats of this document, please contact Diana Simpson.

City of Mississauga



Accessibility

Design Handbook



October 26, 2005

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INTRODUCTION

1

1.1 MANDATE

In September 2003, Mississauga City Council adopted our first annual **Accessibility Plan**. A Strategic Planning Process was followed in preparation for the Plan and as a result the **City of Mississauga Accessibility Advisory Committee (AAC)** developed the following vision statement:

To create a fully accessible community utilizing *universal design principles* resulting in improved attitudes and full inclusion.¹

The Mississauga Accessibility Plan outlines several initiatives to move Mississauga toward becoming an accessible city. One of the initiatives is to develop accessibility design criteria for the City.

The Mississauga Accessibility Design Handbook outlines design criteria in which the City demonstrates to other sectors that we, as a city, are committed to the removal of barriers. Various departments within the corporation and external stakeholders will benefit from having access to the Accessibility Design Handbook. Internal staff, external agencies and our customers will benefit from this consistent approach.

In recognition of the diverse needs of residents of and visitors to the City of Mississauga, the mandate of the Accessibility Design Handbook is to generate built environments that are more inclusive.

The Accessibility Design Handbook is based on the premise that often simple design decisions can make the difference between a path, area or facility being accessible or inaccessible to individuals with varying levels of ability. Furthermore, consideration of a diverse range of needs during the design process can produce an environment that facilitates greater safety, comfort and ease for its users – a benefit to all.

Although the Accessibility Design Handbook outlines design criteria which are intended to generate built environments that are more inclusive, the application of the criteria is dependent on the ability of the City to apply the criteria under various legislation, such as the *Ontario Building Code* and the *Planning Act*, enacted by the provincial government.

¹ For further information on universal design principles refer to Section 5. – Appendices

1.2 STRUCTURE AND FORMAT OF THE ACCESSIBILITY DESIGN HANDBOOK

The Accessibility Design Handbook is organized in a manner corresponding to how both the design and use of an accessible space or facility is likely to occur.

The process begins with consideration for the general space and reach requirements of individuals with disabilities, followed by criteria for signage. Primary consideration is given to both signage and space and reach provisions for a variety of users since every accessible area and design feature of a facility or site is determined by or connected with these requirements.

Next, external design criteria outline the requirements for accessible arrival and departure areas, including parking spaces and drop-off zones, followed by design considerations for other exterior spaces and pathways.

Moving within the building, various recommendations are presented for interior elements and facilities, including doors, corridors and restrooms.

Near the end of the handbook, but applicable to all sections, criteria for systems and controls, such as alarms, lighting, materials and finishes are provided.

The Accessibility Design Handbook includes both Metric and Imperial units. For the purpose of this document **all Metric units are the standard for implementation.** Imperial units are approximate and included exclusively for ease of readership.

The Ontario Building Code (OBC) contains legislated minimum requirements for the design and construction of all projects. The latest version of the OBC must be followed.

1.3 DEFINITIONS AND GENERAL REQUIREMENTS

People with disabilities face unnecessary barriers almost everywhere. They confront difficulty with accessibility almost everyday at home, at work, at school, in parks, in auditoriums, in stores and restaurants and on streets and sidewalks.

A “**barrier**” signifies anything that prevents an individual with a disability from participating in all aspects of society because of his or her disability. A barrier may be physical, architectural, informational, communicational, attitudinal, or technological, or found in a policy or practice.

To comprehend the scope of the following **Accessibility Design Handbook**, the word **disability** must be defined. The **Ontario Human Rights Code** defines **disability** as follows:

- *Any degree of physical disability, infirmity, malformation or disfigurement that is caused by bodily injury, birth defect or illness and, without limiting the generality of the foregoing, includes diabetes mellitus, epilepsy, a brain injury, any degree of paralysis, amputation, lack of physical co-ordination, blindness or visual impediment, deafness or hearing impediment, muteness or speech impediment, or physical reliance on a guide dog or other animal or on a wheelchair or other remedial appliance or device.*
- *A condition of mental impairment or a developmental disability;*
- *A learning disability, or a dysfunction in one or more of the processes involved in understanding or using symbols or spoken language, a mental disorder, or*
- *An injury or disability for which benefits were claimed or received under the insurance plan established under the Workplace Safety and Insurance Act, 1997.*

It is important to note that designing for greater accessibility encompasses not only the reduction of physical barriers for persons using wheelchairs and other mobility aids, but also the creation of an environment that is accessible for people who are vision and/or hearing impaired, as well as individuals with cognitive disabilities, persons of short stature, children and the elderly.

While the range of users and requirements for accessibility often vary widely, the remainder of this section outlines general requirements for space, reach and signage, which serve as the foundation for the Accessibility Design Handbook.

1.3.1 Space and Reach Requirements

In order to design an accessible environment one of the most important considerations is the space and reach requirements of the intended users of the site or facility. The dimensions and manoeuvring requirements of a wheelchair or other mobility equipment, as well as the range of cane detection should serve as the basis for the design and construction of accessible elements within a site.

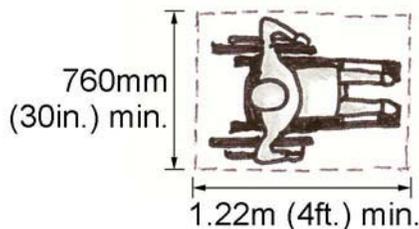
CRITERIA

The following figures illustrate average space and reach requirements for individuals using mobility devices, canes and guide dogs.

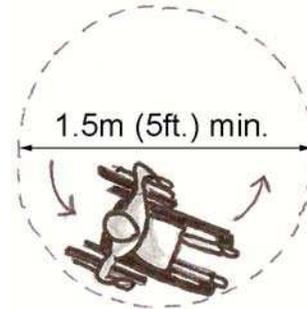
MOBILITY DEVICES

- a) Mobility devices, such as wheelchairs and scooters, require clear space to turn and manoeuvre and to approach features throughout a site or facility.

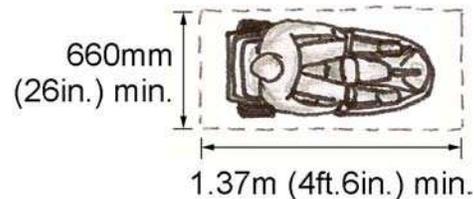
Wheelchair Clear Floor Space



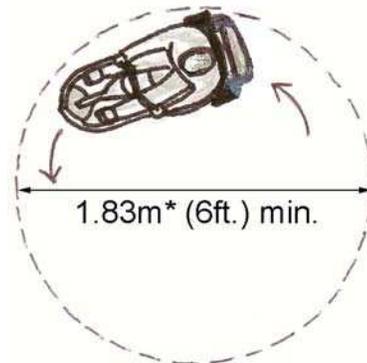
Wheelchair Turning Radius



Scooter Clear Floor Space

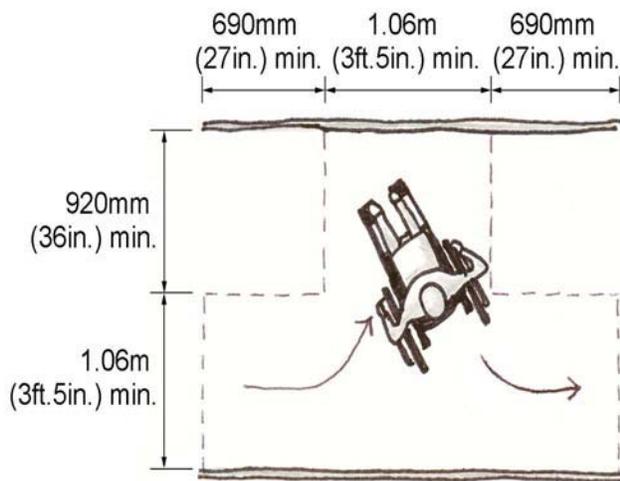


Scooter Turning Radius

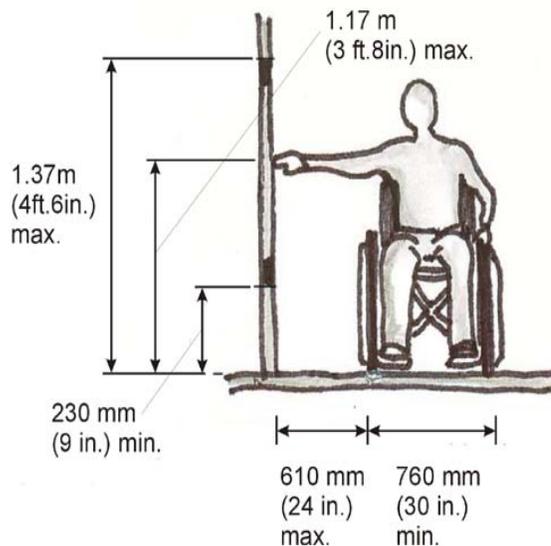


*The turning radius of a scooter varies widely depending on the size and wheel configuration. A 1.83m (6ft.) diameter was selected to accommodate the majority of scooters. Larger scooters may still manoeuvre within this clearance, but not in one continuous circle (i.e. must make a three-point turn).

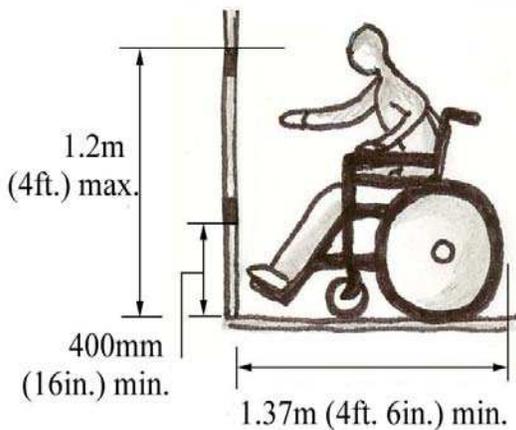
Three-Point Turn



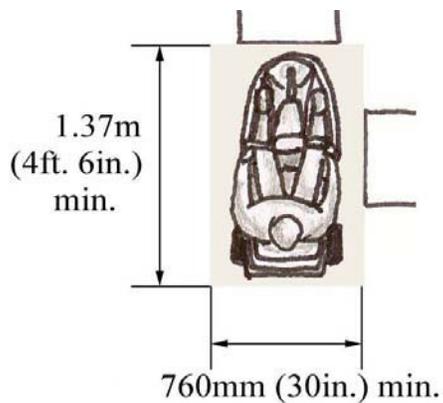
Side Reach



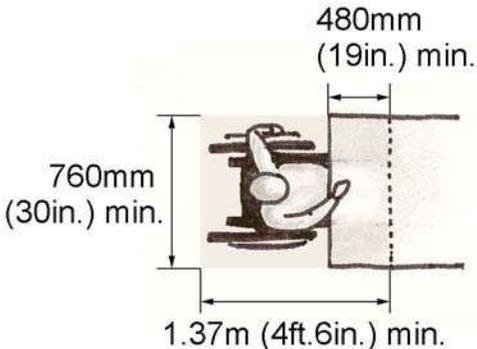
Forward Reach



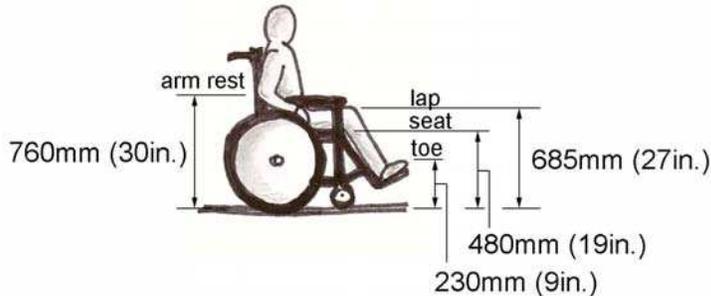
Front or Side Approach



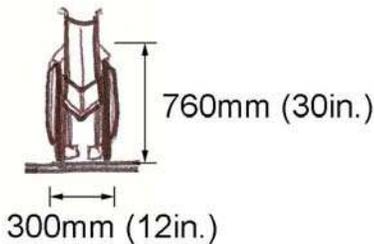
Front Approach under a Horizontal Surface



Clear Toe, Knee and Arm Rest Space



Folded Wheelchair

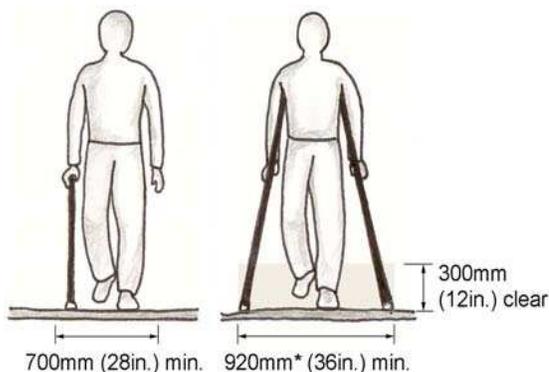


Persons using other mobility aids, such as canes or crutches, also require space clearances to move throughout a facility or site.

CANES AND GUIDE DOGS

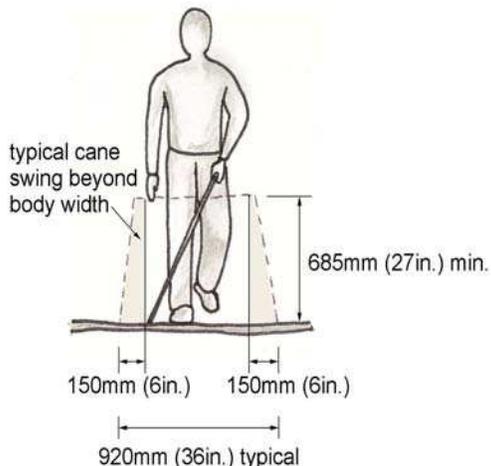
- b) Individuals with vision disabilities who use canes or guide dogs also have space requirements which should be considered when designing a site or facility.

Cane and Crutch Clear Widths

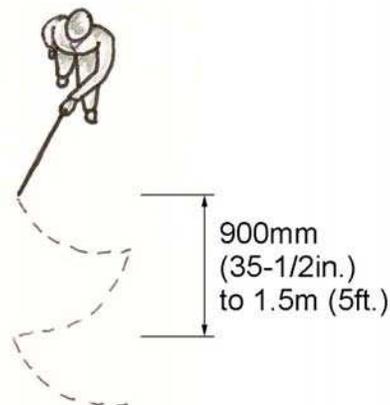


*Crutch tips require a clear width of 920mm (36in.) for a comfortable gait. Persons using walking aids can manoeuvre through a clear opening of 810mm (32in.) wide

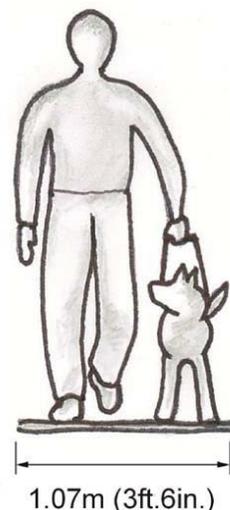
Cane Detectable Range



Cane Detectable Range



Clear Width for Person with Guide Dog



1.3.2 Signage

Clear signage is beneficial to all users of a facility. Appropriately positioned and universally recognizable signage plays an important role in assisting disabled individuals locate accessible areas and paths. Graphic symbols are helpful for individuals with literacy or vision concerns, while electronic signs are useful for both vision and hearing impaired individuals.

LOCATION

Appropriate signage should be included for all significant site and facility areas, routes and features. In addition to each feature, route and area being signed, signage should also be considered as part of a system with logical connections provided throughout the site or facility.

The signage standards are not applicable to municipal roads.

CRITERIA

- a) In general, signs should be **explicit, concisely worded** and contain **easily understood symbols** and **diagrams** (i.e. clear and sharp, not stylized).
- b) While sufficient signage is important for way finding, a proliferation of signs should be **avoided** since this may create visual noise resulting in confusion for vision or cognitively disabled persons.
- c) Letters and numbers on signs should be **sans-serif**, e.g. helvetica, univers 55 and arial with a recommended width-to-height ratio between **3:5** and **1:1** and a stroke-width-to-height ratio between **1:5** and **1:10**.
- d) Characters on signs should be clear and visible from an **appropriate distance** based on the function and location of the sign. Height dimensions for characters are recommended to comply with the viewing distances displayed in the following table.
- e) Signs with numbers should use **Arabic numerals**.
- f) Characters, symbols and backgrounds on signs should have a **matte** or **satin (non-glare)** finish.

Character Heights on Signs

Minimum Character Height	Maximum Viewing Distance
25mm (1in.)	750mm (29 1/2in.)
50mm (2in.)	1.5m (5ft.)
75mm (3in.)	2.3m (8ft.)
100mm (4in.)	2.5m (8ft.2in.)
150mm (6in.)	4.6m (15ft.)
200mm (8in.)	6.0m (19ft.8in.)

- g) Characters and symbols should **contrast (70% or greater)** with their background. **White** lettering or symbols set on a **dark background** is generally more easily read by people who are vision impaired.

Contrasting Signage



- l) Colour **contrast** on signage should be effective against the background to the sign.

CNIB Guide to Effective Colour Contrast

Background Surface	Sign Background	Colour of Lettering
Light brick or light stone	Dark (black preferred)	White/yellow
Whitewashed wall	Dark (black preferred)	White/yellow
Red brick or dark stone	White	Black, dark green or dark blue
Green Vegetation	White	Black, dark green or dark blue

- h) Use upper and lower case letters. Avoid using all capital letters as they provide less visual information to differentiate letters and give words shape.
- i) Avoid very fine type and very thick type. Choose a type face that is in regular range.
- j) The minimum level of illumination over directional or informational signage should be **200 lux** (20 ft. candles) Emergency lighting is **10 lux** (1.09 ft. candles) in exits. (See also **Section 4.1.7 – Lighting**).
- k) Signage should **avoid** using the colour combinations yellow/grey, yellow/white, blue/green, red/green, black/violet, or red/black, since these combinations are **unreadable** for most people with vision impairments.

1.3.3 Universal Symbols of Accessibility

International Symbols of Accessibility (ISAs) indicate to persons with disabilities reasonable freedom of movement within and around the site or facility to which the symbol is attached.

- a) The ISA for people with physical disabilities, hearing impairments and vision impairments should be positioned to indicate respectively accessible areas and features.

International Symbols of Accessibility (ISA)



ISA for persons with physical disabilities



ISA for persons with hearing impairments



ISA for persons with vision impairments

ISAs typically use a **blue background**, with **white** lettering, borders and pictographs.

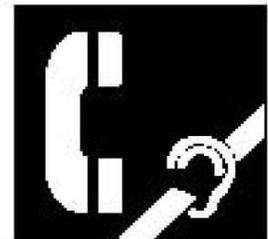
Where lighting conditions or surfaces require an alternative to the blue background, a **white background**, with **blue** lettering, borders and pictographs may serve as a substitute.

- b) Other signage, such as that for restrooms, parking or telephones, should **incorporate** the appropriate ISAs.

Signage with International Symbols



Accessible Female Washroom



Phone for people who are hard of hearing

- c) Where suitable, **directional arrows** should be incorporated into signage for accessible routes, features and areas.

Signage with Directional Arrows



Pedestrian directional signage should be wall or post-mounted at eye-level, between **1.37m** (4ft.6in.) and **1.5m** (5ft.) above the finished floor or ground.

- d) Directional and identification signage for a site or facility should establish a **standardized program** for sign height and location, e.g. always to the left or right of a door at a height of “x”, etc.

Signs and symbols for sites and facilities should follow the **CSA Standard CAN/CSA-Z321-96** “Signs and Symbols in the Workplace”.

1.3.4 Braille and Tactile Signage

a) Braille signage should be used **frequently** and **appropriate** to identify important site and building features.

b) **Grade 1 Braille** should be used on signage with **10 words or less**.

Grade 2 Braille, which uses contractions of words and phrases, should be used on signage with **more than 10 words**.

c) Braille type should be **in the same place** as other type on all signs, e.g. place the Braille type below or to the left of the corresponding tactile sign.

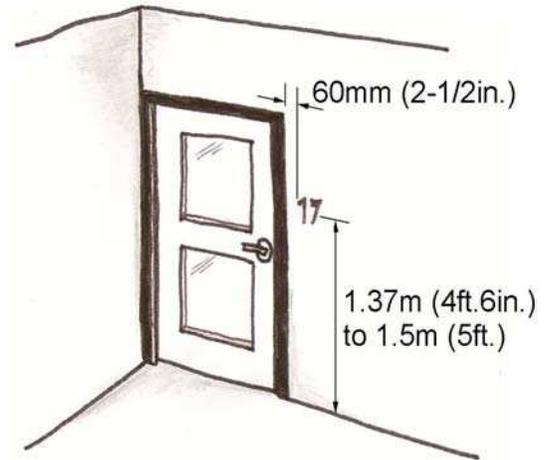
d) Signs with Braille should be positioned so that the reader **does not** have to bend over to touch the Braille type.

e) Braille should be **separated** from other raised characters or symbols.

f) Where Braille is provided, the immediate surrounding surface should be **void of sharp edges or points**.

g) **Tactile signage** should be included in public areas, particularly at key access points, restroom entrances and along emergency routes.

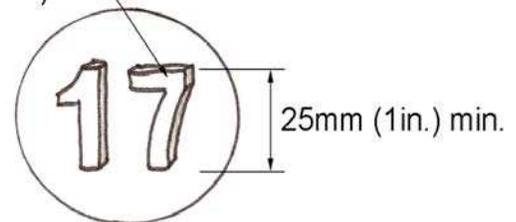
h) Tactile signs should be mounted between **1.37m (4ft.6in.)** and **1.5m (5ft.)** above the finished floor/ground.



i) Tactile signage at public entranceways and doorways should be placed on the **latch side of the door**, no more than **150mm (6in.)** from the door jamb. For **restroom doors** tactile signage should be placed on the door itself.

j) Tactile letters, numerals and symbols should be raised at least **0.8mm (1/32in.)**.

raised 0.8mm
(1/32in.) min.



- k) The edges of tactile characters should be **gently rounded**. Half-rounded characters should not be used.
- l) Tactile characters should measure between **16mm** (5/8in.) and **50mm** (2in.) in height. A minimum height of **25mm** (1in.) is recommended for raised characters on identification signs.
- m) Enclosed stairwells should have tactile signage consisting of **Arabic numerals** designating the floor number, permanently mounted on both sides of the door, **60mm** (2in.) inside the stairwell.
- n) Raised characters are **preferable** to indented characters since they are less susceptible to maintenance problems such as filling up with dirt or cleaning compounds.
- o) Raised borders can make raised characters difficult to read and should be **placed away from** the characters.
- p) A **clear path of travel** should be provided in front of all Braille and tactile signage.
- b) To be heard clearly, audible exterior signals, such as a pedestrian crossing signal, should be at least **15 decibels** louder than ambient noise.

See also **Section 4.1 – Visual and Audible Alarms.**

ELECTRONIC SIGNAGE AND SIGNALS

- a) **Light emitting diode (LED) signage** should be white, yellow or light blue on a black background. Red LEDs on a black background are **unreadable** for most people with vision impairments, particularly those who are colour blind.

