Accessibility design guide 2024

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Alberta

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Acknowledgments

We wish to acknowledge the following Safety Codes Accessibility Sub-Council members who contributed to the content and design of the Accessibility (Barrier-Free) Design Guide.

Alberta Health Services (AHS)	Public at Large Member
Alberta Professional Planners Institute (APPI)	University of Calgary School of Architecture
Multiple Sclerosis Society	Alberta Association of Architects (AAA)
Building Owners and Managers Association (BOMA)	Alberta Building Officials Association (ABOA)
The Canadian Hard of Hearing Association	Canadian National Institute for the Blind (CNIB)
Alberta Seniors Communities and Housing Association (ASCHA)	Spinal Cord Injury Alberta (SCA)
Building Industry Land Development Association (BILD)	Alberta Residential Landlord Association (ARLA)

Preface

The Accessibility Design Guide 2024 6th Edition was previously published by the Safety Codes Council under the name The Barrier Free Design Guide. The term “barrier free” was updated to “accessibility” to reflect the more appropriate terminology that is used in the National Building Code – 2023 Alberta Edition (NBC(AE)).

The Codes for accessibility design requirements exist to allow for the proper and safe access and use of the built environment. Designers and builders must show the compliance with the NBC(AE) in their design prior construction. This helps avoid costly re-work and errors. The Codes for accessible design exist to regulate a proper and safe outcome for people of all ages and abilities.

Section 3.8. Accessibility in the NBC(AE) sets forth the technical requirements for accessibility in design. Section 3.8. and other applicable Codes also apply to all new construction, additions to existing buildings, changes to existing buildings or changes in use. The current requirements in the NBC(AE) are not applied retroactively to existing buildings.

This resource was developed to assist designers, builders and other NBC(AE) users to meet and possibly exceed – within reason - the current minimum accessibility design standards and practices.

The purpose of this resource is to explain the intents and objectives of each section, as well as recommend best practices where accessibility and safety are concerns to seniors and persons with disabilities.

This Guide provides:

- National Building Code – 2023 Alberta Edition requirements.
- New and updated Articles are identified as [New] or [Updated].
- The interpretation, intent and objectives of Articles, Sentences, Clauses, and Sub-Clauses.
- Recommendations for Best Practices.
- Illustrations included as examples only for the requirements for accessible design.
- Requirements for Adaptable Dwelling Units in housing projects supported by Government funding in whole or part thereof.
- Recommendations for accessible or universally designed private dwelling residences.
- Design considerations for accessible built environments for bariatrics, outdoor environments, playgrounds, communication & cognition, assistive listening systems and the hotel/hospitality industry.

Accessibility requirements are for owners, employees, and the public. Disability may be a permanent condition, but may also be a temporary situation due to a incident such as a car accident, sports injury, eye surgery, a fall due to icy conditions, or other events. Also, it is worthwhile to consider more and more individuals are choosing or prefer to age-in-place.

Designers should keep all disability types in mind, as people with various disabilities may be users of all the facilities, buildings, and spaces. A concerted effort should be made to eliminate or minimize as many barriers as possible. The rapidly increasing number of seniors and people with varying disabilities require equal opportunity to access services they have always frequented such as, restaurants, salons, financial institutions, theatres, and more.

Note: A design or solution that may minimize or eliminate an obstacle for one disability group may become an obstacle for another disability group. For instance, curb ramps designed to 1 in 20 at street corners are great for users of wheelchairs but may be hazardous for the visually impaired who may not be able to detect the change in grade signaling a change.

Designated historical sites

Designated historical sites may be exempt from meeting accessibility requirements. An application for the inclusion of accessibility in a building designated under the Historical Resources Act must be submitted to the Minister of Culture.

> 51(1) The Minister may make regulations exempting Registered Historic Sites or Provincial Historic Sites from the application of any provision contained in any building code that would otherwise be applicable pursuant to any Act, regulation or municipal bylaw when the enforcement of that provision would prevent or seriously hinder the preservation, restoration or use of all or any portion of the site or monument.
>
> (2) A regulation under subsection (1) may be general or particular in application.

The