EXTERIOR DESIGN

2

2.1 PARKING AND PASSENGER DROP-OFF ZONES

Individuals arriving at a location by vehicle generally have two options: either park the vehicle or be dropped off. Although well-organized parking and drop-off areas benefit all users, the location and design of these components are particularly important for the arrival and departure of persons with disabilities.

To better facilitate safety and ease, consideration should be given for the proximity of accessible parking spaces and drop-off zones to barrier-free paths of travel, as well as, main entrance and exit points. Clear signage, proper lighting and appropriate surface materials also contribute to the overall accessibility of parking areas and drop-off zones.

2.1.1 Accessible Parking Spaces

Provide accessible parking spaces in close proximity to barrier-free entrances and exits to facilitate the ease and safety of arrival and departure for individuals with disabilities.

LOCATION

Accessible parking spaces serving a particular facility should connect to the shortest barrier-free path of travel from the parking area, lot or structure to the main accessible entrance.

CRITERIA

- a) Accessible parking spaces should be located within **30m** (98ft.5in.) of the main barrier-free entrance and exit.
- b) For facilities with multiple barrier-free entrances and exits, accessible parking spaces should be dispersed and located within **30m** (98ft.5in.) of each barrier-free entrance and exit.
- c) A **barrier-free path of travel** should connect each accessible parking area, lot or structure to each barrier-free entrance and exit.
- d) The path of travel from an accessible parking space should **avoid** vehicle traffic crossing and movement behind or between vehicles.

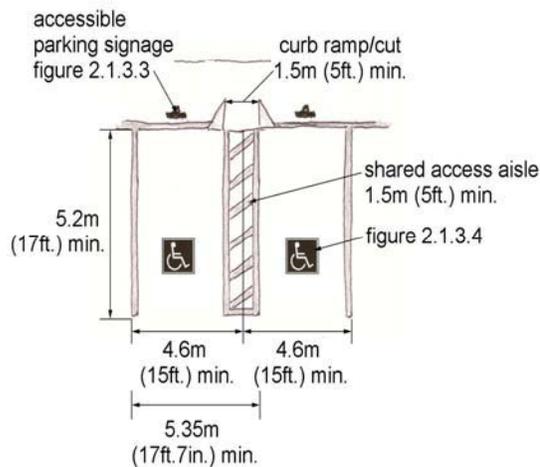
- e) Each parking area, lot or structure should have accessible parking spaces in compliance with the following table.

Accessible Parking Space Requirements

Total Parking Spaces	Minimum Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2% of total
1001 and over	20 plus 1 for each additional 100

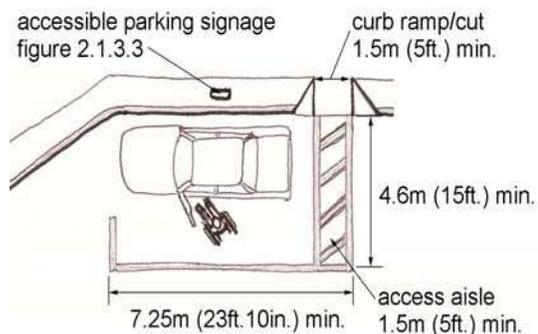
- f) To accommodate people in wheelchairs and those with other mobility equipment, accessible parking spaces (parking stalls) should be at least **4.6m (15ft.)** wide and **5.2m (17ft.)** deep.

Accessible Parking Space Dimensions



- g) Accessible parallel parking stalls should be at least **7.25m (23ft.10in.)** long and **4.6m (15ft.)** deep.

Accessible Parallel Parking Dimensions



- h) A clear path (**no parking zone**) to the adjacent curb ramp/cut should be demarcated by a painted, hatch-lined access aisle, at least **1.5m (5ft.)** in width (**Figures 2.11(f) and 2.1.1.(g)**).
- i) An accessible parking space should have a **firm, level** surface with a maximum slope of **2%** (1:50) for drainage.
- j) Curb ramps or other features mitigating changes in level from a parking space to a barrier-free path of travel should **avoid encroachment upon** the minimum dimensions of the accessible parking stall (refer to dimensions in **Figure 2.1.1(f)** and **Section 2.4.1 – Curb Ramps/Cuts**).
- k) While not recommended, if wheel stops are included they should be painted **yellow** for maximum visibility.
- l) That the instructions to operate a municipal parking meters should be no higher than **1.4m (4ft.7in.)** with all operable components no higher than **1.2m (4ft.)** above the ground. Where sufficient clear space is provided for a side approach, the operable components may be installed as high as **1.37m (4ft.6in.)** (refer to **Section 1.3.1 – Space and Reach Requirements**).
- m) For **signage** standards for accessible parking spaces refer to **Section 2.1.3 – Parking Signage**.

2.1.2 Accessible Passenger Drop-Off Zones

Accessible passenger drop-off zones are important for individuals who have difficulty traveling distances and those who use wheelchairs or other mobility equipment, particularly when entering or exiting side-loading vehicles.

LOCATION

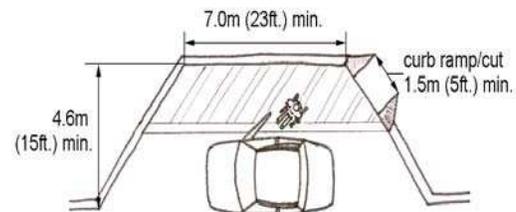
Generally, the drop-off zone should be located at the main barrier-free entrance of the building/site. At a minimum, the zone should be located in close proximity to the main entrance so that persons can see and be seen while waiting to be picked-up or dropped-off.

CRITERIA

- Accessible drop-off zones should be located within **30m** (98ft.5in.) of the main barrier-free entrance and exit.
- A **barrier-free path of travel** should connect the accessible drop-off zone to the barrier-free entrance and exit.
- Changes in level should be **minimized**, but if required should follow the standards set out in **Section 2.4 Ramps, Staircases and Other Changes in Level**.
- If curbs are required, a curb ramp with a minimum width of **1.5m** (5ft.) should be included (refer to **Section 2.4.1 – Curb Ramps/Cuts**).

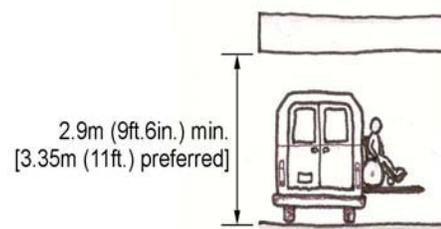
- The **surface** of the drop-off zone should be **firm, non-slip** and **level**.
- An accessible passenger drop-off zone should be at minimum **7.0m** (23ft.) in length and **4.6m** (15ft.) in width.

Accessible Drop-Off Zone Dimensions



- Signage indicating “**drop-off zone only, no parking**” should be positioned in a highly visible location.
- Where possible, overhead canopies and awnings should be included to provide protection for disabled people unloading in the drop-off zone from the elements, but should have a vertical clearance of at least **2.9m** (9ft.6in.) (**3.35m** (11ft.) preferred) to accommodate vehicle unloading devices.

Drop-Off Zone Vertical Clearance



2.1.3 Accessible Parking Signage

Accessible parking spaces must be clearly marked with appropriately sized and positioned international symbols.

LOCATION

Accessible parking space signage must be located directly adjacent to an accessible parking stall.

CRITERIA

- a) Accessible parking spaces must be designated with the **International Symbol of Accessibility** for persons with physical disabilities mounted both vertically on a sign and marked on the surface of the parking stall.
- b) All barrier-free parking signage should be **visible** to vehicles approaching the parking stall.

- c) Vertical signage for an accessible parking space must be designed in accordance with **the following figure** and be positioned in front of each barrier-free parking stall.

Accessible Parking Sign – By-law 134-83



Colour Specifications:

White background

Black letter P, legend and border

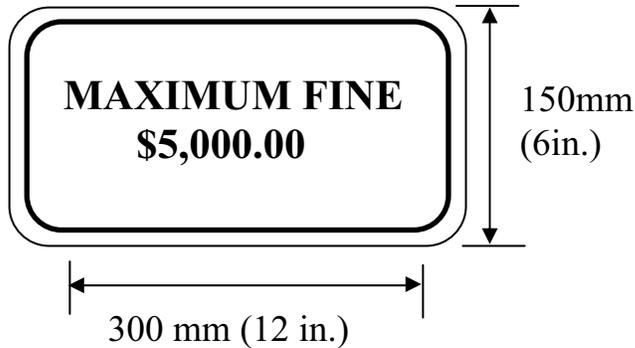
Red annular band with interdictory stroke

Blue symbol background and outline

Entire sign face to be of reflective material

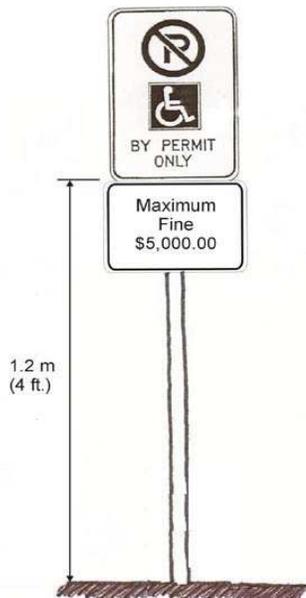
- d) A second sign to deter illegal usage of the accessible parking space is recommended to be mounted below the regulated sign outlined in the following figure, noting the maximum fine \$5000.

Second Accessible Parking Sign



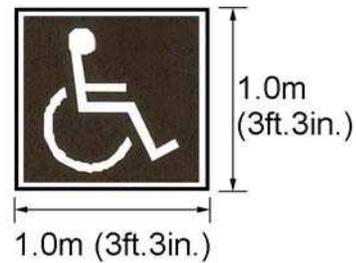
- e) Vertical accessible parking space signs (post or wall mounted) should be located **1.2m (4ft.)** above grade, between **600mm (24in.)** and **2.0m (6ft.6in.)** from the curb edge or on a building face within **2.0m (6ft.6in.)** of the curb. Refer to **By-law 134-83**.

Post-Mounted Accessible Parking Signage



- f) For surface signage, the International Symbol of Accessibility for Persons with Physical Disabilities should be painted with a **blue background** with **white lettering** onto the paved surface of the parking stall and be a minimum length and width of **1.0m (3ft.4in.)**.

Accessible Parking Surface Signage



- g) In addition to signage for individual parking spaces, signage directing vehicles and pedestrians to accessible parking areas should be located at **changes in direction** and **appropriate intervals**, e.g. **30m (98ft.5in.)**, along a continuous path of travel.

Accessible Parking Directional Signage



2.2 PEDESTRIAN LINKAGES

People with disabilities are better able to participate in the community if facilities include barrier-free paths of travel. Walkways and municipal sidewalks function as critical links for movement by providing pedestrians with a guided path to a particular destination.

Since municipal sidewalks and municipal walkways contribute such a fundamental function they should be designed to meet the needs of the widest possible range of users.

Walkways should be designed and constructed to provide a well-defined, barrier-free path of travel from parking areas, drop-off zones and streets to the main building entrance, as well as other accessible site features.

In addition to serving a variety of elements and areas on a site, walkways should be simple, logical and consistent in both layout and surface treatment. This enables individuals, particularly those with vision impairments, to predict and interpret new, as well as routine paths of travel.

Municipal sidewalks and municipal walkways should be designed as an accessible route in areas of significant pedestrian activity such as hospitals, medical centres, senior residences, schools, places of worship, community centres, arenas, libraries and civic buildings.

2.2.1 Accessible Routes

Accessible routes should provide a clear width for individuals using wheelchairs or other mobility equipment to not only travel in a straight line but also to turn and to manoeuvre around obstacles.

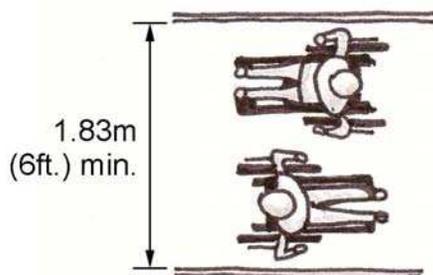
LOCATION

Walkways and municipal sidewalks should aim to meet the standards for accessible routes for areas of significant pedestrian activity.

CRITERIA

- a) At a minimum, one accessible route should connect barrier-free parking spaces, drop-off zones and public streets or sidewalks to the main barrier-free entrance and exit of a facility. It is preferable for all routes to be accessible with the inclusion of ramps, curb cuts, lifts or other suitable measures to deal with changes in level.
- b) An accessible route should be at least **1.83m (6ft.)** wide. This width permits the comfortable passage of two wheelchairs/scooters/strollers, etc. as well as the piling of snow along the edges without obstructing pedestrian flow during the winter months.
- c) The slope of an accessible route should be less than **3% (1:33)** to ensure ease of travel and manoeuvrability.
- d) Where accessible routes have a slope between **3% (1:33)** and **5% (1:20)**, level resting areas, at least **1.5m (5ft.)** in length, should be provided every **30m (98ft.5in.)**.
- e) Accessible routes with a slope greater than **5% (1:20)** are considered ramps and should be designed according to **Section 2.4.2 – Ramps**.
- f) To ensure proper drainage a cross slope of **2% (1:50)** is recommended for all accessible routes.
- g) Surfaces of accessible routes should be constructed of a **firm, smooth, stable, non-slip, non-glare material**, including; concrete, asphalt or brick. Concrete with a level, brushed surface is preferable (refer to **Section 2.2.3 – Sidewalk Surface Treatments**).
- h) An accessible route should have a **continuous surface** with no steps permitted unless accompanied by an accessible ramp (refer to **Section 2.4.2 – Ramps**).

Accessible Route Width



- i) Where an accessible route crosses or adjoins a vehicular route and the surface is not separated by curbs, railings or other protective measures, a detectable warning surface, at least **915mm** (36in.) in width, should define the boundary between the accessible route and the vehicular way (refer to **Section 4.4 – Detectable Warning Surfaces**).

- j) Where **maze gates** or **offset gates** are installed, the clear width of the route may narrow provided that the offset of the maze gates does not restrict the ability of a person using a wheelchair, scooter or other mobility aid to pass through (refer to **Section 1.3.1 – Space and Reach Requirements**).

2.2.2 Protruding Objects

Accessible routes should provide a clear path of travel free from ground and aerial obstructions. Protruding objects, such as directional signs, tree branches, wires and street furniture, should be installed and maintained as to ensure they are outside the clear path of travel and are cane detectable.

LOCATION

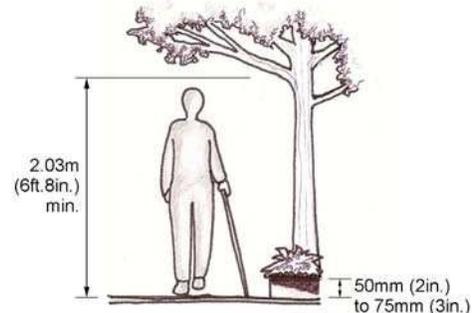
While it is optimal for an accessible route to be completely free of obstructions, objects may protrude into accessible route under a variety of circumstances. Where objects do protrude into sidewalks and pathways they should be clearly marked, detectable and navigable.

CRITERIA

- When designing an accessible route, particularly for visually impaired persons, projections into or over the path of travel should be **avoided**.
- Aerial projections, including tree branches, awnings, lights etc., should have a vertical clearance of **2.03m (6ft.8in.)**.

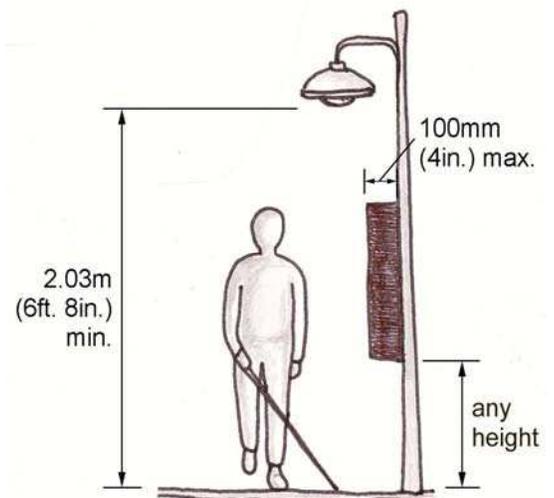
Ground projections, such as the edge of a landscaped area or water feature, should be cane detectable. A curb at least **50mm (2in.)** to **75mm (3in.)** in height is recommended.

Aerial and Ground Projections



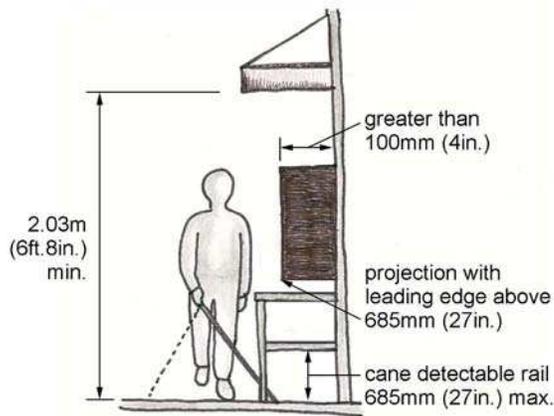
- If a projection must occur below **2.03m (6ft.8in.)** it should have a **maximum** projection of **100mm (4in.)**.

Projections Below Vertical Clearance



- d) An object protruding more than **100mm (4in.)** should be marked with a cane detectable guiderail if the leading edge of the object is between **685mm (27in.)** and **2.03m (6ft.8in.)** above grade.

Projection Outside Cane Detectable Range



- e) Protruding objects should **not reduce** the clear width of an accessible route or manoeuvring space.
- f) See also **Section 2.5.5 – Benches and Street Furniture**.

2.2.3 Surface Treatments

Accessible routes should contain surface treatments, such as colour contrasted material or tactile features to assist individuals, especially those with vision impairments, to safely navigate the route.

LOCATION

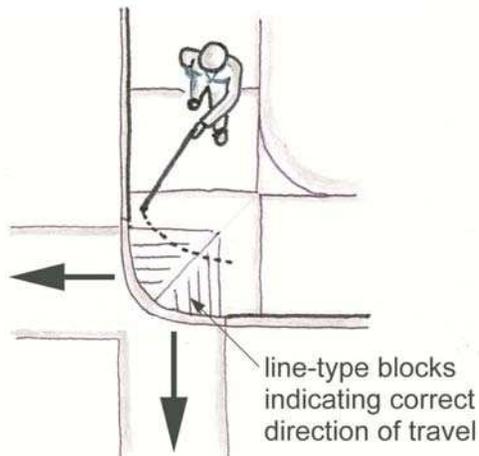
While surface treatments are important to the entirety of an accessible route, several areas are particularly important, including; facility entrances, traffic crossings, stairs, ramps and other changes in level, as well as corners and junctions.

CRITERIA

- a) **Contrasting colours, materials or tactile surface treatments** should be set into accessible routes to identify edges, key site features and correct paths of travel, particularly when the pedestrian route encounters vehicular traffic, a significant change in level or other potentially hazardous condition.
- b) A change in **surface texture** should be used on accessible routes to provide clues to the location of edges, vehicular routes and intersections, curb cuts, or steps and stairs. Surface texture should minimize potential water and ice accumulation.
- c) **Contrasting colours and tones**, achieved through the use of material variation or high-contrast paint, should be used to indicate key features, such as curb or stair edges and traffic crossings.
- d) Surface treatments and materials should be used **simply, logically and consistently** throughout the site so individuals can predict and interpret the route layout. Tactile treatments should be used **carefully**, since too much tactile information may create a distracting or confusing condition.
- e) **Dot-type blocks** should be used to provide a warning signal to screen-off obstacles, drop-offs or other hazards (refer to **Section 4.4 – Detectable Warning Surfaces** for design specifications).

- f) **Line-type blocks** should be used to warn of hazardous conditions (e.g. traffic crossings), as well as indicate the correct direction of travel (**Figure 2.2.3.1**) (refer to **Section 4.4 – Detectable Warning Surfaces** for design specifications).

Tactile Sidewalk Treatment



- g) Where construction or repairs are required on an accessible route, the works should be **well-marked** with cane detectable barriers. Lights and audible warnings should be included where feasible.
- h) See also **Section 4.4 – Detectable Warning Surfaces**.

2.3 ENTRANCEWAYS

Representing the transition between interior and exterior elements on a site entranceways are an integral part of barrier-free site design. An accessible entranceway to a building or facility should be available for the participation of people with different levels of ability.

Barrier-free entrances connecting to accessible routes and site features, such as parking, drop-off areas, public transportation stops, streets and sidewalks ensure that an individual with a disability can safely and conveniently access a facility.

2.3.1 Barrier-free Entrances

Barrier-free entrances and exits must be included throughout a site, both reinforcing and integrating with accessible routes and other barrier-free site features.

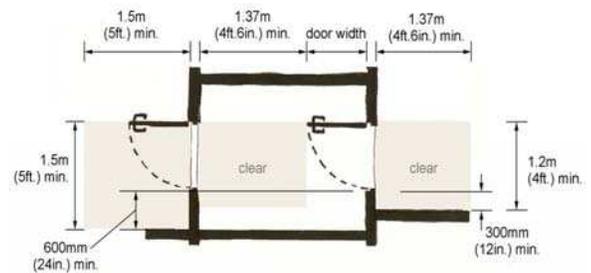
LOCATION

Barrier-free entrances should be positioned in prominent, sheltered and easily accessible locations.

CRITERIA

- a) The **main entrance** of a building or facility must be barrier-free.
- b) Where a building or facility has only **one** entrance, that entrance must be barrier-free.
- c) Where there is more than one entrance, at least **50%** of entrances should be barrier-free.
- d) Barrier-free entrances should be located within **30m** (98ft.5in.) of accessible parking spaces and drop-off zones.
- e) **Universal signage** should indicate the location of all barrier-free entrances.
- f) Entrances which are not accessible should have **directional signage** indicating the location of the nearest barrier-free entrance.
- g) Barrier-free entrances should have a clear, level, non-slip landing outside the entrance at least **2.44m** (8ft.) in width and **2.44m** (8ft.) in length.
- h) The opening of a barrier-free entrance, measured between the edge of the door in the 90 degree open position and the door stop, should be at least **860mm** (34in.) wide, excluding door hardware, to accommodate people using all mobility aids.
- i) Where an accessible entrance has an adjoining vestibule, the vestibule should have at least **1.37m** (4ft.6in.) of clear space beyond the swing pattern of the entrance door.

Clear Space for Doors in Sequence



- j) Where possible barrier-free entrances should include overhead canopies and awnings to provide protection from the elements (refer to **Sections 2.1.2 – Passenger Drop-Off Zones** and **2.2.2 Objects Protruding into Sidewalks and Pathways** for acceptable vertical clearances).
- k) To reduce a potential tripping hazard door mats should be no higher than **6mm** (1/4in.) from grade.
- l) See also **Section 3.1.1 – Doors**.

2.4 RAMP, STAIRCASES AND OTHER CHANGES IN LEVEL

While variations in grade are often unavoidable, the design of barrier-free paths of travel should aim to minimize the degree and frequency of changes in level. Where changes in level do occur, properly designed ramps, steps and stairs greatly improve the likelihood of safe and unimpeded access to buildings and other site features.

2.4.1 Curb Ramps/Cuts

While a smooth transition and minimal slope are ideal for users of wheelchairs and other mobility equipment, they are potentially hazardous to vision impaired individuals who may not notice the transition from sidewalk to street or driveway. With this in mind, curb ramps should be designed to provide maximum utility to wheelchair and mobility equipment users, without creating additional hazards for people who are vision impaired.

LOCATION

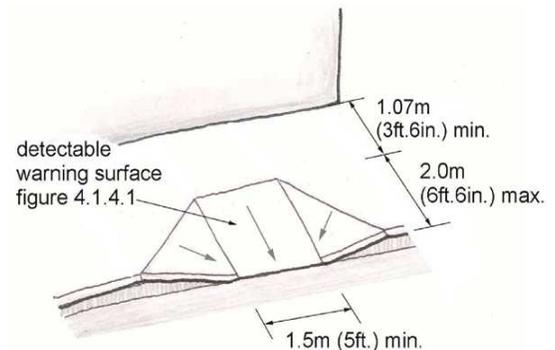
Curb ramps/cuts should be located wherever barrier-free routes cross a raised curb.

CRITERIA

- a) A curb ramp should have a minimum width of **1.5m** (5ft.) with the ramp not exceeding **2.0m** (6ft.6in.) in length.

If a curb ramp cuts into an accessible sidewalk or pathway a level resting area, at least **1.5m** (5ft.) wide and **1.07m** (3ft.6in.) deep should be provided at the top of the curb ramp to accommodate the turning of a wheelchair or other mobility aid.

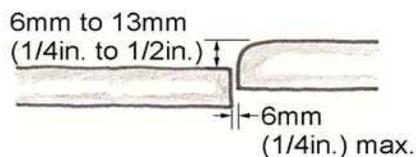
Curb Ramp Requirements



- b) A curb ramp should have a maximum slope of **8%** (1:12) with a recommended slope of **6%** (1:15). Each flared side should have a recommended slope of **10%** (1:10).
- c) The counter slope of surfaces immediately adjacent to curb ramps should not exceed **5%** (1:20).
- d) Curb ramps which provide access to vehicular way crossings shall include a detectable warning surface (refer to **Section 4.4 – Detectable Warning Surfaces**).

- e) The lower edge of a curb ramp should be finished with a rounded or sloped edge between **6mm** (1/4in.) and **13mm** (1/2in.) in height. An edge greater than **13mm** (1/2in.) impedes the safe operation of a wheelchair, while an edge less than **6mm** (1/4in.) is a potential hazard to individuals with vision impairments.

Lower Edge of a Curb Ramp



- f) Handrails are **not** required adjacent to curb ramps.
- g) Storm gratings, manhole covers and other obstacles should **not** be located on or near curb ramps and connecting paths of travel.
- h) Where catch basins are necessary, they should be located **clear** of the curb ramp and **upstream** from the accessible route.
- i) A curb ramp should be **slip-resistant** and provide a **smooth transition** from the ramp to adjacent surfaces.
- j) See also **Sections 2.2.3 – Sidewalk Surface Treatments** and **4.4 – Detectable Warning Surfaces**.

2.4.2 Ramps

Ramps assist wheelchair users and those who have mobility difficulties, as well as provide a general benefit to persons experiencing difficulty negotiating changes in level. Where a change of level already exists or cannot be avoided, a properly designed ramp should be constructed to provide access for those using wheelchairs, scooters, crutches or canes, pushing strollers or moving packages on a trolley.

LOCATION

Ramps with handrails should be integrated into an accessible route wherever significant changes in level necessitate the inclusion of a ramp.

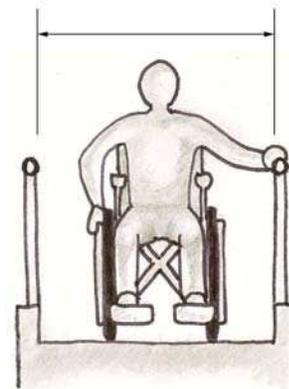
CRITERIA

- a) The recommended width for an accessible ramp is **1.22m** (4ft.).
- b) The slope of a ramp should be **5%** (1:20). Where the recommended slope is technically infeasible the running slope must never exceed **8%** (1:12).
- c) The cross slope of a ramp should be a maximum of **2%** (1:50) to facilitate drainage.
- d) Ramps with a slope between **5%** (1:20) and **8%** (1:12) and/or a rise greater than **1.5m** (5ft.) or width greater than **1.83m** (6ft.) should have handrails on both sides (refer to **Section 2.4.4 – Handrails** for detailed requirements).

- e) The clear width between ramp handrails should be between **1.1m** (3ft.7in.) and **1.2m** (4ft.). These widths permit both the passage of a mobility aid and the opportunity to grasp both handrails.

Ramp Width between Handrails

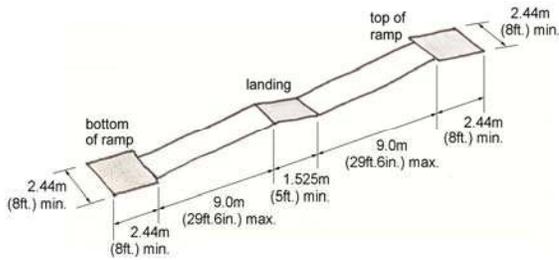
1.1m (3ft.7in.) to 1.2m (4ft.)



- f) Intermediate landings or level resting areas should be provided on a ramp every **9.0m** (29ft.6in.) and where there is a significant **change in direction**.

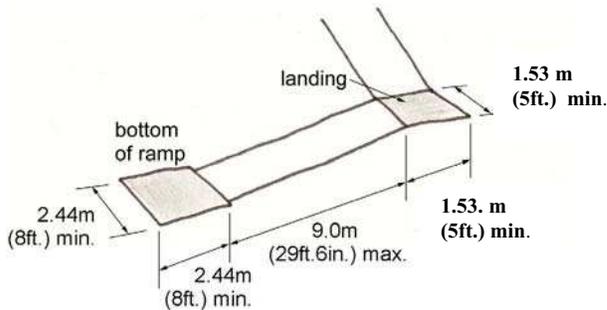
- g) Intermediate landings on a **straight ramp** should have a minimum length of **1.53m (5ft.)**.

Landing Dimensions for Straight Ramps



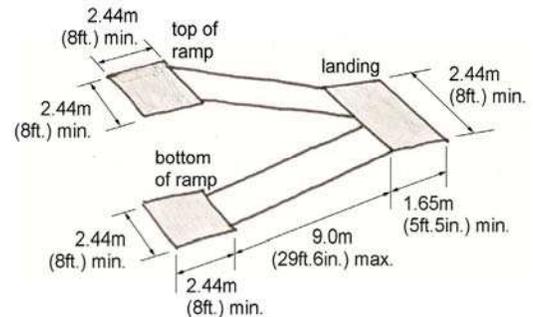
- h) Where an intermediate landing is at the corner of an **L-shaped ramp**, the landing should have a minimum width and length of **1.53m (5ft.)**.

Landing Dimensions for L-shaped Ramps



- i) Where an intermediate landing is at the switchback of a **U-shaped ramp**, the landing should have a minimum width of **2.44m (8ft.)** and length of **1.65m (5ft.5in.)**.

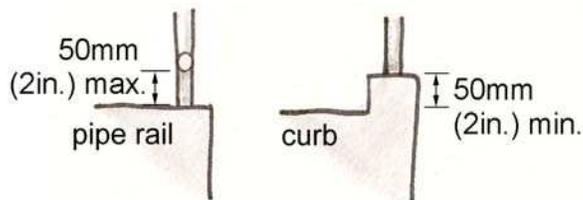
Landing Dimensions for U-shaped Ramps



- j) Landings located at directional changes at the top or bottom of a ramp and/or if served by a doorway should be at least **2.44m (8ft.)** wide and **2.44m (8ft.)** long.

- k) A curb with a minimum height of **50mm (2in.)** or a solid barrier or pipe rail located no higher than **50mm (2in.)** from the ramp surface should be included to act as safety stops for wheeled equipment.

Height of Safety Barriers on Ramp Edges



- l) Surfaces of ramps and landings should be **non-slip, non-glare** and free of **ridges** or **aggregates** that may promote the accumulation of water, ice or snow. Concrete, with a brushed finish perpendicular to the path of travel, is recommended.
- m) Colour and texture contrasts should denote the top and bottom of a ramp, as well as any intermediate landings (refer to **Section 4.4 – Detectable Warning Surfaces**).
- n) See also **Section 2.4.4 – Handrails**.

2.4.3 Steps and Stairs

Steps and stairs should be designed and constructed to ensure maximum ease and safety especially for those with mobility difficulties and/or vision impairments. Of particular importance is the inclusion of safety features, such as detectable warning surfaces, to assist individuals who are vision impaired locate entry and exit points, as well as step edges.

LOCATION

Accessible steps and stairs should be integrated into a barrier-free path of travel. Furthermore stairs should be located perpendicular to the pedestrian direction of travel.

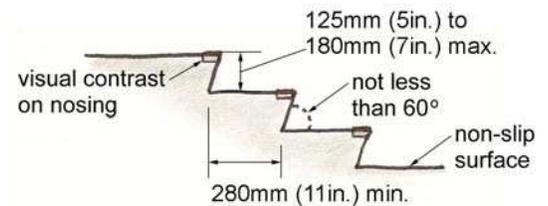
CRITERIA

- All stairs and steps should be **uniform** in riser height and tread depth.
- Stair risers should be a minimum of **125mm (5in.)** and a maximum of **180mm (7in.)** in height.

Stair treads, measured from riser to riser, should be a minimum of **280mm (11in.)** in depth.

Where stair treads project they should be sloped to the riser at an angle not less than **60 degrees** to the horizontal.

Stair Riser and Tread Dimensions



- Open risers and projecting treads present a tripping hazard and should be **avoided**. Stairs with open risers are hazardous to individuals who need a solid riser to guide the foot up or who place crutches or canes against the riser of the next step.

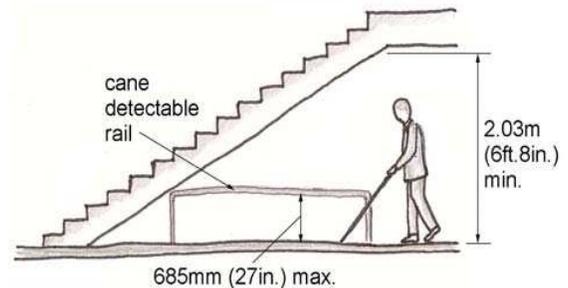
Unacceptable Stair Tread Design



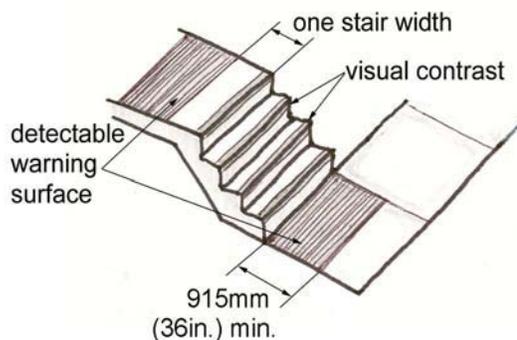
- Openings in riser or tread surfaces should not permit the passage of a sphere **13mm (1/2in.)** in diameter.

- e) Steps or stairs which rise more than **1.5m** (5ft.) and/or are more than **1.83m** (6ft.) wide must include handrails on both sides (refer to **Section 2.4.4 – Handrails** for detailed requirements).
- f) Steps or stairs that are **2.2m** (7ft.2in.) or greater in width should include an **intermediate (middle) handrail** to assist individuals with limited mobility or vision impairments.
- g) Surfaces of steps and stairs should be **non-slip, non-glare** and free of **ridges** or **aggregates** that may promote the accumulation of water, ice or snow. Concrete, with a brushed finish perpendicular to the path of travel, is recommended (see also **Sections 4.4 – Detectable Warning Surfaces** and **4.1.8 – Materials and Finishes**).
- h) To warn of impending level changes **detectable warning surfaces** should be installed **one stair width** from the top and **flush** to the bottom of steps or flights of stairs and extend at least **915mm** (36in.) into the adjoining path of travel.
- i) **Colour or texture contrasted** tread nosings should be included to provide a visual and/or tactile warning indicating stair edges (refer to **Section 4.4 – Detectable Warning Surfaces** for detailed requirements).
- j) Where a pedestrian route passes a flight of stairs at least **2.03m** (6ft.8in.) of clear headroom should be maintained underneath the stairs. Where the underside of a flight of stairs is less than 2.03m (6ft.8in.), a **cane detectable rail** should be installed for the length and width of the portion below the required clear height.

Detectable Rail under Open Staircase



Detectable Warnings on Stairs



2.4.4 Handrails

Handrails included on ramps and stairs should be of correct height, size and configuration to accommodate the widest range of users and provide maximum utility to individuals with limited mobility or other disabilities.

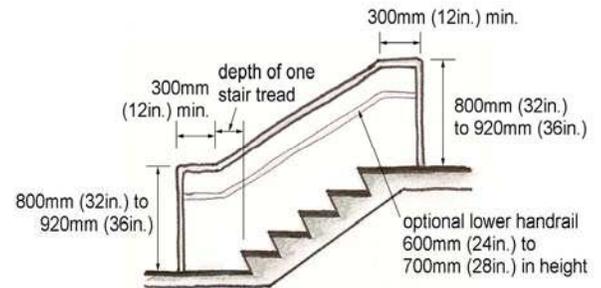
LOCATION

Handrails should be included on all ramps, steps and stairs particularly along barrier-free paths of travel.

CRITERIA

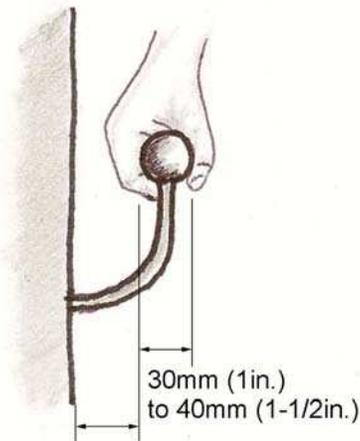
- a) **All** ramps, steps and stairs should include handrails with a **continuous gripping surface** to help individuals negotiate changes in level.
- b) Ramps with a slope between **5%** (1:20) and **8%** (1:12) should have handrails on **both sides**.
- c) Ramps, steps or stairs which rise more than **1.5m** (5ft.) and/or are more than **1.83m** (6ft.) wide should include handrails on **both sides**, except where the ramp serves as an aisle for fixed seats.
- d) Ramps, steps or stairs that are **2.2m** (7ft.2in.) or greater in width should include an **intermediate (middle) handrail** to assist individuals with limited mobility or vision impairments.
- e) Handrails must be not less than **865mm** (34in.) and not less than **965mm** (38in.) in height measured from the surface of the ramp or stair nosing to the top of the handrail.
- f) Handrails designed for use by children should be between **600mm** (24in.) and **700mm** (28in.) in height.
- g) Where both adults and children use handrails extensively a **double set** of handrails should be included to accommodate all users.

Barrier-Free Handrail Design



- h) The clearance between a smooth wall surface and adjacent handrail should be **40mm (1-1/2in.)**. The clearance between a rough wall surface and handrail should be **60mm (2in.)**.

Barrier-Free Handrail Design Detail



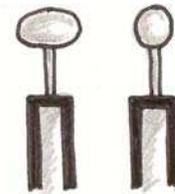
40mm (1-1/2in.) min. for smooth wall surfaces
OR 60mm (2-1/2in.) min. for rough wall surfaces

Handrails should be, **smooth in texture, firmly mounted and easy to grasp**, measuring between **30mm (1in.)** and **40mm (1-1/2in.)** in diameter.

Handrails should **extend**, parallel to the floor or ground surface at least **300mm (12in.)** beyond the beginning and end of a ramp or stair segment.

- i) Handrails should be **round** (preferred) or **oval** in shape. Square or rectangular rails are **not acceptable**.

Accessible Handrail Shapes

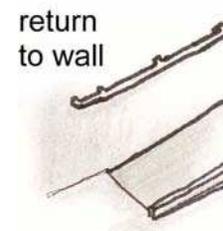
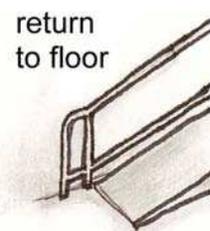


acceptable preferred

- j) To reduce the potential for injury, handrail extensions should **avoid** using **butt-ends**. Instead handrail extensions should return in a continuous manner to the **floor or wall**.

Gripping surfaces of handrails should be **smooth** and **continuous** without supporting posts or other obstructions interrupting the handhold.

Handrail Extension Options



2.5 RECREATIONAL AREAS

Recreational areas should include components that are designated and designed to be accessible. Playgrounds, swimming pools, splash pads, picnic areas, pathway and trails are a few examples of recreational areas that can be designed to be accessible depending on the challenges and constraints with existing conditions.

In addition to designing individual outdoor components to be accessible, consideration should be given for the proximity to and connections between all accessible elements. For instance, a barrier-free swimming pool requires accessible restrooms, changing areas, parking, seating etc. all in close proximity and connected by barrier-free paths of travel.

2.5.1 Accessible Playgrounds

Accessible playgrounds are designed to generate specific opportunities for play and learning. They also provide an opportunity for socialization of not only children, both able bodied and disabled persons; but also between caregivers. In addition an accessible route, adequate accessible parking should also be provided. “Accessible” playgrounds should be designed to accommodate and include children and caregivers of various abilities.

LOCATION

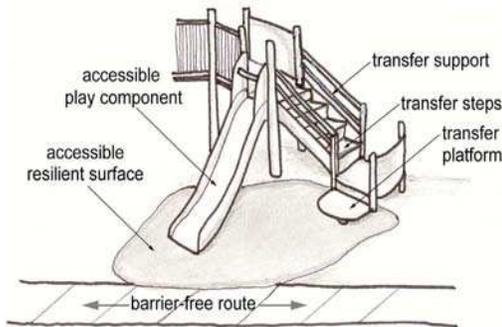
Accessible playgrounds and accessible play components must be located along an accessible route.

CRITERIA

- a) A playground must be accessible from a **firm, level** and **non-slip** surface, sidewalk or pathway.
- b) Accessible Playgrounds should be designed with reference to the **Playability Toolkit** published by the Ontario Parks Association with the Province of Ontario (current version) as well as the National Standard of Canada **CAN/CSA-Z614-03** for “Children’s Playspaces and Equipment” (current version).
- c) All entry and exit points for barrier-free play components must **connect** to an accessible route (see **Accessible Route Section 2.2.1**).
- d) Small playgrounds, measuring less than **304.8m²** (1000 sq ft), may have accessible routes with a clear width of **1.12m** (3ft.7in.). Where such routes exceed **9.14m** (30ft.) in length, a wheelchair turning space should be provided (see **Section 1.3.1 – Space and Reach Requirements**).
- e) To provide flexibility around existing site features such as trees, ground-accessible routes may narrow to a clear width of **915mm** (36in.) for a maximum distance of **1.53m** (5ft.).
- f) Non-encroachment safety zones required around play components and manoeuvring space **can** overlap onto the accessible route.
- g) A **vertical clearance** of at least **2.03m** (6ft.8in.) should be provided along the entire ground-level accessible route. Vertical clearance for the remainder of the play area may vary to permit the inclusion of protective roofs and other play components.

- h) Raised play structures designated as accessible should be designed with **transfer points, ramps, platforms and railings** leading to play components allowing children in wheelchairs or with limited mobility to participate.

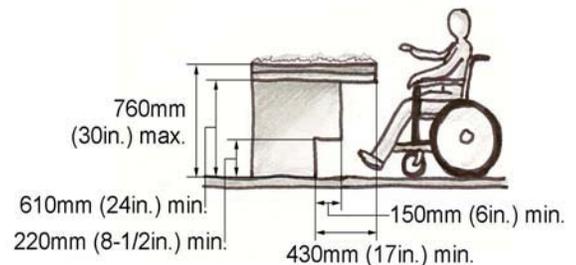
Accessible Play Equipment



- i) **Tire nets, ramps and slides** should be designed to allow children with mobility limitations to crawl and slide on them as well as easily **transfer** to and from the component.
- j) Barrier-free play equipment should be surrounded by an **accessible resilient surface**. Refer to the current Canadian Safety Association Standards and the American Society for Testing and Materials: Specifications for Impact Attenuation of Surface Systems Under and Around Playground Equipment (ASTM 1292) and Determination of Accessibility to Surface Systems Under and Around Playground Equipment (ASTM 1951).

- k) Accessible surfaces and play components should be designed to **complement** and **enhance** the theme of the play area.
- l) Where an accessible resilient surface is not feasible for the whole playground, **accessible** and **non-accessible** surfaces can be combined.
- m) The transition between adjacent surfaces should be smooth, with a rounded or sloped edge no greater than **6mm (1/4in.)** to **13mm (1/2in.)** in height.
- n) **Raised** sand and water tables, where installed, should be designed in accordance with the following figure.

Accessible Sand or Water Table



- o) Additional circulation space should be provided around **high-use** play components.
- p) **Accessible routes, seating areas and other accessible amenities** should be incorporated into the design of all accessible playgrounds to accommodate caregivers or attendants with disabilities.

2.5.2 Accessible Swimming Pools and Splash Pads

Accessible swimming pools and splash pads offer significant recreational and therapeutic opportunities and should, therefore, be designed to include and accommodate persons with disabilities.

LOCATION

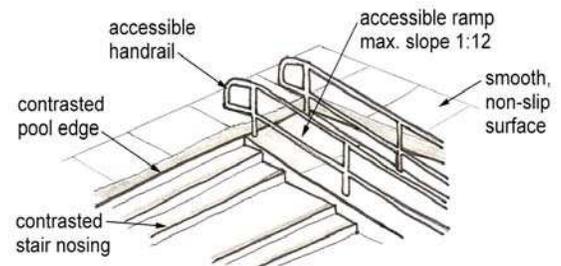
Accessible swimming pools and splash pads should be accessible from a barrier-free route.

CRITERIA

- a) Accessible swimming and splash pads should be **accessible** from a barrier-free parking and drop-off area and a barrier-free sidewalk or pathway.
- b) Barrier-free restrooms and changing areas should be located in close proximity to the accessible pool area (refer to **Sections 3.3.4 – Restrooms** and **3.3.5 – Changing Areas**).
- c) Swimming pools should include either a **hydraulic lift** or a **ramp** for barrier-free access. For an existing pool where a hydraulic lift is present, a portable ramp or portable stairs may also be used to promote independent use of the pool.

- d) A ramp must have a **slip-resistant surface**, **handrails** on both sides and a slope not exceeding **8.3%** (1:12). A slope of **6%** (1:15) is preferable (**Figure 2.5.2.1**). Refer to **Sections 2.4.2 – Ramps** and **2.4.4 – Handrails** for design specifications.

Pool with Accessible Ramp



- e) The pool floor should be **slip-resistant** yet non-abrasive.
- f) To assist persons with low vision the pool floor and walls should have a **light coloured finish**, with depth markings or lettering indicating the **SHALLOW END** and **DEEP END** marked in a contrasting colour.
- g) The surface of a pool deck should be **hard, well-drained** and **slip-resistant** with surface joints not exceeding **6mm** (1/4in.).

-
- h) All skimmers and gutters should be covered with **hard plastic** or **metal grates** mounted **flush** to the pool or deck surface and contain openings no wider than **13mm** (1/2in.).
 - i) Pool boundaries should be clearly marked with **texture** and **colour contrasts** to both the water surface and the surrounding deck.
 - j) Pool furniture and other pool components, such as lifeguard podiums and diving boards, should **contrast** with their surroundings and be positioned **clear** of the accessible route to and from the water.

2.5.3 Accessible Picnic Areas

A portion of each picnic area should be designated and designed with accessible spaces, elements and connecting routes to provide opportunity for participation by individuals with disabilities, including those who are vision impaired or using wheelchairs and other mobility aids.

LOCATION

Accessible picnic areas should be connected to an accessible route and be in close proximity to restrooms and other common facilities.

CRITERIA

- a) Accessible picnic areas should be **adjacent to** a barrier-free route.
- b) While it is ideal to **evenly distribute** accessible picnic areas throughout the site, they should also be located within **180m** (590ft.) of accessible restrooms.
- c) The top of an accessible picnic table should be no higher than **865mm** (34in.) above the ground.
- d) To accommodate a wheelchair or other mobility device accessible picnic tables should have a clear knee space at least **760mm** (30in.) wide, **480mm** (19in.) deep and **760mm** (30in.) high.
- e) Other picnic elements, such as a cooking grill, should be accessible with a height between **610mm** (24in.) and **915mm** (36in.) from grade.
- f) The surface of a barrier-free picnic area should be **hard, level and well-drained** with at least **2.0m** (6ft.6in.) of clear space around all sides of picnic tables and other picnic elements.
- g) To improve safety for vision impaired individuals, a **change in texture and colour contrast** should be used to indicate the location of picnic table areas and other picnic elements.
- h) Barrier-free picnic areas should be identified with the **Universal Symbol of Accessibility** (refer to **Section 1.3.2 – Signage**).

2.5.4 Accessible Pathways and Trails

Park pathways and linear multi-use recreational trail systems not only links between destinations, but opportunities to experience the natural environment and enjoy outdoor physical activity. While the environmental and geographic constraints preclude all park pathway and trail systems from being totally accessible, where possible, they should be designed to encourage participation from the widest possible range of users.

LOCATION

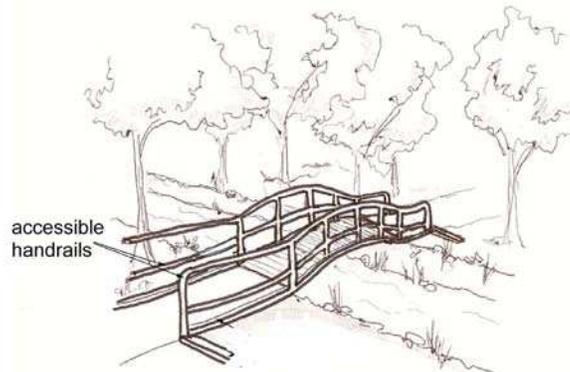
Barrier-free pathways and trails should be located to encourage participation from the widest possible range of users, while remaining respectful of the existing landform and natural environment.

CRITERIA

- a) Accessible paths and trails should **connect** to accessible site features such as restrooms, playgrounds and picnic areas as well as other common outdoor facilities.
- b) All accessible paths and trails may not meet the needs of a diverse range of disabilities. Signage should note the levels of accessibility of the designated paths and trails.

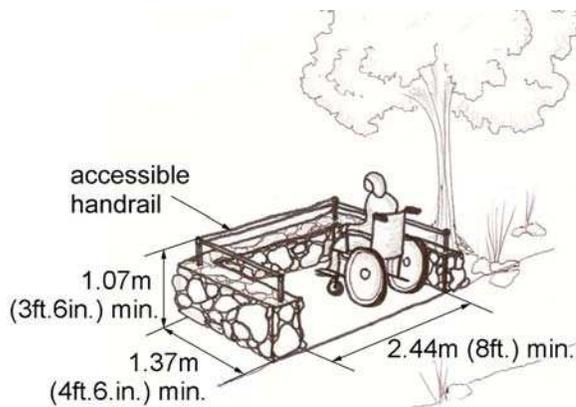
- c) Accessible paths and trails should be at least **1.83m** (6ft.) in width with level resting areas provided every **30m** (98ft.5in.) to **90m** (295ft.2in.) depending on the overall length and slope of the route (refer to **Section 2.2.1 – Accessible Routes**).
- d) Bridges should include **detectable curbs, rails and accessible handrails**.

Accessible Bridge



- e) Where provided, **accessible viewing areas** should be incorporated into the path or trail (**Figure 2.5.4.2**). Railings should be at least **1.07m (3ft.6in.)** in height. Where a railing is higher, the solid portion of the barrier should not exceed **1.07m (3ft.6in.)** in height to avoid obstructing views from a seated position.

Accessible Viewing Area



- f) Path and trail surfaces should be **firm** and **well-drained**. A cross-slope of **2%** is recommended.
- g) Asphalt, concrete or decking with gaps laid perpendicular to the path of travel are recommended surface treatments for accessible paths and trails (refer to **Section 4.8 - Materials and Finishes**).

2.5.5 Benches and Street Furniture

Benches and other street furniture such as mail boxes, waste receptacles, lights, bicycle racks and signs should be designed and positioned to maximize safety and utility for all users. For instance, benches installed along barrier-free routes, at entrances and waiting areas offer a place to rest, which is especially important for the comfort of disabled persons and seniors.

LOCATION

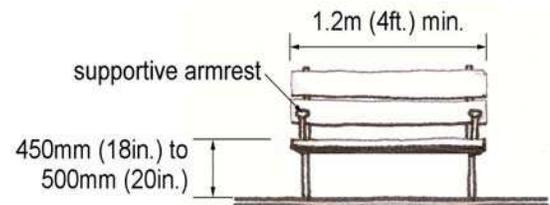
Benches and street furniture should be located along a barrier-free route of travel, but not encroach upon the clear width of the route to avoid potential safety hazards.

CRITERIA

- Benches and street furniture, such as waste receptacles, mail boxes, light standards, etc. should be **cane detectable**, colour contrasted to their surroundings, located to **one side** of an accessible route and not encroach upon the **clear width** of the route.
- Benches and street furniture should be **stable** and **firmly anchored** to the ground.
- All** waiting and resting areas should include accessible benches and seating.

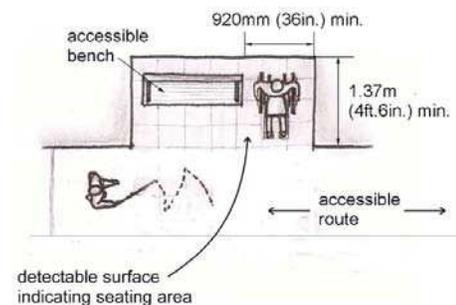
- Accessible benches should be constructed with **arm** and **backrests** to assist individuals transferring to or departing from the seat. Arm and backrests should be designed to accommodate easy transfer from a wheelchair or other mobility device.
- An accessible bench should have a minimum width of **1.2m (4ft.)** and a seat height between **450mm (18in.)** and **500mm (20in.)** from grade.

Accessible Bench Design



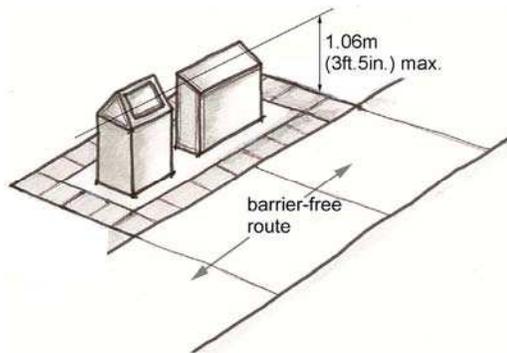
- To accommodate individuals using guide dogs, wheelchairs and other mobility aids, a **firm and level** surface with a clear space at least **920mm (36in.)** wide and **1.37m (4ft.6in.)** deep should be located adjacent to an accessible bench or seat.

Accessible Seating Area



- g) A change in surface **material** or **pattern** is recommended around amenities, such as seating areas, mail boxes, waste receptacles, etc. to assist persons with vision impairments.
- h) Armrests on **both sides** of a seat are preferable for people who need assistance in transferring to/from the bench.
- i) Street furniture, such as mail boxes and waste receptacles, should be **securely mounted** adjacent to an accessible route.
- k) See also **Section 2.2.2 – Objects Protruding into Sidewalks and Pathways.**

Amenity Strip on Barrier-free Route



Lids or openings on waste receptacles and other street furniture should be easy to operate with one hand and be no higher than **1.06m** (3ft.5in.) from grade.

- j) To prevent overflow and potential tripping hazards, waste receptacles should be sufficient in both **size** and **number** to contain the anticipated amount of waste for a site.

2.5.6 Landscaped Areas

Landscaped areas must be designed with attention given to aesthetics as well as the safety and comfort of a wide variety of users. Natural plant materials may serve to delineate borders and edges, provide pleasing scents and fragrances as well as protect individuals from sun, wind and rain. While providing several benefits, landscaped areas may also present hazards, such as obstructions to a clear path of travel. Suitable materials and regular maintenance should be a priority.

LOCATION

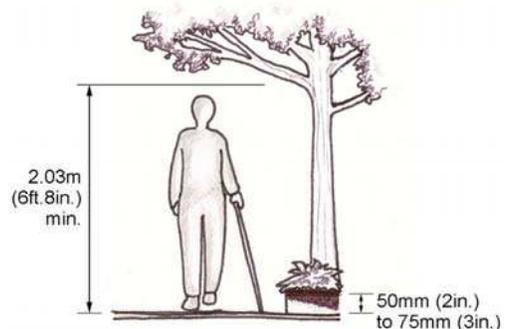
Landscaped areas should be integrated throughout a site to enhance and reinforce barrier-free routes and elements.

CRITERIA

- Plants and shrubs with a variety of **colours** and **fragrances** should be used to provide interest for individuals with vision impairments.
- Plantings with thorns or heavy berries present a potential hazard and should be **pruned back** along barrier-free routes or surrounding accessible site features.
- Contrasting plant material, such as brightly coloured flowers, should be incorporated throughout the site to reinforce **borders**, **edges** and **landmarks**.

- Plantings may be used as a **buffer** between street furniture, such as hydrants or meters, and pedestrians.
- Trees and shrubs should be used to provide **protection** from sun, wind and rain particularly along barrier-free routes and around resting areas.
- Plants or trees that drop large seed pods should **not** overhang or be positioned near barrier-free routes.
- Tree branches should be maintained with a vertical clearance of at least **2.03m** (6ft.8in.).
- Edges of a landscaped area should be **cane detectable**. A curb at least **50mm** (2in.) to **75mm** (3in.) in height is recommended.

Projections from Landscaped Areas



Accessible planting beds should be raised **460mm** (18in.) from grade to accommodate a person with limited mobility, such as an individual in a wheelchair.

- See also **Section 2.2.2 – Objects Protruding into Sidewalks and Pathways**.

INTERIOR DESIGN

3

3.1 INTERIOR CIRCULATION

Appropriately sized and designed doorways and corridors are integral to achieve an accessible building interior. If a door or route is too narrow, barrier-free spaces and features adjacent to such components become inaccessible. Similarly, if door hardware is inoperable by persons with physical limitations, entry into a space becomes challenging, if not impossible.

In addition to addressing the space and reach requirements of individuals in wheelchairs, interior circulation design should account for individuals using scooters and other mobility devices, persons with vision disabilities, as well as persons with limited dexterity and strength. The design of corridors and doorways should consider the width of mobility equipment, as well as the clear space required to manoeuvre and negotiate changes in level and direction.

3.1.1 Doors

Doors serve a fundamental function often defining the transition between interior and exterior areas, as well as various interior spaces. To improve access for all users, barrier-free doors, with accessible widths, design and hardware should be included throughout a site.

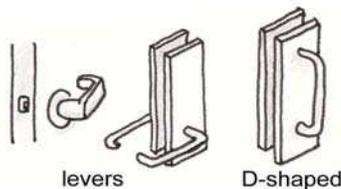
LOCATION

Barrier-free doors should be located throughout a site, particularly along accessible routes, in order to provide access to barrier-free areas and site features.

CRITERIA

- a) All barrier-free doors should have a minimum clear width of **860mm** (34in.), as measured between the door stop and the edge of the door in the 90 degree open position. Door hardware must not encroach upon the minimum clear width.
- b) Barrier-free doors should utilize accessible hardware, including **levers** or **D-shaped** pulls.

Accessible Door Hardware



knob handles

- c) Door hardware, such as pulls and push plates, should be located not lower than **400mm** (16in.) and not higher than **1.1m** (3ft.7in.) from grade.
- d) **Panic hardware** should be included where possible, but positioned so it does not interfere with the clear width of the doorway.
- e) Where panic hardware or other door hardware does encroach upon the clear width of the doorway, the minimum open width should be **measured from the panic hardware**, rather than the edge of the door.
- f) To maximize visibility, lever handles, pulls, push plates, and other door hardware should be **colour contrasted** with the door.
- g) Thresholds are discouraged, but where required should be less than **13mm** (1/2in.) from grade and have a **bevelled** leading edge to facilitate the passage of wheeled equipment.
- h) Thresholds should be **non-slip** and **colour, texture or tone contrasted** to assist persons who are vision impaired.
- i) Wherever possible doors should **not** swing into high traffic corridors.
- j) There should be **manoeuvring space** on both sides of a door permitting sufficient room for the door to both open and close clear of a mobility aid (refer to **Section 2.3.1 – Barrier-free Entrances**).

- k) **Both leaves** of double doors should be unlocked and operable. This is particularly helpful for guide dog users.
- l) **Double** doors should **avoid** the use of centre posts.

MANUAL DOORS

- m) Where a barrier-free door is not equipped with a power door operator, a clear space beyond the latch side at least **600mm** (24in.) wide on the pull side of the door or **300mm** (12in.) wide on the push side of the door is required.

The force required to open manual doors should not exceed the specifications.

Maximum Force for Door Operation

Door Type	Maximum Force Required to Open
Exterior Swing Door	38N (8.5 lbs)
Interior Hinged Door	22N (4.6 lbs)
Sliding/Folding Door	22N (4.6 lbs)

The sweep period of door closers should be adjusted so that the door will take at least **3 seconds** to move from an open position of 90 degrees to a semi-closed position of approximately 12 degrees.

AUTOMATIC DOORS

- n) Barrier-free doors should be equipped with an automatic door operator wherever possible.

All public buildings must be equipped with at least **one automatic door** at the main entrance.

Automatic doors for accessibility:

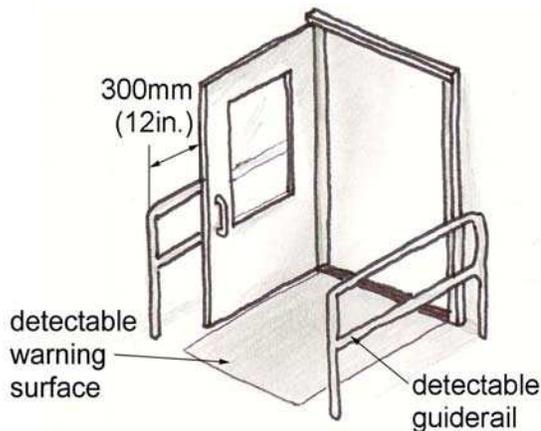
1. **Sliding doors with a sensing device** (most preferred);
2. **Swinging doors with a sensing device** (second most preferred);
3. **Swinging doors with a button opening device** (acceptable).

Where a power door operator is installed, the equipment should function for passage in **both directions** through the door.

The controls for button-operated, out-swinging doors should be mounted **outside** and **in front** of the door swing, (toward the latch side if possible), to avoid the situation where an individual using a mobility aid is required to back-up to allow the door to open. This may be achieved in several ways, including **wall-mounting** or **post-mounting** the controls.

Where automatic doors open into the path of travel **cane detectable rails** with at least **300mm (12in.)** extensions should be included to protect individuals from the door swing.

Automatic Door Protective Features



If a guiderail is not present, a **colour** and **texture contrasted** surface (or mat) should be installed under the swing pattern of the door and extend at least **300mm (12in.)** beyond the door swing to provide a **tactile warning surface** to aid individuals with vision impairments.

Automatic doors with **sensing devices** do **not** require guiderails provided that the sensing device stops or sufficiently slows door movement when there is a pedestrian in the path of the door swing.

Automatic doors should take no more than **3 seconds** to move from a closed position to the fully open position.

A force no greater than **66N (13.8 lbs)** should be required to stop door movement.

Where automatic doors are installed with a **security system** ensure the opening mechanism is linked with the electronic board of the security system.

See also **Section 2.3.1 – Barrier-free Entrances.**

3.1.2 Corridors

Any route of travel should provide a clear width for persons operating wheelchairs or other mobility equipment, pushing strollers or travelling in pairs to easily progress and change directions along the route. Consideration should be given in the design of corridors to accommodate the width and manoeuvrability of various wheeled devices.

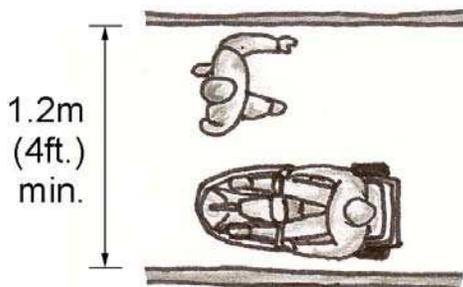
LOCATION

Accessible corridors should form a network throughout a building or facility connecting all barrier-free areas and features.

CRITERIA

- a) An accessible corridor should be at least **1.2m (4ft.)** in width. This width permits the comfortable passage of a mobility device and ambulatory person.

Accessible Corridor Width



- b) Where a corridor is less than **1.6m (5ft.2in.)** in width, turning spaces at least **1.6m (5ft.2in.)** in width and length should be provided every **20m (65ft.7in.)** along the route and at the **end of the corridor**.

- c) An accessible corridor should have a minimum vertical clearance of **2.03m (6ft.8in.)** with any obstructions or projections, such as the underside of stairs, clearly marked (see also **Sections 2.2.2 – Objects Protruding into Sidewalks and Pathways** and **2.4.3 – Steps and Stairs**).
- d) Barrier-free corridors should have a slope of **3% (1:33)** or **less**. Areas where the slope exceeds **5% (1:20)** should be designed as ramps (refer to **Section 2.4.2 – Ramps**).
- e) Changes in level should be **avoided** along accessible corridors.
- f) Where changes in level occur, properly designed **stairs, ramps** and **lifts** must be included to ensure access for persons with all levels of ability (refer to **Section 3.2 – Interior Changes in Level**).
- g) Where there is a **change in direction** along an accessible corridor and/or the intended destination of the route is not evident, **directional signage** should be provided (refer to **Section 1.3.2 – Signage**).
- h) Distinct **colour** or **texture contrasts** should be used throughout accessible corridors to reinforce the location of key elements both within and adjacent to the corridor.
- i) See also **Section 4.7 – Lighting**.

3.2 INTERIOR CHANGES IN LEVEL

Similar to exterior changes in level, a level change within a building or facility should be navigable by individuals with all levels of ability. Accessible stairs, escalators, ramps, lifts and elevators must be included throughout a multi-level facility to ensure barrier-free access for all users.

Where an accessible route within a building requires steps, escalators or flights of stairs, barrier-free ramps, lifts and/or elevators must be installed to provide access for individuals using wheelchairs and other mobility equipment. All changes in level should be clearly marked with colour or texture contrasts to assist individuals with vision impairments.

3.2.1 Stairs and Escalators

Interior stairs and escalators should be designed to ensure maximum ease and safety particularly for those with mobility difficulties and vision impairments. Safety features, such as detectable warning surfaces and colour contrasts, should be incorporated into stair and escalator design to assist individuals who are vision impaired locate entry and exit points, as well as edges.

LOCATION

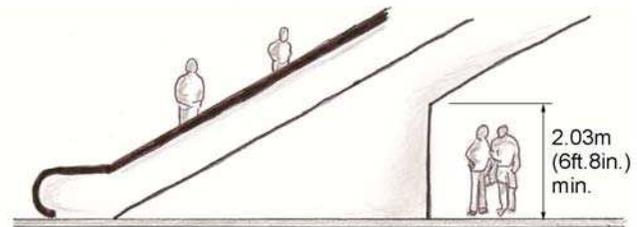
Accessible stairs should be located along a barrier-free route, perpendicular to the pedestrian direction of travel. Escalators should be included in high use areas or where flights of stairs are extensive.

CRITERIA

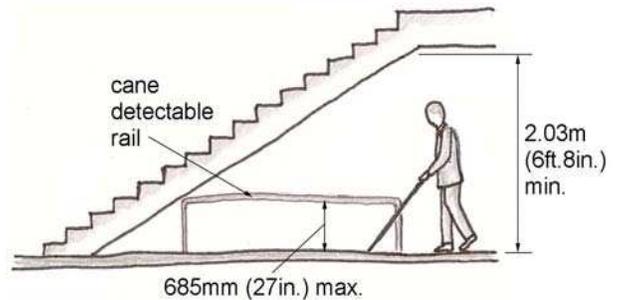
- a) Refer to **Section 2.4.3 – Steps and Stairs** for interior step and stair standards.

- b) Where persons might pass underneath a flight of stairs or an escalator, at least **2.03m (6ft.8in.)** of clear headroom should be maintained. Where the underside of a flight of stairs or an escalator is less than **2.03m (6ft.8in.)**, a cane detectable rail should be installed for the entire length and width of the portion below the required clear height.

Clear Headroom under Escalator or Stairs



Detectable Rail under Open Staircase



-
- c) Escalators should include **colour contrasted** tread edges and nosing to improve visibility while on the stair and assist an individual in estimating the speed of escalator operation from ingress to egress.
 - d) A detectable warning surface, extending at least **915mm** (36in.) beyond the head and foot of the escalator should be installed to assist individuals who are vision impaired.
 - e) The surface of escalator treads should have a **matte, non-slip finish** to reduce reflective glare and tripping hazards.

3.2.2 Ramps and Lifts

Interior ramps, platform lifts and stair lifts are important for facility accessibility particularly where elevators are not present.

LOCATION

Accessible ramps and lifts must be located along barrier-free routes where a change in level occurs and an elevator is not present or feasible.

CRITERIA

- a) Refer to **Section 2.4.2 – Ramps** for interior ramp standards.
- b) Since lifts present space limitations and tend to segregate individuals with disabilities they should be **avoided**. Wherever possible accessibility for individuals using wheelchairs and other mobility equipment should be provided through the inclusion of properly designed ramps and elevators (see also **Section 3.2.3 – Elevators**).
- c) Where ramps and elevators are not practical, due to **short horizontal and vertical distances** respectively, a lift may be installed to provide access along a barrier-free route.
- d) Platform lifts should comply with the most recent **CSA Standard CAN/CSA-B355** “Lifts for Persons with Physical Disabilities.”
- e) Platforms should be surrounded by **half-walls** for safety and stability.
- f) Platform lifts should include an **emergency call system** with two-way voice communication.
- g) Lift activation devices, such as **keys** or **buttons**, should be easy to operate by persons with limited dexterity and strength (see also **Section 4.3 – Controls and Operating Mechanisms**).
- h) Lifts should be identified by signage displaying the **ISA** (refer to **Section 1.3.2 – Signage**).
- i) Ensure that lifts and stair lifts **do not** compromise or eliminate the functionality of a **fire egress route**. Lifts should not encroach upon required emergency egress widths.
- j) See also **Section 4.7 – Lighting**.

3.2.3 Elevators

In addition to ramps and lifts, elevators are often the only means by which an individual with a physical disability can move from one building floor to another. Every building containing more than one floor not served by a ramp or lift must have an elevator for greater accessibility.

LOCATION

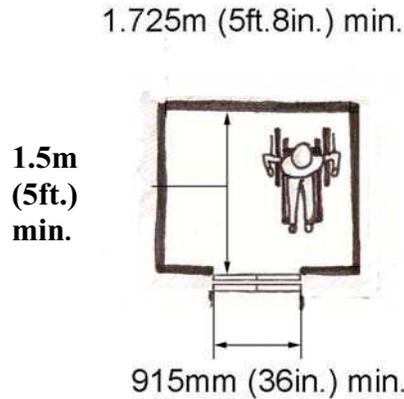
Elevators should be located in close proximity to the main accessible entrance and accessible parking area (if applicable) and connect with barrier-free corridors and routes throughout the building or facility.

CRITERIA

- a) Elevators should comply with the most recent **CSA Standards CAN/CSA-B44** “Safety Codes for Elevators” and **CAN/CSA-B355** “Lifts for Persons with Physical Disabilities”.
- b) The elevator should contain an automatic levelling device which maintains the floor level to **±13mm** (1/2in.).
- c) An accessible elevator should have a clear space between walls or between wall and doors, at least **1.725m** (5ft.8in.) x **1.5m** (5ft.) to accommodate people using wheelchairs and other mobility equipment.

- d) Elevator doors should have a clear width of at least **915mm** (36in.).

Accessible Elevator Dimensions



- e) Elevator doors should be **power-operated** and contain an **automatic reopening device**.
- f) From the time elevator doors begin to open a minimum period of **7 seconds** should elapse before the doors start to close for a hall call, and **5 seconds** for a floor call. Where an existing condition does not have separate settings, doors should be set for **7 seconds**.
- g) Doors should contain **photoelectric sensors** and **bumper-type devices** capable of sensing and responding to an obstruction in the path of a closing door.
- h) Photoelectric devices should be positioned **125mm** (5in.) **±25mm** (1in.) above the floor to detect feet and footrests and **735mm** (29in.) **±25mm** (1in.) above the floor to detect main body mass.

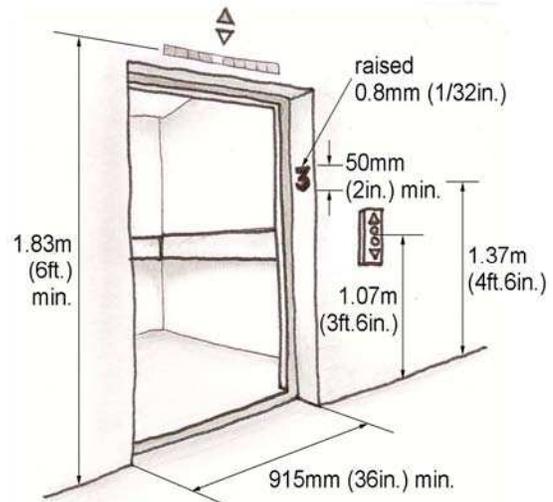
- i) Door reopening devices should remain effective for at least **20 seconds** to provide sufficient time for a person or object to move clear of the doorway.
- j) Handrails should be provided on **all non-access walls** installed not less than **865mm (34in.)** and not more than **965mm (38in.)** from the floor with a space of **40mm (1-1/2in.)** between the rail and the wall (refer to **Section 2.4.4. – Handrails**).
- k) The interior of elevators should be **well illuminated** and finished with materials that do not cause **glare**.
- l) Illumination for elevator controls and at the landing sill should be at least **100 lux (10 ft. candles)** with **200 lux (20 ft. candles)** recommended.
- m) In-car lighting should be provided, with fixtures installed at least **1.83m (6ft.)** from the floor.
- n) The elevator floor and adjacent landings should be **firm, slip-resistant** and **non-glare**, to permit easy movement of wheeled devices, as well as to assist individuals with vision impairments.

ELEVATOR CONTROLS AND INDICATORS

- o) All elevator entrances should have raised and Braille floor designations mounted with the centreline **1.37m (4ft.6in.)** above the floor.

Hall call buttons should be a minimum of **20mm (1in.)** in size and mounted one above the other to a centreline of **1.07m (3ft.6in.)** from the floor.

Features outside Elevators



A **visual indication** should be provided on the hall call button for each registered call which extinguishes when the call is answered.

A **visible** and **audible** signal should be provided at each elevator entrance indicating which car is answering the call.

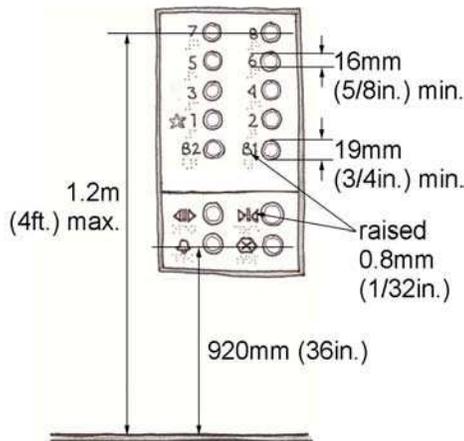
Audible signals should sound **once** for the up direction and **twice** for the down direction.

Audible indicators are not recommended for doors that are held open longer than **5 seconds**.

All lettering, numbering and control panels in both the elevator and access hallway/lobby should be **highly visible** and **colour contrasted**.

Within the elevator, floor buttons should be a minimum of **19mm** in size and mounted in series with the centreline of the highest button no higher than **1.2m** (4ft.) from the floor.

Controls within Elevators



Arabic numerals on a contrasting background, **raised pictographs** and **Braille** should be located on the left side adjacent to each floor button or control.

The operating depth of flush or recessed buttons should not exceed **10mm** (3/8in.).

Heat sensitive call buttons should **not** be used.

A **visual indication** should be provided to show each call registered and a **momentary audible indication** should be provided when each call is answered.

An **audible** and **visual indication** corresponding to the landing at which the car is stopped or passing, should be provided within the elevator to convey the position of the car in the hoistway.

Where the depth of the elevator cab makes it difficult for persons using mobility aids to turn around, a **mirror** reflecting the visual floor indicator should be provided on the rear wall.

In case of emergency, elevators should be equipped with a **telephone** that is capable of **two-way** communication.

To ensure hearing aid compatibility, emergency telephones must comply with **CSA Standard T515**, be equipped with a receiver that generates a magnetic field in the area of the **receiver cap** and include a **volume control**.

The telephone should be located a maximum of **1.2m** (4ft.) from the floor with a minimum cord length of **900mm** (35-1/2in.).

The **International Symbols** for both telephones and hearing loss should be marked in a contrasting colour on the telephone cabinet (refer to **Section 1.3.2 – Signage**). The symbols should be at least **38mm** high, raised a minimum of **0.8mm** (1/32in.).

A **push button alarm** should be provided for those unable to speak.

Emergency controls and door-operating buttons should be **grouped together at the bottom** of the control panel.

The centre-line of the alarm and emergency stop buttons should exceed **920mm** (36in.) from the floor.

3.3 INTERIOR AREAS

Interior areas, such as reception and information counters, restrooms, offices and meeting rooms are commonly found within public, as well as private facilities. Such areas occur frequently throughout a building and should be accessible to a wide range of users.

Clear floor space for the manoeuvrability of mobility equipment, suitable counter heights for individuals with reach limitations and adequately sized restrooms for families, persons using mobility aids or individuals requiring assistance are examples of the many ways the design of interior areas impacts accessibility within a facility.

3.3.1 Reception Areas

Reception areas should be designed to provide access for individuals with varying levels of ability. Information and service counters should contain sections low enough to serve children, persons of short stature and persons using wheelchairs and other mobility aids.

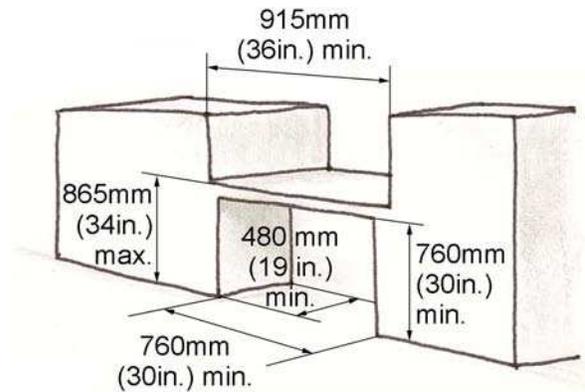
LOCATION

Accessible reception areas should be located along a barrier-free path of travel in close proximity to the main barrier-free entrance where applicable.

CRITERIA

- a) Counters for information or service should incorporate at least one accessible section that is located a maximum of **865mm** (34in.) above the finished floor and measures at least **915mm** (36in.) in width and **480mm** (19in.) in depth.
- b) Accessible sections of information and service counters should incorporate a clear floor space not less than **760mm** (30in.) wide and **1.37m** (4ft.6in.) deep.
- c) Where a forward approach is used to access a wheelchair seating space, a clear knee space of at least **760mm** (30in.) wide, **480mm** (19in.) deep and **760mm** (30in.) high should be provided. The clear knee space may overlap the clear floor space by a maximum of **480mm** (19in.).

Accessible Information or Service Counter



- d) A **variety** of counter heights is recommended to provide options for a wide range of people.
- e) Counter service desks with vertical, backlit panels cause glare and should be **avoided** (see also **Section 4.6 – Glare and Light Sources**).
- f) Where speaking ports are provided at information or service counters, at least one section should have a speaking port no higher than **1.06m** (3ft.5in.) above the finished floor.
- g) Glass, Plexiglas and similar materials used to separate staff from visitors serve as barriers to communication for people who are hearing and vision impaired. Such barriers, unless required for safety or security purposes, should be **avoided**.
- h) Where appropriate, reception areas should contain **accessible seating**.
- i) See also **Section 4.7 – Lighting**.

3.3.2 Waiting and Queuing Areas

Waiting and queuing areas for passenger pick-up, communication or information, tickets or services should permit safe and convenient access for individuals with disabilities and other limitations.

LOCATION

Waiting and queuing areas should be located along a barrier-free path of travel.

CRITERIA

- a) Waiting areas should incorporate sufficient waiting space for at least **two persons** using wheelchairs, scooters or guide dogs (refer to **Section 1.3.1 – Space and Reach Requirements**).
- b) An accessible **public telephone** should be provided in waiting areas, particularly near main entrances and passenger drop-off zones (refer to **Section 3.4.2 – Public Telephones**).
- c) **Accessible seating** should be provided in waiting areas to assist people who may experience difficulty standing for an extended duration.
- d) To increase visibility, ropes, bars or other solid obstructions defining a waiting or queuing area should be **colour contrasted** with their background.
- e) **Cane detectable guiderails** should be included in queuing lines to assist individuals with vision impairments.
- f) Obstructions in waiting and queuing areas should be laid out in **parallel, logical lines**, spaced at least **1.06m** (3ft.5in.) apart and set **clear** of the main path of travel.
- g) Barriers intended to streamline people movement at queuing areas should be **firmly mounted** to the floor and have **rigid rails** to provide support for waiting persons.
- h) Permanent queuing areas should incorporate clearly defined surface treatments, such as **distinct patterns, colours and textures**, to aid individuals with vision impairments.
- i) Waiting and queuing areas should incorporate **clear signage** indicating entry and exit points, and other specially designated areas.

3.3.3 Offices, Work Areas and Meeting Rooms

Offices, work areas and meeting rooms providing assistance or programs to the public should be accessible for all users. Additionally, offices, work areas and meeting rooms should be accessible to employees and visitors with varying levels of ability.

LOCATION

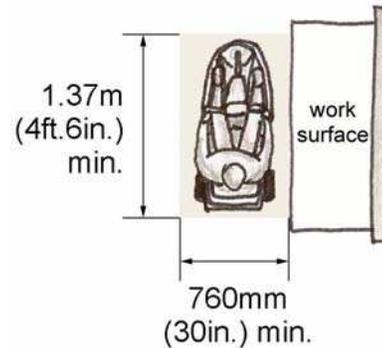
All accessible offices, work areas and meeting rooms should be located along a barrier-free route of travel.

CRITERIA

- a) All accessible offices, work areas and meeting rooms should include a **clear floor space** permitting a mobility aid to make a **180-degree turn** (refer to **Section 1.3.1 – Space and Reach Requirements**).
- b) A **barrier-free route** should be provided throughout an accessible office, work area or meeting room such that a person using a wheelchair or other mobility device is not required to travel backwards to enter or exit the space (refer to **Section 1.3.1 – Space and Reach Requirements**).
- c) A **barrier-free route** should connect the primary activity elements within an accessible office, work area or meeting room.
- d) At least **10%**, but **no less than one** fixed or built-in table, counter or work surface should be barrier-free.

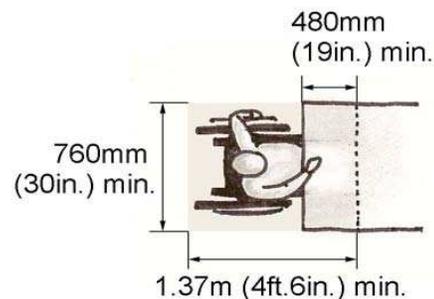
- e) To accommodate an individual in a wheelchair or scooter, desks, tables, counters and other work surfaces should be positioned a maximum of **865mm (34in.)** above the finished floor and include a clear floor space at least **760mm (30in.)** in width and **1.37m (4ft.6in.)** in length.

Clear Floor Space for Work Surfaces



- f) To address the knee space requirements of an individual in a wheelchair, tables and other work surfaces must incorporate a clear knee space at least **760mm (30in.)** wide, **480mm (19in.)** deep and **760mm (30in.)** high.

Clear Knee Space for Work Surfaces



- g) Where served by a door, the required clear space of an accessible office, work area or meeting room should **not be reduced** by the operation of the door (see also **Section 3.1.1 – Doors**).
- h) Storage, shelving or display units should be accessible for use by personnel and visitors (refer to **Section 3.4.3 – Lockers and Storage**).
- i) A clear floor space, at least **760mm** (30in.) x **1.37m** (4ft.6in.), should be provided in front of office equipment, such as photocopiers.
- j) **Natural coloured task lighting**, such as that provided by halogen bulbs, should be used to improve visibility for individuals with vision impairments (refer to **Section 4.7 – Lighting**).
- k) In areas where reflective glare may pose a problem, such as adjacent to large expanses of glass, window coverings should be provided and be accessible for adjustment (refer to **Section 3.4.4 – Windows**).
- l) Where required, **telephone equipment** suitable for individuals with hearing impairments should be provided in offices, work areas, meeting rooms.
- m) Where required, meeting rooms should be equipped with an **assistive listening system**.
- n) Accessible reception counters should be a maximum of 865mm (34in.) in height to accommodate individuals with height and reach limitations.

3.3.4 Restrooms

Restroom facilities should be accessible for individuals with physical disabilities. All restrooms should contain accessible stalls or be accompanied by separate individual accessible washrooms. Separate accessible restrooms are particularly useful for persons in wheelchairs or scooters, families and individuals requiring assistance.

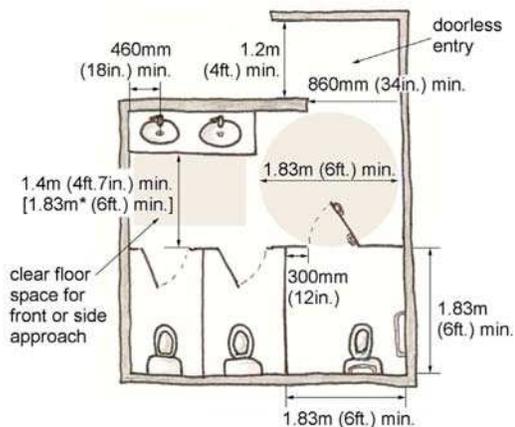
LOCATION

Accessible restrooms should be served by a barrier-free path of travel and be located near main areas and activities within the site.

CRITERIA

- a) The entrance to individual accessible restrooms and public restrooms with accessible stalls should be at least **860mm (34in.)** (refer to **Section 3.1.1 – Doors**).
- b) **Doorless entry** is preferred for all restrooms with accessible stalls. Privacy screens with a minimum clear width of **1.2m (4ft.)** should be provided between the screen and a door opening.

Accessible Restroom Dimensions



- * Where a lavatory is adjacent to an accessible stall, at least 1.83m (6ft.) of clear space is required [rather than 1.4m (4ft.7in.)] between the outside of the stall face and any wall-mounted fixture or obstruction.

A minimum clearance of **1.4m (4ft.7in.)** should be provided between the outside of the stall face and any wall-mounted fixture or obstruction

A **clear turning space**, at least **1.83m (6ft.)** in diameter, should be provided outside an accessible stall. The door to the accessible stall may encroach upon this clear space.

- c) Where doors are used for entry to an accessible restroom, the door should be equipped with an **automatic opener** whenever possible.
- d) Thresholds are discouraged, but where present should be **colour or brightness contrasted**, a maximum of **13mm (1/2in.)** in height and **bevelled** to facilitate the passage of wheeled equipment.
- e) A minimum clearance of **1.7m (5ft.7in.)** should be provided between the outside face of a stall and the face of an in-swinging restroom door.
- f) See also **Section 3.1.1 – Doors**.

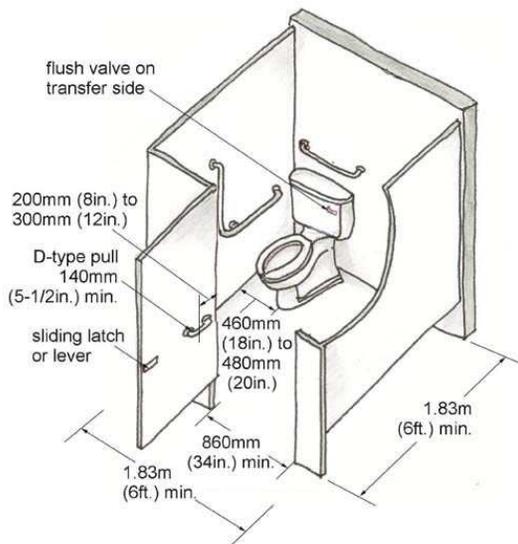
URINALS

- g) The urinal should have grab bars installed on each side, vertically mounted, not less than 300mm long, (12in) with the centre line 1000mm (3ft.4in.) above floor and mounted so that each grab bar has the lower end between 600mm-650mm (2ft.-2ft.2in.) from the floor; and located not more than 380mm (15in.) from the centre line of the urinal.

ACCESSIBLE STALLS

- h) Accessible restroom stalls should have a minimum width and depth of **1.83m (6ft.)**.

Accessible Restroom Stall



Accessible stall doors must provide a clear opening at least **860mm (34in.)** wide and **swing outward** unless additional space is provided within the stall.

Accessible stalls should include **D-type** door pulls with a minimum length of **140mm (5-1/2in.)**. Door pulls should be positioned on the outside of the door near the latch and on the inside of the door at a centreline between **200mm (8in.)** and **300mm (12in.)** from the hinged side.

Locking devices should be located on the inside of the stall door, be operable with **one hand** (e.g. a sliding bolt or lever) and require a maximum force of **22N**. Locking devices should not require tight grasping, pinching or twisting of the wrist.

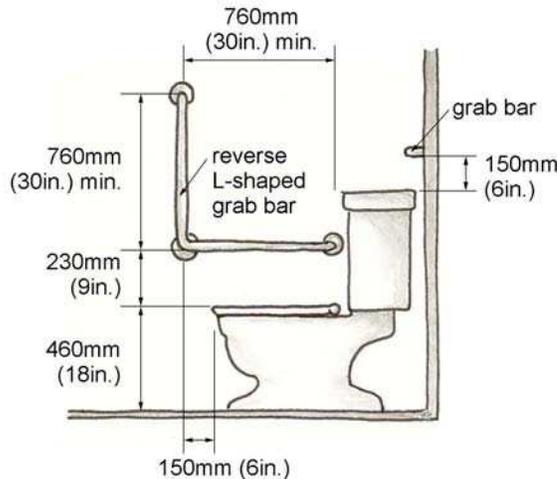
The centreline of the toilet in an accessible stall should be located between **460mm (18in.)** and **480mm (20in.)** from the adjacent wall.

A clear width of at least **900mm (35-1/2in.)** must be provided beside the toilet to facilitate transfer to and from a mobility device. Accessories, such as paper dispensers, sanitary napkin disposals, fold-down shelves, etc., should not obstruct the transfer area.

Baby change tables should not be installed in accessible stalls since they present a potential obstruction and hazard if not closed after use. The only exceptions will be for accessible stalls that exceed the minimum width and depth with the change table in the open position.

- i) The top of the toilet seat should be not more than **510mm** (20in.) and not less **460mm** (18in.) above the finished floor.

Accessible Toilet and Grab Bars



A **back support** should be provided when there is no toilet seat lid or tank. If a toilet tank lid is present, it should be **securely attached**.

Grab bars, with a diameter between **30mm** (1in.) and **40mm** (1-1/2in.) and a **slip-resistant gripping surface**, must be installed to assist transfer to and from the toilet.

One grab bar, at least **600mm** (24in.) in length, should be horizontally mounted on the wall behind the toilet at a height between **840mm** (33in.) and **920mm** (36in.) above the finished floor and where a tank is present, at least **150mm** (6in.) above the tank.

A reverse **L-shaped** grab bar should be mounted on the side wall closest to the toilet.

Grab bars should have a **40mm** (1-1/2in.) clearance between the bar and the wall and be capable of resisting a horizontal and vertical force of at least **1.3kN** (300lbs.).

Toilet flush controls should be located on the **transfer side** of the toilet, above the back rest and be of **contrasting colour** to their background. **Automatic flush controls** are preferable.

Toilet paper dispensers should be **wall-mounted**, located **higher than the grab bar**, in line with or not more than **300mm** (12in.) in front of the toilet seat. Single roll paper dispensers or small paper dispensers should be used, as the large double roll dispensers prohibit access to the grab bar.

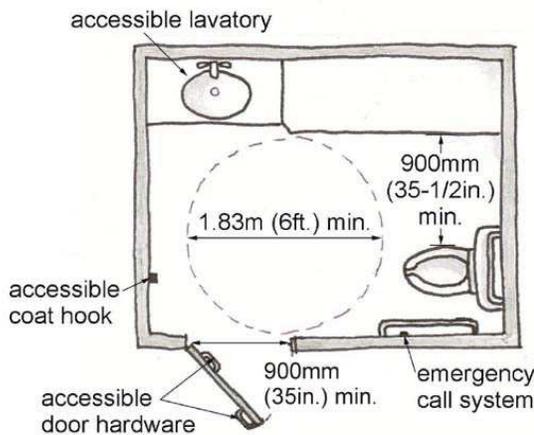
INDIVIDUAL ACCESSIBLE RESTROOMS

- j) Individual Accessible Restrooms are **preferable** to accessible stalls and should be included wherever feasible. An individual accessible restroom is more spacious for persons using mobility devices and is especially helpful for individuals requiring assistance, e.g. children or seniors, particularly when the assistant is of opposite gender.

Where a separate individual accessible restroom is provided, it should be located on the same floor and within **45m (147ft.7in.)** of the general public restroom.

A separate accessible restroom should have an internal clear space at least **1.83m (6ft.)** in diameter to accommodate the turning radius of a mobility device such as a scooter.

Individual Accessible Restroom



The door of an individual accessible restroom should be **lockable from the inside** but capable of being **removed from the outside** in case of an emergency.

An **emergency call system** should be installed in all individual accessible restrooms (refer to **Section 4.1.3 – Controls and Operating Mechanisms** for positioning and clearances).

A **change table**, with a surface no higher than **865mm (34in.)**, an adjacent clear floor space at least **760mm (30in.)** wide and **1.37m (4ft.6in.)** long and a design capable of supporting the **weight of an adult**, may be included in an individual accessible restroom provided that the required **clear transfer and manoeuvring spaces are not reduced** when the table is in the open position.

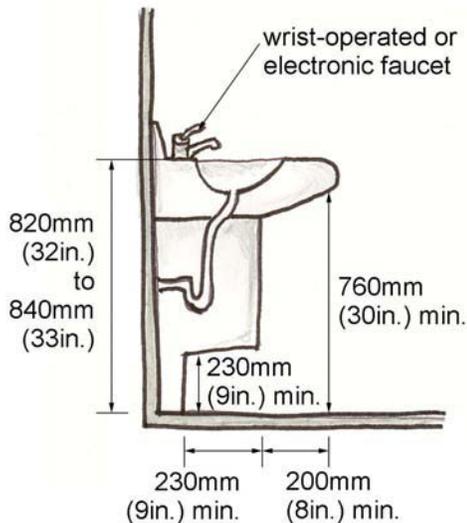
Requirements for accessible toilets, grab bars, dispensers, coat hooks, door hardware, lavatories and other individual restroom features should follow the design standards set out for **Accessible Stalls and Lavatories and Accessories** found in this section.

LAVATORIES AND ACCESSORIES

- k) The minimum distance between the centreline of a fixture in a sink or vanity and a sidewall should be **460mm (18in.) (Figures 2.2.4(g))**.

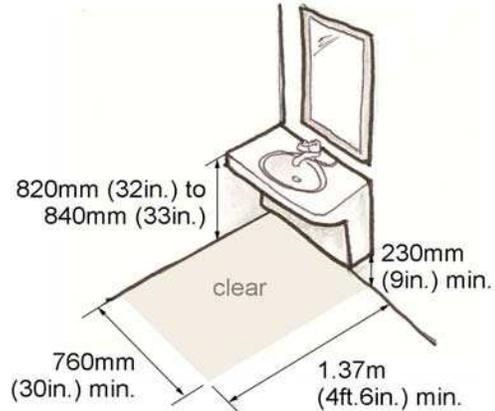
The surface of a sink or vanity should be located between **820mm (32in.)** and **840mm (33in.)** above the finished floor.

Accessible Sink or Vanity Side View



A clear floor space measuring at least **760mm (30in.) x 1.37m (4ft.6in.)** should be positioned in front of a lavatory to permit a forward or side approach by a wheelchair or scooter.

Accessible Sink or Vanity

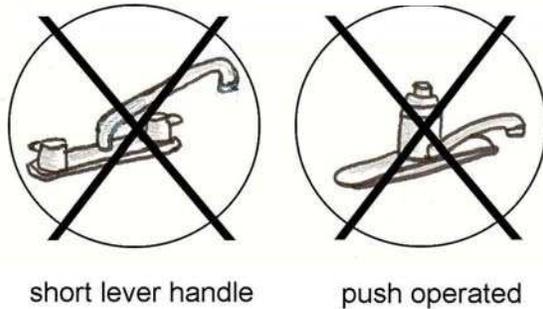
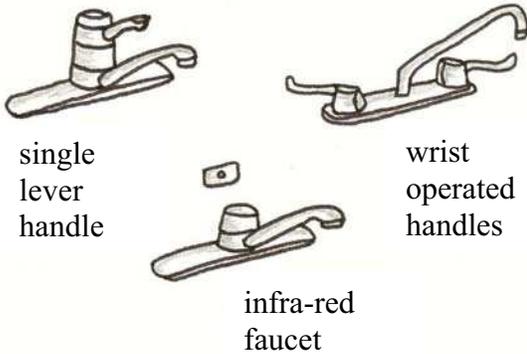


A **clear knee space** of at least **760mm (30in.)** wide and **760mm (30in.)** high, must be provided under an accessible sink or vanity.

Hot water and drain pipes must be **insulated** if located in close proximity to the clear knee space of a lavatory.

Faucet handles should be a **wrist-operated faucet** or be **electronically controlled** (preferred).

Accessible Faucet Handles



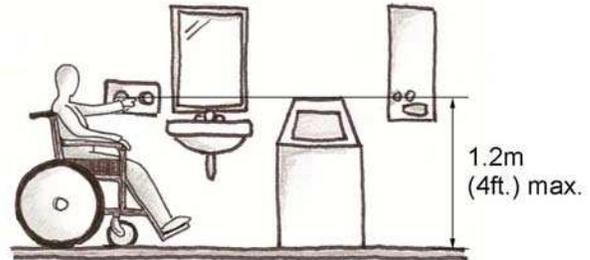
Faucet handles and sink accessories should be located a maximum of **300mm (12in.)** from the sink edge.

The distance between the centreline of the faucet and edge of the sink basin should not exceed **485mm (19in.)**.

Washroom accessories and dispensers should be positioned in **close proximity** to complementary restroom features, such as an accessible sink or toilet stall.

Accessories and dispensers should be mounted with operable controls and dispensing components positioned between **900mm (35-1/2in.)** and **1.2m (4ft.)** above the finished floor. See also **Section 4.3 – Controls and Operating Mechanisms.**

Accessible Accessories and Dispensers



Accessories and dispensers should be **operable with one hand** and should not require tight grasping, pinching or twisting of the wrist.

Accessories and dispensers should include a **clear floor space**, at least **760mm (30in.)** in width and **1.37m (4ft.6in.)** in length, oriented to permit a front or parallel approach in a mobility device.

Accessories and dispensers should **not protrude** into the barrier-free path of travel and be **recessed** whenever possible.

Hand dryers, paper towel dispensers and soap dispensers should be installed **directly adjacent to** an accessible sink, but not encroach upon the required clear space. Dispensers should **not** be located on the wall behind a sink or vanity.

Restroom mirrors should be installed with a bottom edge no higher than **900mm (35-1/2in.)** from the floor or be **tilted** to reflect an individual in a seated position.

A coat hook should be provided in an accessible stall or individual restroom, projecting a maximum of **25mm (1in.)** and be installed no higher than **1.2m (4ft.)** from the finished floor.

A retractable shelf should be provided in an accessible stall or individual restroom not more than **1000mm** (3ft.3in.) above the floor in a location accessible to a person in a wheelchair.

Restroom features such as doorframes and hardware should be **colour contrasted** to assist persons with vision disabilities.

To assist people with vision impairments and individuals with literacy concerns, **graphic symbols** should be used to indicate the location of accessible restrooms (refer to **Section 1.4.2 – Signage**).

See also **Sections 4.7 – Lighting and 4.8 – Materials and Finishes**.

3.3.5 Changing Rooms

Accessible changing rooms should be large enough for a wheelchair or scooter to enter and manoeuvre so that transferring is simple and safe. To accommodate a wide range of users, sufficient space should be provided in accessible changing rooms or sections for at least two people and a mobility device, without interference from seating and other accessories.

LOCATION

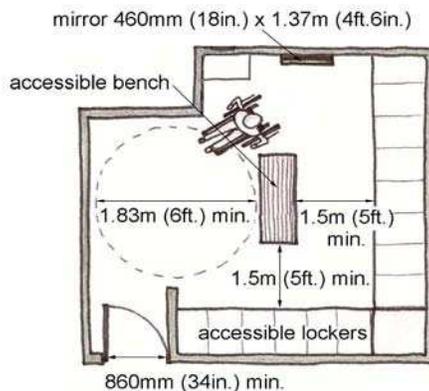
Accessible changing rooms must be located along a barrier-free route in close proximity to related activities.

CRITERIA

a) Accessible changing areas should include at least one clear space at least **1.83m (6ft.)** in width and **1.83m (6ft.)** in length to serve as a turning space for individuals using wheelchairs and scooters. Doors should not swing into this turning space.

Changing rooms should provide access aisles to benches and accessible lockers at least **1.5m (5ft.)** in width.

Accessible Changing Room



- b) An accessible changing area should be equipped with a bench at least **610mm (24in.)** wide and **1.22m (4ft.)** long, mounted with a seat height between **450mm (18in.)** and **500mm (20in.)** above the finished floor, and designed to carry a minimum load of **1.33kN**.
- c) A clear floor space, at least **920mm (36in.)** wide should be located alongside an accessible bench to permit easy transfer, particularly for individuals using mobility aids, to and from the bench.
- d) Where mirrors are provided in accessible changing rooms, a full length mirror, at least **460mm (18in.)** wide and **1.37m (4ft.6in.)** high should be mounted with the bottom edge no higher than **610mm (24in.)** above the finished floor.
- e) Accessible lockers should be provided for individuals using mobility devices such as wheelchairs and scooters (refer to **Section 3.4.3 – Lockers and Storage**).
- f) Accessible changing areas and features, particularly when in conjunction with showers, swimming pools or other wet locations, must be **slip resistant** and **well-drained**.

3.3.6 Bathing Facilities and Shower Rooms

Bathing facilities and shower rooms should be designed to assist individuals with mobility and vision disabilities. For individuals using wheelchairs, scooters or requiring assistance a bathing facility with a separate individual shower room and bathroom is preferable to an accessible stall.

LOCATION

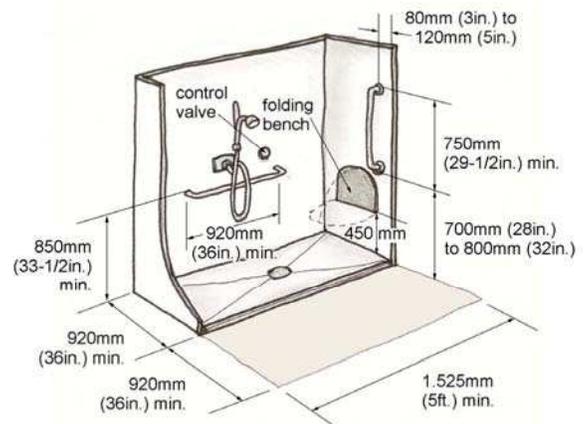
Accessible bathing facilities and shower rooms should be accessible from a barrier-free route and located in close proximity to related activities and changing rooms.

CRITERIA

- a) To reduce potential hazards shower stall, bathtub and bathing facility surfaces must be **well-drained** and **non-slip**.
- b) The water system should be equipped with a **pressure-equalizing** or **thermostatic mixing control valve (anti-scalding device)** controlled by a wrist-operated lever or other mechanism operable with a closed fist from the seated position.
- c) Soap holders should be **fully recessed**. Dispensers and other fixtures should be fully recessed whenever possible.
- d) Grab bars must have a diameter between **30mm (1in.)** and **40mm (1-1/2in.)** and a **slip-resistant gripping surface**.
- e) Grab bars must have a **40mm (1-1/2in.)** clearance between the bar and the wall and be capable of resisting a horizontal and vertical force of at least **1.3kN (300lbs.)**.
- f) An accessible shower stall should be at least **1.525m (5ft.)** wide and **920mm (36in.)** deep.

SHOWER STALLS

Dimensions for Accessible Shower Stalls



A clear floor space, a minimum of **920mm (36in.)** in depth and at least the **width of the stall**, should be provided at the entrance to an accessible shower.

Fixtures are permitted to project into the clear floor space provided they **do not restrict access** to the shower.

Accessible showers should have a bevelled **threshold** not greater than **13mm (1/2in.)** above the finished floor.

A horizontal grab bar at least **920mm** (36in.) in length should be mounted **850mm** (33-1/2in.) from the shower floor and positioned so that at least **300mm** (12in.) of its length is reachable from one side of the seat (**Figure 3.3.6.(f)**).

A vertical grab bar at least **750mm** (29-1/2in.) in length should be mounted between **80mm** (3in.) and **120mm** (5in.) from the front edge of the stall and begin between **700mm** (28in.) and **800mm** (32in.) from the finished floor (**Figure 3.3.6.(f)**).

An accessible shower shall include a handheld showerhead with at least **1.525m** (5ft.) of flexible hose. The showerhead should be reachable from a **seated position** and contain a support for operation as a **fixed showerhead**. The bottom of the handheld shower handle should be installed no higher than **1.2m** (4ft.) above the floor.

To be accessible from a seated position all **operable components** in an accessible shower must be installed no higher than **1.2m** (4ft.) above the floor.

An accessible shower stall should be equipped with a **wall mounted folding seat** that is not spring loaded or make provisions for a **portable seat**.

An accessible shower seat should be at least **450mm** (18in.) wide and **400mm** (16in.) deep, installed **450mm** (18in.) from the shower floor and be designed to carry a minimum load of **1.33kN**.

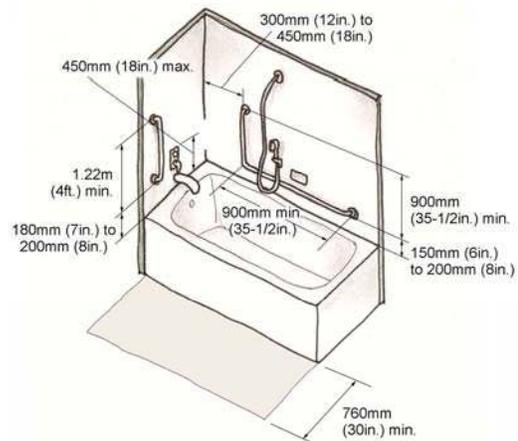
Bathtubs

g) Accessible bathtubs should have a clear floor space at least **760mm** (30in.) wide along the length of the tub.

A lavatory may encroach a maximum of **300mm** (12in.) into the required clear space in front of the tub provided there is an accessible clear knee and toe space (refer to **Section 3.3.4 – Restrooms** for lavatory clearances).

A vertical grab bar at least **1.22m** (4ft.) long and an L-shaped grab bar at least **900mm** (35-1/2in.) long should be installed.

Dimensions for Accessible Bathtubs



Faucet handles should be **automatically operable** or of a **wrist-operated lever-type** that is not spring loaded (refer to **Section 3.3.4 – Restrooms** for accessible faucet handles).

Faucets and other controls should be operable from the **seated position** and mounted no higher than **450mm** (18in.) from the bathtub rim.

3.3.7 Saunas and Steam Rooms

Similar to swimming pools, saunas and steam rooms offer therapeutic opportunities and should, therefore, be designed to accommodate and include persons with disabilities.

LOCATION

Saunas and steam rooms should be located along a barrier-free path of travel and in close proximity to accessible restrooms and changing rooms.

CRITERIA

- a) Where saunas and steam rooms are clustered, at least **5%**, but no less than **one** of each type should be accessible.
- b) To accommodate the turning radius of a wheelchair or scooter a clear floor space at least **1.83m** (6ft.) diameter should be provided within accessible saunas and steam rooms.
- c) If necessary, **removable** benches or seats may locate within the clear floor space.
- d) If seating is provided, at least **one** bench should be accessible, with a height between **450mm** (18in.) and **500mm** (20in.). A supportive **armrest** or **grab bar** should be included to facilitate transfer to and from the bench.

- e) Doors should **not** swing into any part of the accessible clear floor space or ground space required for accessible benches.
- f) An **emergency call system** should be installed in all saunas or steam rooms (refer to **Section 4.3 – Controls and Operating Mechanisms** for positioning and clearances).

3.3.8 Kitchens

Kitchens and their elements should be accessible to employees, patrons and visitors with disabilities. They should be designed to be accessible for the preparation and the service of food and drink at social gathering facilities such as community centres, banquet halls, restaurants, work places, etc.

LOCATION

Accessible kitchens should be located within an accessible environment, including close proximity to barrier-free entrances, and accessible routes.

CRITERIA

- a) The clearance between counters and all opposing base cabinets, countertops, appliances, or walls in accessible kitchens should be **1.5m (5ft.)**.
- b) The **work surface** should be at least **760mm (30in.)** wide and **610mm (24in.)** deep and a height between **760mm (30in.)** and **865mm (34in.)**.
- c) The work surface should have a centered knee clearance at least **760mm (30in.)** wide and **480mm (19in.)** deep and **680mm (27in.)** high.
- d) There should be a clear floor area at least **760mm (30in.)** wide and **1200mm (47in.)**, which may extend up to **480mm (19in.)** underneath the work surface.
- e) The work surface should have no sharp or abrasive surfaces under it and have no electrical outlets at the side or the front of it.
- f) **Base cabinets** should have a toe space at least **150mm (6in.)** deep and **230mm (9in.)** high.
- g) **Sinks** should be mounted with the centerline at least **460mm (18in.)** from a side wall and have a rim height located between **810mm (32in.)** and **860mm (34in.)** from the floor.
- h) **Sinks** should have a knee clearance centered on the sink at least **760mm (30in.)** wide and **200mm (8in.)** deep and **680mm (27in.)** high, with an additional toe space at least **760mm (30in.)** wide and **230mm (9in.)** and **230mm (9in.)** high.
- i) There should be a clear floor area at least **760mm (30in.)** and **1200mm (47in.)**, which may extend up to **480mm (19in.)** underneath the sink.
- j) **Faucets** should have handles of the lever type or electronically controlled (preferred).
- k) **Sinks** should have no sharp or abrasive surfaces underneath it and have hot water and drain pipes offset to the rear and not abut the clear space. If the hot water and drain pipes abut the clear space, they should be insulated.
- l) **Refrigerators and freezers** should be vertical side by side, self defrosting with storage space and controls not more than **1100mm (43in.)** from the floor.
- m) **Cabinets, drawers and self storage areas** should have at least one shelf at a height of not more than **1100mm (43in.)** from the floor where it is above a work surface and have "D" type door pull mounted close to the bottom of the upper cabinet doors and top of the base cabinet doors.

3.4 INTERIOR AMENITIES AND FEATURES

While less integral to a person's ability to access and circulate through a building or facility, several interior amenities and features, if designed as barrier-free, can greatly enhance the comfort, convenience and utility of a site for people with limitations. In turn, items such as accessible drinking fountains, telephones and storage units, can improve the likelihood of full participation by all users within the community.

3.4.1 Drinking Fountains

When designing and positioning drinking fountains the limited reach of children, persons of short stature and individuals using wheelchairs or other mobility aids should be accommodated. Water dispensing devices should also consider individuals who experience difficulty bending, have limited hand strength or have coordination difficulties.

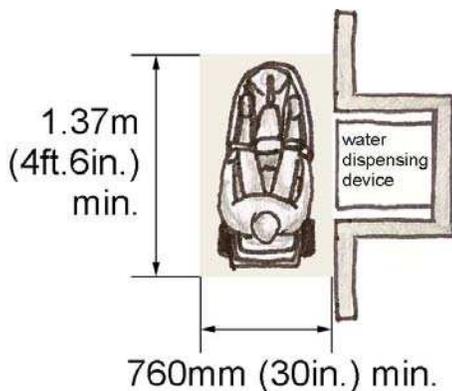
LOCATION

Water dispensing devices, such as drinking fountains, should be located along a barrier-free route clear of the path of travel.

CRITERIA

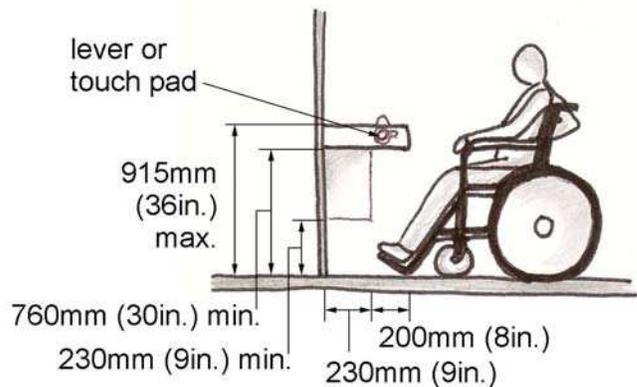
- a) To accommodate a side approach by wheelchairs and scooters, free-standing or built-in water dispensing devices should have a clear floor space at least **1.37m (4ft.6in.)** wide and **760mm (30in.)** deep in front of the unit.

Clear Floor Space for Drinking Fountains



- b) Drinking fountains should be adjacent to, but **clear** of a barrier-free route. A unit **recessed** into the wall or with a cane detectable surface are preferred.
- c) Cantilevered drinking fountains should have a **clear knee space** between the bottom of the apron and the floor at least **760mm (30in.)** wide, **200mm (8in.)** deep and **685mm (27in.)** high.

Dimensions for Drinking Fountains



Where an obstruction exists under a cantilevered drinking fountain a **clear toe space**, at least **760mm (30in.)** wide, **230mm (9in.)** deep and **230mm (9in.)** high, should be provided.

An accessible drinking fountain should have a spout located near the front of the unit raised between **760mm (30in.)** and **915mm (36in.)** from the finished floor.

The spout should direct the water flow in a trajectory that is **parallel** or nearly parallel to the front of the unit and provide a flow at least **100mm (4in.)** high.

-
- d) Controls for a drinking fountain should be **automatically operable** or be easy to operate from a wheelchair or mobility device, using **one hand** with a force no greater than **22N** (4.9 lbs).

 - e) Drinking fountains should be equipped with **lever style controls** or **touch pads**.

3.4.2 Public Telephones

The design and position of public telephones should address the limited reach of children, persons of short stature and individuals using wheelchairs or other mobility aids. Additionally, public telephones should be accessible to individuals with vision and hearing disabilities.

LOCATION

Accessible public telephones should be located adjacent to a barrier-free route, particularly near main entrances and in designated waiting areas.

CRITERIA

- a) Accessible public telephones should be provided in compliance with the following table.

Accessible Public Telephone Requirements

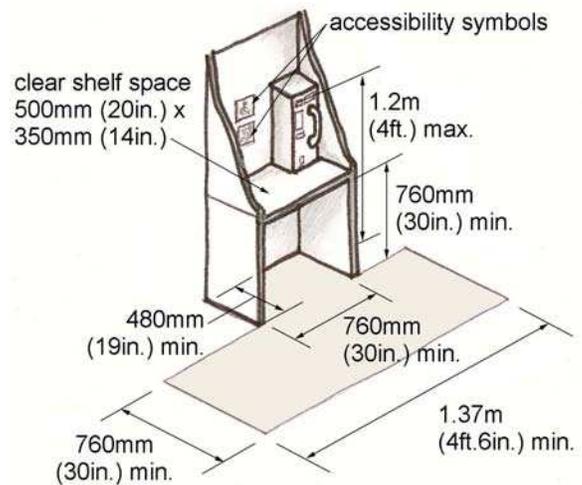
Total Public Telephones	Minimum Accessible Public Telephones
1 or more single unit	1 per floor
1 bank*	1 per floor
2 or more banks	1 per bank or 1 single unit in close proximity to each bank

* A bank refers to two or more adjacent public telephones, often installed as a unit.

- b) Where an interior public pay telephone is provided, at least one interior public **text telephone (TTY)** should be provided.

- c) Accessible public telephones should be equipped with a **volume control**.
- d) To accommodate an individual in a wheelchair or scooter, all accessible public telephones should have a clear floor space at least **760mm (30in.)** in width and **1.37m (4ft.6in.)** in length in front of the telephone.

Accessible Public Telephone Dimensions



Where a front approach is provided for wheelchair or scooter access, there should be a clear knee space at least **865mm (34in.)**, **480mm (19in.)** deep and **760mm (30in.)** wide.

Operable portions, such as coin slots and number pads, should have a maximum height of **1.2m (4ft.)** from the finished floor.

An accessible telephone should have a flat directory shelf at least **500mm (20in.)** wide and **350mm (14in.)** deep.

- e) Telephone directories should not block or hang within the clear knee space under an accessible telephone.
- f) To facilitate the use of a public telephone by individuals with reach limitations, the handset cord should be at least **1.0m** (3ft.4in.) in length.
- g) The minimum illumination level for accessible telephones should be **200 lux** (20 ft. candles).
- h) Accessible telephones should have **push-button controls** with characters that are clearly marked in a **matte finish**. Both the buttons and characters should **contrast** with their background.
- i) Text telephones (TTYs) used with pay telephones should be **permanently affixed** within, or adjacent to the telephone enclosure and signed. If an **acoustic coupler** is used, the telephone cord should be sufficiently long to allow connection of the TTY and the telephone receiver.
- j) Additional public telephones designed to accommodate individuals with hearing impairments and a **portable TTY** should comply with **CSA Standard T515**; contain a shelf with a clear space at least **250mm** (10in.) wide, **350mm** (14in.) deep and **250mm** (10in.) high; be equipped with an **electrical outlet** within or adjacent to the telephone enclosure; and include a handset that is capable of being placed **flush on the surface** of the shelf.
- k) All accessible public telephones and directional signs for telephones should include the **symbol of accessibility** for mobility impaired persons and/or persons who are deaf or hard of hearing (refer to **Section 1.4.2 – Signage**).
- l) Telephones projecting from the wall should be designed as **cane detectable** (refer to **Section 2.2.2 – Objects Protruding into Sidewalks and Pathways**).
- m) Where possible, a fold-down seat should be included to assist individuals who experience difficulty standing for extended periods.
- n) Outdoor telephone booths should be made accessible by mounting the booth **flush** with the adjacent surface and by utilizing **plastic doors** which open both in and out.

3.4.3 Lockers and Storage

In facilities where public and private storage is provided a proportion of that storage should be accessible, particularly to individuals with limited reach and/or dexterity.

LOCATION

Accessible lockers and storage units should be located adjacent to a barrier-free route.

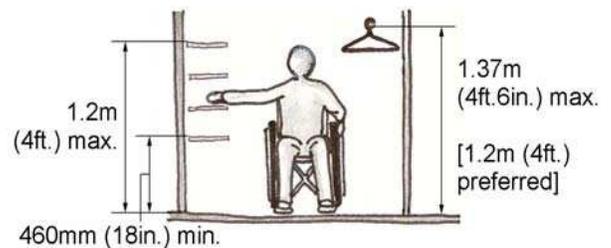
CRITERIA

- a) At least **one section** of every storage area, such as lockers, closets or coat rooms, should be accessible.
- b) A clear aisle should be provided in front of lockers and other storage units measuring at least **1.5m (5ft.)** in depth to permit both the forward and side approach of a mobility device (see also **Section 3.3.5 – Changing Rooms**).
- c) Where a storage area is accessed through a doorway, that doorway should comply with **Section 3.1.1 – Doors**.

- d) Accessible storage should contain shelving that is between **460mm (18in.)** and **1.2m (4ft.)** from the finished floor.

Accessible coat racks, rails or hooks should be installed no higher than **1.35m (4ft.5in.)** from the finished floor, with a recommended height of **1.2m (4ft.)**.

Accessible Storage Dimensions



- e) Locks or other operating mechanisms for accessible storage should be located no higher than **1.06m (3ft.5in.)** from the finished floor.
- f) Numbers or names on lockers and storage units should be in a **prominent location**, mounted no higher than **1.525m (5ft.)** from the finished floor and use **legible** and **clear lettering**. Markings should be **raised** or **recessed** and be of a **highly contrasting colour** or **tone**.
- g) Accessible lockers should require a maximum force of **22N (4.6 lbs)**, to open from a fully closed position.

3.4.4 Windows

Disabled persons who use wheelchairs and other mobility devices require window views and operating mechanisms accessible from a seated height. Window heights and controls should respect these reach limitations as well as the limited strength or dexterity of individuals with other disabilities.

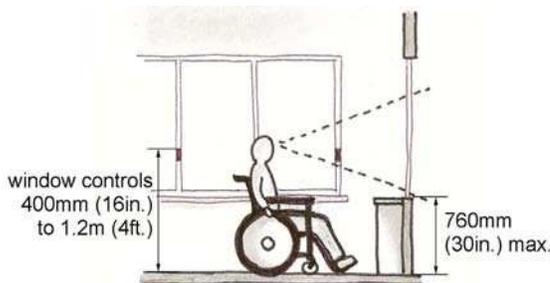
LOCATION

Accessible windows should be located throughout a building or facility.

STANDARDS

- a) The sill height of all viewing windows should not exceed **760mm (30in.)** above the finished floor.

Accessible Windows



- b) Where horizontal transoms are incorporated into windows, the transoms should **not** be located between **1.06m (3ft.5in.)** and **1.22m (4ft.)** from the finished floor.

- c) Operable windows should utilize control mechanisms that are operable **using one hand**, and do **not** require fine finger control, tight grasping, pinching or twisting of the wrist.
- d) Window controls should be mounted between **400mm (16in.)** and **1.2m (4ft.)** from the finished floor.
- e) Fully glazed sidelights at entrances and vestibules, as well as fully glazed interior screens, should be clearly identified with a **horizontal row of decals or continuous stripe** at least **50mm (2in.)** in width.
- f) Decals or continuous stripes should be mounted with a centreline between **1.22m (4ft.)** and **1.525m (5ft.)** above the finished floor.
- g) Where decals are used, each decal should be located a maximum of **150mm (6in.)** from the centre to centre.
- h) Decals may be **square, round** or of a **special design** (e.g. a logo) provided that the solid portion provides high colour contrast and is easy to identify by persons with visual disabilities.
- i) Where etched or patterned glass panels are used, **decals** or **continuous stripes** should still be provided.
- j) Where frameless glass panels are installed, exposed edges should be identified with a **vertical safety strip**.

3.5 OTHER FACILITIES

“Other Facilities” refers to interior areas, such as cafeterias, libraries, places of worship, etc., which are important interior areas, yet are not often found in all buildings. Similar to common interior areas, such as reception counters, restrooms and offices, the design of other interior facilities as barrier-free is integral to the participation of a wide range of individuals within the community.

3.5.1 Cafeterias

Cafeterias provide both the service of food and drink and opportunities for socialization. Tables, chairs and service components should be designed to support persons with physical and vision disabilities. Consideration should also be given for lighting and noise reduction, which may assist individuals with hearing disabilities.

LOCATION

A cafeteria should be accessible from a barrier-free route and located in close proximity to an accessible restroom.

CRITERIA

- a) **All** cafeterias, raised or sunken dining areas and outdoor seating areas should be accessible.
- b) Where fixed tables or counters are provided, at least **10%**, but no less than **one**, should be designed as accessible. It is preferable for all fixed installations to be accessible.
- c) In buildings where separate areas are provided for smoking and non-smoking, or indoor and outdoor seating, the required number of accessible tables or counters should be **evenly distributed** between each area(s).
- d) **Well-illuminated, noise reduced sections** should be provided to assist communication among persons with hearing disabilities (refer to **Section 4.1.7 – Lighting**).
- e) Accessible areas should feature the same **level of service** and **décor** as the entire facility.
- f) Where food or drink service counters exceed **865mm** (34in.) in height and **1.525m** (5ft.) in length, a portion of the main counter should be designed as accessible (refer to **Section 3.3.1 – Reception Areas** for specific requirements).
- g) An access aisle at least **1.2m** (4ft.) wide should serve all accessible tables, counters, cashier locations and other fixed cafeteria elements.
- h) Vending machines, beverage dispensers and other service equipment should be positioned along, but **clear** of a barrier-free route or access aisle.
- i) A clear space at least **760mm** (30in.) in width and **1.37m** (4ft.6in.) in length should be provided in front of all service machines and dispensing equipment.
- j) The **operating controls** for vending and service machines, as well as the **installation height** of service shelves, and dispensers for tableware, dishware, condiments, etc., should be located between **400mm** (16in.) and **1.2m** (4ft.) above the finished floor.

- k) In cafeterias or banquet halls with a raised speaker's podium or head table, the platform and related features should be accessible, e.g. the inclusion of a ramp, wheel stops, protective railings, adjustable lecterns, accessible tables, etc. (refer to **Sections 1.3.1 – Space and Reach Requirements, 2.4.2 – Ramps** and **2.4.4 – Handrails**).

3.5.2 Libraries

Library facilities should be designed to promote accessibility by ensuring that catalogues, display cases and terminals meet the space and reach requirements of as many users as possible and do not obstruct the pedestrian route creating hazards or obstacles for persons with disabilities.

LOCATION

A library should be accessible from a barrier-free route, entrance and parking area.

CRITERIA

- a) Wherever possible, or **upon request**, information should be available in **multiple formats for example, Braille, large print, audiotape.**
- b) Turnstiles are **not accessible** for persons using mobility equipment and can be hazardous to ambulatory persons using crutches or canes.
- c) Where turnstiles are present, at least **one entry and exit gate** must be provided for people using wheelchairs, scooters or other mobility aids.
- d) Accessible gates and turnstiles should be a minimum of **920mm** (36in.) in width, installed on **level ground, unlocked** and operable using **one hand**.
- e) Controlled checkout lanes or other restricted passageways must include at least one route not less than **920mm** (36in.) in width.
- f) Stack aisles and other access aisles or routes should be at least **1.2m** (4ft.) in width (refer to **Section 2.2.1 – Accessible Routes**).
- g) A clear floor space at least **1.83m** (6ft.) in width and **1.83m** (6ft.) in length should be provided periodically within continuous stacks and at aisle termini as a turning space for people using wheelchairs and other mobility aids.
- h) All work and reading areas and book stacks should be illuminated at least **200 lux** (20 ft. candles). At least **5%** of work stations should have illumination of **500-700 lux** (50-70 ft. candles).
- i) Changes in lighting level should not exceed a range of **100 lux** to **300 lux** (10-30 ft. candles) from one space to the next.
- j) To accommodate the reach limitations of individuals with physical disabilities, a broad sampling of books, information pamphlets and magazines should be stored between **400mm** (16in.) and **1.2m** (4ft.) from the finished floor. Staff should be available to reach and retrieve material outside this range.

- k) Computer catalogues and workstations should be accessible with a clear floor space at least **760mm** (30in.) wide and **1.37m** (4ft.6in.) long and a clear knee space at least **760mm** (30in.) wide, **480mm** (19in.) deep and **685mm** (27in.) high (refer to **Section 3.3.3 – Offices, Work Areas and Meeting Rooms**).
- l) The maximum height for **pull handle of book return boxes** (interior and exterior) must be **1.2m** (4ft.). Ensure the handle is accessible.
- m) To assist persons with hearing disabilities acoustic quality in reading and study areas should **limit extraneous background noise**.
- n) At least **one** lane at each check out area should be accessible, with preference for **all** lanes to be accessible (see also **Section 3.3.1 – Reception Areas**).

3.5.3 Places of Worship

Places of worship and/or reflection should be accessible to a wide range of individuals. Main areas of worship, meeting rooms, restrooms, coatrooms and offices should be designed as barrier-free to include all members of the community.

LOCATION

Places of worship should be located within a fully accessible environment, following the design standards outlined throughout this document.

CRITERIA

- a) **All** areas of a chapel, place of worship and/or reflection should be accessible for participants, leaders, staff or volunteers with disabilities.
- b) Entrances, doorways, corridors and all other components and features within a place of worship or reflection **should meet** the various space, reach and other design requirements set out in this document.

3.5.4 Retail Facilities

All retail facilities and elements thereof should be accessible to employees, patrons and visitors with disabilities.

LOCATION

Retail facilities should be accessible via a barrier-free route of travel.

CRITERIA

- a) Where service or retail facilities have counters for sales, the distribution of goods and services or for information, at least **one of each type** of counter should be designed as accessible (refer to **Section 3.3.1 – Reception Areas**).
- b) Where counters are dispersed throughout the facility, accessible counters should be **equally distributed**.
- c) Accessible checkout aisles, at least **915mm (36in.)** in width, with **1.06m (3ft.5in.)** recommended, should be provided in accordance with the following table.

Accessible Checkout Aisle Criteria

Total Checkout Aisles of each Design	Minimum Accessible Checkout Aisles (of each design)
1 to 4	1
5 to 8	2
9 to 15	3
Over 15	3 plus 20% of additional aisles

- d) All accessible sales and service counters should be on a **barrier-free route**.
- e) In facilities where counters or teller windows have solid partitions or security glazing, at least **one section** should provide a method to facilitate **voice communication**, including grills, slats, talk-through baffles, intercoms, telephone handsets, etc., which is accessible to individuals in wheelchairs or scooters and persons with difficulty bending.
- f) Accessible sales and service counters should be a maximum of **865mm (34in.)** in height to accommodate individuals with height and reach limitations
- g) Counters with cash registers should include an accessible portion at least **915mm (36in.)** in length.
- h) Where counters without cash registers are present, such as at ticketing counters, teller stations, registration and information counters, box offices and library checkouts, an accessible portion at least **865mm (34in.)** in length is required at or adjacent to the main counter.
- i) Signage identifying accessible checkout aisles shall include the **ISA** positioned next to the aisle number or aisle type (refer to **Section 1.3 .2 – Signage**).
- j) Any security features or devices used to prevent the removal of shopping carts **should not impede** the ingress or egress of an individual using a mobility aid such as a wheelchair or scooter.

3.5.5 Medical Care Facilities

Medical care facilities such as hospitals, clinics and rehabilitation facilities should be designed for a wide range of users. Accessible restrooms, waiting areas, offices, corridors, doorways, etc. should be provided within medical care facilities to accommodate patients, personnel and visitors with disabilities.

LOCATION

Accessible medical care facilities should be located within an accessible environment, including close proximity to barrier-free entrances, parking areas and drop-off zones.

CRITERIA

- a) In hospitals and rehabilitation facilities at least **10%** of patient rooms and toilets, and **all** public and common areas should be designed as accessible (refer to **Section 3.3 – Interior Areas**).
- b) In hospitals and rehabilitation facilities that specialize in treating conditions affecting mobility **all** patient rooms and toilets, as well as **all** public and common areas should be designed as accessible.
- c) In long term care facilities and nursing homes at least **50%** of patient rooms toilets and bathing rooms, and **all** public and common areas should be designed as accessible.

- d) Medical care facilities should be equipped with accessible examining tables in designated accessible examining rooms.
- e) Medical care facilities should **meet the requirements** for all corresponding accessible areas and features outlined in this document.
- f) In facilities where counters or teller windows have solid partitions or security glazing, at least **one section** should provide a method to facilitate **voice communication**, including grills, slats, talk-through baffles, intercoms, telephone handsets, etc., which is accessible to individuals in wheelchairs or scooters and persons with difficulty bending.

3.5.6 Transportation Facilities

Transportation facilities serving public and private buses, taxis, trains and airplane arrival and departure should be designed as accessible. Appropriate ramps and lifts, as well as alternative audible and visual communication devices should be available to assist a wide range of users.

LOCATION

Transportation facilities should be accessible via a barrier-free route of travel.

CRITERIA

- a) **All** accessible features and areas within transportation facilities should be identified with the appropriate **ISA** (refer to **Section 1.3.2 – Signage**).

BUS SHELTERS

- a) A bus shelter should be positioned **on a firm, level pad** at a similar elevation to the adjacent sidewalk or pathway.
- b) A **clear view** of oncoming traffic should be provided from within and around a bus shelter.
- c) Bus shelters should have a clear space at least **1.22m (4ft.)** in width around at least two sides of the shelter, including the landing pad side.

- d) **All glazed panels** surrounding bus shelters should incorporate safety features such as decals or warning strips (refer to **Section 3.4.4 – Windows**).
- e) A bus shelter should include sufficient **floor space** to accommodate a person using a wheelchair and/or guide dog and contain **seating** designed in accordance with **Section 2.5.5 – Benches and Street Furniture**.

BUS STOPS

- f) A bus stop should be positioned on a **paved, firm and level surface**. Sufficient space should be provided for snow clearance and storage to maintain a barrier-free path around the bus stop.

Benches and street furniture should be installed **clear** of the barrier-free path required to enter and exit the bus.

TRANSIT TERMINALS

- g) Bus platforms or other boarding platforms shall permit safe access for persons using wheelchairs or other mobility equipment. Where possible a **level approach** should be provided.

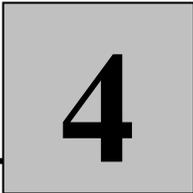
Platform edges should incorporate a **continuous detectable warning surface** at least **610mm (24in.)** wide (refer to **Section 4.4 – Detectable Warning Surfaces**).

Lighting at all boarding platforms should be at least **100 lux (10ft. candles)**.

Boarding locations should incorporate both **visual** and **audible warning signals** to indicate vehicle approach and departure (refer to **Section 4.1 – Visual and Audible Alarms**). Audible announcements, such as bus “x” now approaching platform “y,” are preferable to nondescript bells or alarms.

Where special lifting devices are used, appropriate **vertical clearance** and **manoeuvring space** for mobility equipment should be included (refer to **Section 2.1.2 – Passenger Drop-off Zones**).

SYSTEMS AND CONTROLS



4.1 VISUAL AND AUDIBLE ALARMS

Visual and audible alarms are essential for communicating emergencies or other important information to both hearing and vision impaired individuals. Audible emergency warnings, such as fire alarms or smoke alarms, do not alert persons with hearing disabilities therefore visual devices should be installed to communicate the alarm.

LOCATION

Visual and audible alarm signal devices should be integrated into the facility alarm system throughout the building, particularly in public buildings and places of employment.

CRITERIA

- a) Visual alarm signals should be installed **2.03m** (6ft.8in.) above the finished floor or **152mm** (6in.) from the ceiling (whichever is lower).
- b) In general, a visual alarm device should be within **15m** (49ft.2in.) (in a horizontal plane) of all locations within a room, corridor or area.
- c) In large rooms, exceeding **30m** (98ft.5in.) in width, visual alarm devices may be placed around the perimeter positioned a maximum of **30m** (98ft.5in.) apart.
- d) Visual alarm signals should be equipped with a **Xenon strobe-type** lamp or equivalent bulb.
- e) A visual alarm should be **clear** or **nominal white light** (i.e. unfiltered or clear filtered white light).
- f) The maximum pulse duration of a visual alarm (the time interval between initial and final points of 10% of maximum signal) should be **0.2 seconds** with a maximum duty cycle of **40 percent**.
- g) A visual alarm should have an intensity of at least **75 candelas**.
- h) The flash rate should be between **1Hz** and **3Hz**.
- i) To be heard clearly, audible exterior signals, such as a pedestrian crossing signal, should be at least **15 decibels** louder than ambient noise.

4.2 VENDING AND TICKETING MACHINES

Vending and ticketing machines should be accessible to a variety of users including children, individuals in wheelchairs and scooters and persons with limited mobility and dexterity.

LOCATION

Vending and ticketing machines should be located along, but clear of, a barrier-free route.

CRITERIA

- a) Vending and ticketing machines should be located along a **barrier-free route**, but positioned **clear** of the accessible path of travel (refer to **Section 2.2.2 – Objects Protruding into Sidewalks and Pathways**).
- b) To accommodate individuals using mobility aids, children and persons of short stature, operable and dispensing components of vending and ticketing machines should be positioned between **400mm** (16in.) and **1.2m** (4ft.) above the finished floor or ground (refer to **Section 4.3 – Controls and Operating Mechanisms**) Where sufficient clear space is provided for a side approach, the operable components may be installed as high as **1.37m** (4ft.6in.) (refer to **Section 1.3.1 – Space and Reach Requirements**).
- c) To provide ease of access for individuals in wheelchairs and scooters a clear space, at least **1.37m** (4ft.6in.) wide and **760mm** (30in.) deep, should be provided in front of all vending and ticketing machines.
- d) Vending and ticketing machines should be located in **close proximity** to accessible parking spaces, tables or other site features associated with the function of the machine.
- e) Signage, with **highly contrasting lettering**, at least **13mm** (1/2in.) in height, should be provided on all vending and ticketing machines.
- f) All components and mechanisms should be **operable with one hand** and require **minimal strength** to assist individuals with young children, a handful of parcels, canes or other mobility aids, or a physical limitation such as arthritis.
- g) To assist individuals with vision impairments and reduce potential hazards, vending and ticketing machines should be **cane detectable** and **colour contrasted** with their surroundings.
- h) See also **Section 4.7 – Lighting**.

4.3 CONTROLS AND OPERATING MECHANISMS

Controls and operating mechanisms should be equally as accessible as the wide range of areas and features to which they apply. For instance, a barrier-free elevator may be inaccessible if the controls and floor calls cannot be reached by a person in a wheelchair or scooter. Accessible controls and operating mechanisms should consider the space and reach requirements of individuals with physical limitations, as well as the needs of the vision or hearing impaired.

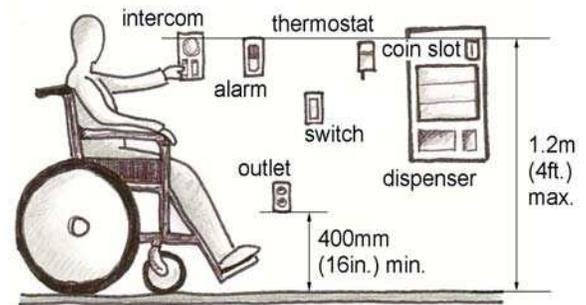
LOCATION

Controls and operating mechanisms should be accessible from a barrier-free route and positioned to accommodate use from a variety of heights, including a seated position.

CRITERIA

a) Controls and operating mechanisms, such as alarms, electrical outlets, dispensers, switches and thermostats, should be installed between **400mm (16in.)** and **1.2m (4ft.)** from the finished floor or ground. Where sufficient clear space is provided for a side approach, the operable components may be installed as high as **1.37m (4ft.6in.)** (refer to **Section 1.3.1 – Space and Reach Requirements**).

Accessible Controls and Mechanisms



- b) A clear floor space, at least **1.37m (4ft.6in.)** wide and **760mm (30in.)** deep, should be provided in front of all controls and operating mechanisms.
- c) Where applicable, controls and operating mechanisms should possess both a **visual** and **audible indication** (see also **Section 3.2.3 – Elevators**).
- d) Flush mounted buttons or touch pads and screens without Braille present difficulty for individuals with vision impairments and should be **avoided** or accompanied by an **accessible alternative**.
- e) Faucets and other such mechanisms should be **operable with one hand** or be **electronically controlled**.
- f) Hand operated controls and mechanisms should require a maximum force of **22N** and avoid the need for tight grasping, pinching or twisting of the wrist.

4.4 DETECTABLE WARNING SURFACES

Detectable warning surfaces provide important cues for individuals with vision impairments, particularly those using canes or guide dogs. A change in surface texture can indicate potential hazards, such as a curb edge or stairs, as well as provide direction for navigation throughout a site.

LOCATION

Detectable warning surfaces should be provided throughout a site and facility, particularly along barrier-free routes and where changes in level or direction occur.

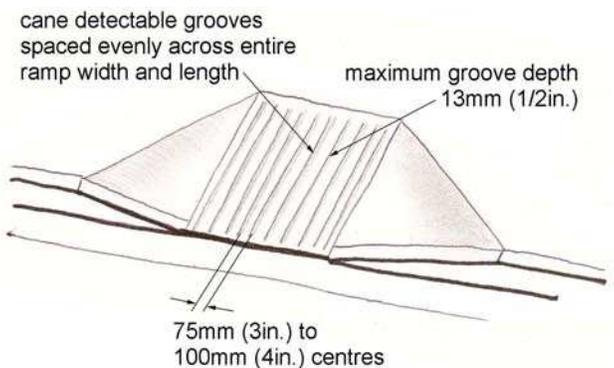
CRITERIA

- Detectable warning surfaces should be **colour, tone** and/or **texture contrasted**.
- All textured surfaces used as detectable warning surfaces should be **cane detectable** and **clearly differentiated** from the surrounding ground or floor surfaces.
- Interior detectable warning surfaces should differ from adjoining surfaces in **resiliency** or **sound** upon cane contact.
- Detectable warning surfaces positioned to indicate edges, projections, traffic crossings or other potentially hazardous situations should be at least

915mm (36in.) in width (see also **Sections 2.2.3 – Sidewalk Surface Treatments, 2.4.3 – Steps and Stairs** and **2.2.1 – Accessible Routes**).

- Grooves, channels, thresholds or other changes in level found within a detectable warning surface should have a maximum depth or height of **13mm (1/2in.)**.
- Dot-type blocks** should be used to provide a warning signal to screen-off obstacles, drop-offs or other hazards. Dots should consist of truncated domes with a diameter of **±23mm (1in.)**, a height of **±5mm (1/4in.)** and centre-to-centre spacing of **±60mm (2in.)**.
- Line-type blocks** should be used to indicate the correct direction of travel. Exterior lines-type blocks should consist of parallel grooves or incisions with centre-to-centre spacing of **75mm (3in.)** to **100mm (4in.)** and a maximum depth of **13mm (1/2in.)**.

Line-type Cane Detectable Warning Surface



- h) Detectable warning surfaces should be used **simply, logically** and **consistently** throughout the site so individuals can easily predict and interpret the route layout. A lack of standardization or too many surface changes may cause confusion and weaken the usefulness of the tactile signal.

- i) Whenever possible, the contrasting material or treatment used to create a detectable warning surface should be **integrated** into the overall design/décor of the site or facility.

4.5 CARD ACCESS, SAFETY AND SECURITY SYSTEMS

All systems and components installed for access, safety and security should be appropriate for use by disabled persons, including individuals with reduced manual dexterity and impaired vision.

LOCATION

Card access, safety and security systems should be installed in prominent and accessible locations, such as at the main entrance or other barrier-free entrance to a facility.

CRITERIA

- a) All card access or encoded entry/exit systems, such as keypads, should be mounted no higher than **1.06m** (3ft.5in.) above the finished floor, with an adjacent clear floor space at least **760mm** (30in.) wide and **1.37m** (4ft.6in.) long.
- b) Entry or exit card or keypad systems should be positioned **on the latch side** of the door at a height of **920mm** (36in.), **clear** of the door swing or other operating components of the entry point.
- c) Card access mechanisms should be operable with **one hand**, and should not require tight grasping, pinching or twisting of the wrist.
- d) Operable components of safety or security systems should incorporate **raised** buttons, numerals, symbols and letters, mounted in a **constant array** on a clearly **differentiated background**.
- e) To accommodate a disabled person requiring assistance a **signalling mechanism** such as a bell, buzzer or similar device, or a **two-way intercom system**, should be provided at the primary accessible entrance and in any covered accessible parking area.
- f) Where individual accessible restrooms are provided an **emergency call system** linked to a central location (main office or switchboard) should be installed (refer to **Section 3.3.4 – Restrooms**).
- g) Elevators and platform lifts should incorporate **emergency calling devices**, including a **push button alarm** for individuals unable to speak (refer to **Sections 3.2.2 – Ramps and Lifts** and **3.2.3 – Elevators**).

4.6 GLARE AND LIGHT SOURCES

Direct or reflected glare off floors, walls or work surfaces presents a significant problem for individuals with vision impairments. Non-reflective materials and finishes, as well as mechanisms to control natural daylight should be integrated throughout a facility.

LOCATION

Glare and light sources potentially impact all areas within a site or facility.

CRITERIA

- a) **Curtains, blinds or other sun screening systems** should be installed at windows and other areas of direct sunlight to minimize and control the level of light and reflective glare.
- b) Materials and finishes on **horizontal surfaces**, such as floors, counters or work surfaces, as well as **vertical surfaces**, such as walls or columns, should be **matte** or **satin** to minimize reflective glare.
- c) Extensive high gloss surfaces are **not acceptable**. High gloss materials and finishes may be incorporated into horizontal and vertical surface details provided they do not result in large reflective surfaces.
- d) Light fixtures should be installed with **diffusers** or **lenses** or be **recessed** so they do not produce glare.
- e) To minimize potential glare, **valance-type lighting** or other means of **indirect lighting** should be used whenever possible. Vertical, backlit panels used as indirect lighting sources may cause glare and are **not recommended**.
- f) Where surface mounted fluorescent fixtures are used, they should have **darkened sides** (no wrap around lenses) and be positioned **perpendicular** to the dominant direction of travel.
- g) Lighting for key features and direction orienting elements should have **upward** and **downward components only**.
- h) Changes in lighting level should not exceed a range of **100 lux** to **300 lux** (10-30 ft. candles) from one space to the next.
- i) See also **Section 4.7 – Lighting**.

4.7 LIGHTING

Both lighting quality and quantity are important to accessibility, particularly for individuals with vision impairments. To improve access and safety, artificial lighting and natural light sources should provide acceptable, evenly measured light throughout a site or facility.

LOCATION

Ample lighting should be installed throughout a site, particularly at entrances, in work and meeting areas and areas of potential hazard, such as stairs or doorways.

CRITERIA

- a) All lighting should be **evenly distributed** to minimize pools of light and cast shadows. Shields, recesses or other features should be used to focus light and minimize reflective glare.
- b) Changes in lighting level should not exceed a range of **100 lux to 300 lux** (10-30 ft. candles) from one space to the next.
- c) Light sources should provide the **fullest spectrum** possible to aid in edge and colour definition.
- d) **Supplementary lighting** should be provided to highlight key signage and orientating landmarks.

EXTERIOR LIGHTING

- e) All exterior lighting at public thoroughfares and pedestrian routes should comply with Illuminating Engineering Society of North America (**I.E.S.N.A.**) **Standards**, to provide safe access for persons with disabilities from sidewalks, transit stops and parking facilities to nearby facilities and amenities.

INTERIOR LIGHTING

- f) Interior light sources and fixtures should be selected and positioned to **minimize direct or indirect glare** on nearby reflective surfaces.

Where fluorescent or quartz light sources with a high blue content are used, the warm end of the spectrum should be supplemented with the inclusion of **incandescent lighting**.

To minimize tripping hazards, lighting at steps, stairs, escalators and ramps should be positioned to **clearly define** leading edges.

Lighting levels for interior accessible routes should be at least **100 lux** (10 ft. candles).

All work areas should be illuminated at **200 lux** (20 ft. candles) or greater and **5%** of work stations should include lighting capable of being adjusted to **500 to 700 lux** (70 ft. candles).

Lighting levels in elevator lobbies should be **similar to the elevator interior** and measure at least **200 lux** (20 ft. candles).

Emergency lighting over stairs or ramps, at an exit or along an accessible path of travel should be at least **100 lux** (10 ft. candles) measured at the floor.

Lighting for orientating features, over directional or informational signage, at public telephones, information or service counters and card access or keypad security systems should be at least **200 lux** (20 ft. candles) measured at the working surface.

Lighting in meeting and assembly areas should be **evenly distributed** and **capable of adjustment** (through the use of dimmers or other light control mechanisms).

Lighting at lecterns, podiums, platforms or other speaking locations should be **capable of being enhanced** even when other lights are dimmed, to assist individuals with hearing impairments read lips or view the hand actions of a signer.

4.8 MATERIALS AND FINISHES

Materials and finishes used throughout a site or facility are critical to the safety and ease of movement for persons with disabilities, especially individuals using wheelchairs or scooters and those who are vision impaired. Materials or finishes may also contribute to noise and echo, which impacts individuals with hearing disabilities.

LOCATION

Materials and finishes are located throughout a site. Particular attention should be given to those along and within accessible areas.

CRITERIA

- a) **Stable, firm, slip-resistant** materials and finishes should be used wherever possible (refer to **CAN/CSA B651-04** Annex D, “Potential for Slip of Floor and Tread Finishes”).
- b) Materials and finishes on **horizontal surfaces**, such as floors, counters or work surfaces, as well as **vertical surfaces**, such as walls or columns, should be **matte** or **satin** to minimize reflective glare.
- c) Surface should be glare-free, extensive high gloss surfaces are **not acceptable**. High gloss materials and finishes may be incorporated into horizontal and vertical surface details provided they do not result in large reflective surfaces.
- d) Walls and other vertical surfaces adjacent to barrier-free routes and areas should be **non-abrasive**.
- e) Highly patterned floors should be avoided as they can create visual confusion. The use of directional wayfinding within the surface is encouraged.
- f) Ground and floor surface materials and transitions between such surface materials should contain variations in level no greater than **13mm** (1/2in.) and joints no greater than **6mm** (1/4in.) wide.

EXTERIOR MATERIALS AND FINISHES

- g) Recommended paving surfaces for accessible exterior routes include concrete, asphalt, brick or decking laid perpendicular to the path of travel. **Concrete with a level, brushed surface** is most preferred.

Paving stones or interlocking pavers should be **avoided** for main walking and wheeling surfaces unless installed to **minimize** the effects of settlement and frost heave, such as over a structural slab.

Wherever possible, gratings and grills must be located **clear** of a barrier-free route. Where grates and grills are present, the bars should be positioned **perpendicular to the main path of travel** and contain openings no greater than **13mm (1/2in.)** in width.

Exterior surface materials should be **well-drained** and installed to minimize water and ice accumulation.

See also **Section 2. Exterior Design Standards** (e.g. **Section 2.2.1 – Accessible Routes**) for additional exterior surface requirements.

INTERIOR MATERIALS AND FINISHES

- h) Where carpet is installed it should be a **low-level loop** construction, **10- or 12-gauge non-static fibre** and **glued directly to the subfloor**.

Where hard, monolithic materials are used, such as stone, granite, marble or terrazzo, the surface should be **non-slip, non-glare** and **minimize echo**.

Wall finishes such as paint, vinyl coverings, stone, marble, wood, metals, plastic laminate etc. should be **non-glare** and **non-abrasive**.

Interior floor areas near sources of water, such as pools, shower rooms and restrooms, should be **well-drained**.

See also **Section 3. – Interior Design Standards** for additional interior surface requirements.

4.9 ACOUSTICS

Proper acoustics are most important to individuals who are hearing and vision impaired. The acoustic surroundings of common buildings or spaces should accommodate a hearing or vision disabled person's need to separate essential sounds from general background noise.

LOCATION

Similar to lighting, acoustics relate to the entirety of a facility or site.

CRITERIA

- a) Floor finishes, wall surfaces and ceiling treatments should be selected so as **not to unduly amplify occasional noise**.
- b) While minimizing amplification to assist individuals with hearing disabilities, surface treatments may include **audible differentiation** to serve as a cue for changes in location and way finding for people who are vision impaired.
- c) In large facilities where way finding may be problematic for persons with vision disabilities, primary and secondary paths of travel should possess **differentiated sound transmission or reflection characteristics**.
- d) Ceiling design should **minimize echo**.
- e) Public address and call systems should be capable of **focusing in key areas**, rather than blanketing the whole facility at all times.
- f) In meeting rooms and assembly areas where audio communication is the primary mode, all **unnecessary background noise** (mechanical equipment, air diffusers, fans etc.) should be **dampened** and/or the room should be equipped with sufficient **sound insulation**.
- g) Meeting rooms and assembly areas should have the necessary wiring installed for devices that assist persons with hearing disabilities.
- h) Public or common spaces, such as library reading rooms or cafeterias, should provide **noise reduced sections** to assist communication among persons with hearing disabilities.

APPENDICES

5

5.1 UNIVERSAL DESIGN PRINCIPLES

The Principles

The authors, a working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following Principles of Universal Design to guide a wide range of design disciplines including environments, products, and communications. These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments.

How The Principles Are Formatted:

1. **Name of the principle** (a concise statement of the key concept embodied in the principle).
2. **Definition of the principle** (brief description of the principle's primary directive for design).
3. **Guidelines** (list of the key elements that should be present in a design which adheres to the principle).
4. **Images** (photographic samples of the principles applied).

Universal Design:

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

Principle One: Equitable Use

The design is useful and marketable to people with diverse abilities.

Guidelines:

- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- Avoid segregating or stigmatizing any users.
- Provisions for privacy, security, and safety should be equally available to all users.
- Make the design appealing to all users.



Principle Two: Flexibility In Use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

- Provide choice in methods of use.
- Accommodate right-or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

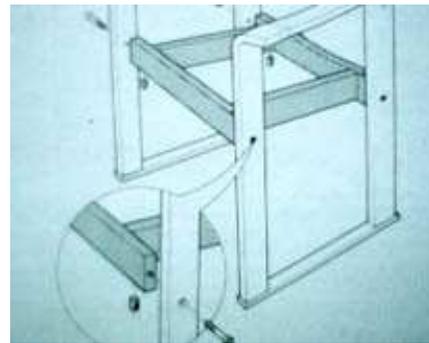


Principle Three: Simple and Intuitive

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.



Principle Four: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximize "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).



- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Principle Five: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

- Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.



Principle Six: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimize repetitive actions.
- Minimize sustained physical effort.



Principle Seven: Size and Space for Approach and Use

- Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.



5.2 DEFINITIONS

Access Aisle

An accessible pedestrian space between elements, such as parking spaces, seating, and desks, that provides clearances appropriate for use of the elements.

Accessible (Barrier-free)

Describes a site, building, facility, or portion thereof that complies with these guidelines.

Accessible Element

An element specified by these guidelines (for example, telephone, controls, and the like).

Accessible Route

A continuous unobstructed path connecting all accessible elements and spaces of a building or facility. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior accessible routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps, and lifts.

Accessible Space

Space that complies with the accessibility guidelines.

Adaptability

The ability of certain building spaces and elements, such as kitchen counters, sinks, and grab bars, to be added or altered so as to accommodate the needs of individuals with or without disabilities or to accommodate the needs of persons with different types or degrees of disability.

Addition

An expansion, extension, or increase in the gross floor area of a building or facility.

Administrative Authority

A governmental agency that adopts or enforces regulations and guidelines for the design, construction, or alteration of buildings and facilities.

Alteration

An alteration is a change to a building or facility that affects or could affect the usability of the building or facility or part thereof. Alterations include, but are not limited to, remodelling, renovation, rehabilitation, reconstruction, historic restoration, resurfacing of circulation paths or vehicular ways, changes or rearrangement of the structural parts or elements, and changes or rearrangement in the plan configuration of walls and full-height partitions. Normal maintenance, re-roofing, painting or wallpapering, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility.

Area of Rescue Assistance

An area, which has direct access to an exit, where people who are unable to use stairs may remain temporarily in safety to await further instructions or assistance during emergency evacuation.

Assembly Area

A room or space accommodating a group of individuals for recreational, educational, political, social, civic, or amusement purposes, or for the consumption of food and drink.

Automatic Door

A door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat, or manual switch (see power-assisted door).

Boarding Pier

A portion of a pier where a boat is temporarily secured for the purpose of embarking or disembarking.

Boat Launch Ramp

A sloped surface designed for launching and retrieving trailered boats and other water craft to and from a body of water.

Boat Slip

That portion of a pier, main pier, finger pier, or float where a boat is moored for the purpose of berthing, embarking, or disembarking.

Building

Any structure used and intended for supporting or sheltering any use or occupancy.

Circulation Path

An exterior or interior way of passage from one place to another for pedestrians, including, but not limited to, walks, hallways, courtyards, stairways, and stair landings.

Clear

Unobstructed.

Clear Floor Space

The minimum unobstructed floor or ground space required to accommodate a single, stationary wheelchair and occupant.

Closed Circuit Telephone

A telephone with dedicated line(s) such as a house phone, courtesy phone or phone that must be used to gain entrance to a facility.

Common Use

Refers to those interior and exterior rooms, spaces, or elements that are made available for the use of a restricted group of people (for example, occupants of a homeless shelter, the occupants of an office building, or the guests of such occupants).

Cross Slope

The slope that is perpendicular to the direction of travel (see running slope).

Curb Ramp

A short ramp cutting through a curb or built up to it.

Detectable Warning

A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired people of hazards on a circulation path.

Dwelling Unit

A single unit which provides a kitchen or food preparation area, in addition to rooms and spaces for living, bathing, sleeping, and the like. Dwelling units include a single family home or a townhouse used as a transient group home; an apartment building used as a shelter; guestrooms in a hotel that provide sleeping accommodations and food preparation areas; and other similar facilities used on a transient basis. For the purposes of these guidelines, use of the term "Dwelling Unit" does not imply the unit is used as a residence.

Egress, Means of

A continuous and unobstructed way of exit travel from any point in a building or facility to a public way. A means of egress comprises vertical and horizontal travel and may include intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, horizontal exits, courts and yards. An accessible means of egress is one that complies with these guidelines and does not include stairs, steps, or escalators. Areas of rescue assistance or evacuation elevators may be included as part of accessible means of egress.

Element

An architectural or mechanical component of a building, facility, space, or site, e.g., telephone, curb ramp, door, drinking fountain, seating, or water closet.

Elevated Play Component

A play component that is approached above or below grade and that is part of a composite play structure consisting of two or more play components attached or functionally linked to create an integrated unit providing more than one play activity.

Entrance

Any access point to a building or portion of a building or facility used for the purpose of entering. An entrance includes the approach walk, the vertical access leading to the entrance platform, the entrance platform itself, vestibules if provided, the entry door(s) or gate(s), and the hardware of the entry door(s) or gate(s).

Facility

All or any portion of buildings, structures, site improvements, complexes, equipment, roads, walks, passageways, parking lots, or other real or personal property located on a site.

Gangway

A variable-sloped pedestrian walkway that links a fixed structure or land with a floating structure. Gangways which connect to vessels are not included.

Ground Floor

Any occupiable floor less than one story above or below grade with direct access to grade. A building or facility always has at least one ground floor and may have more than one ground floor as where a split level entrance has been provided or where a building is built into a hillside.

Ground Level Play Component

A play component that is approached and exited at the ground level.

Mezzanine or Mezzanine Floor

That portion of a story which is an intermediate floor level placed within the story and having occupiable space above and below its floor.

Marked Crossing

A crosswalk or other identified path intended for pedestrian use in crossing a vehicular way.

Multifamily Dwelling

Any building containing more than two dwelling units.

Occupiable

A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes, or in which occupants are engaged at labour, and which is equipped with means of egress, light, and ventilation.

Operable Part

A part of a piece of equipment or appliance used to insert or withdraw objects, or to activate, deactivate, or adjust the equipment or appliance (for example, coin slot, pushbutton, handle).

Play Area

A portion of a site containing play components designed and constructed for children.

Play Component

An element intended to generate specific opportunities for play, socialization, or learning. Play components may be manufactured or natural, and may be stand alone or part of a composite play structure.

Power-Assisted Door

A door used for human passage with a mechanism that helps to open the door, or relieves the opening resistance of a door, upon the activation of a switch or a continued force applied to the door itself.

Ramp

A walking surface which has a running slope greater than 1:20.

Running Slope

The slope that is parallel to the direction of travel (see cross slope).

Service Entrance

An entrance intended primarily for delivery of goods or services.

Signage

Displayed verbal, symbolic, tactile, and pictorial information.

Site

A parcel of land bounded by a property line or a designated portion of a public right-of-way.

Site Improvement

Landscaping, paving for pedestrian and vehicular ways, outdoor lighting, recreational facilities, and the like, added to a site.

Space

A definable area, e.g., room, toilet room, hall, assembly area, entrance, storage room, alcove, courtyard, or lobby.

Storey

That portion of a building included between the upper surface of a floor and upper surface of the floor or roof next above. If such portion of a building does not include occupiable space, it is not considered a storey for purposes of these guidelines. There may be more than one floor level within a storey as in the case of a mezzanine or mezzanines.

Structural Frame

The structural frame shall be considered to be the columns and the girders, beams, trusses and spandrels having direct connections to the columns and all other members which are essential to the stability of the building as a whole.

TDD (Telecommunication Devices for the Deaf)

See text telephone.

TTY (Tele-Typewriter)

See text telephone.

Tactile

Describes an object that can be perceived using the sense of touch.

Text Telephone (TTY)

Machinery or equipment that employs interactive text based communications through the transmission of coded signals across the standard telephone network. Text telephones can include, for example, devices known as TDDs (telecommunication display devices or telecommunication devices for deaf persons) or computers with special modems. Text telephones are also called TTYs, an abbreviation for Tele-typewriter.

Transfer Device

Equipment designed to facilitate the transfer of a person from a wheelchair or other mobility device to and from an amusement ride seat.

Vehicular Way

A route intended for vehicular traffic, such as a street, driveway, or parking lot.

Walk

An exterior pathway with a prepared surface intended for pedestrian use, including general pedestrian areas such as plazas and courts.

Taken from: ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)

5.3 BIBLIOGRAPHY AND WEB RESOURCES

This broad list summarizes the sources used or considered when creating the design criteria presented in this document.

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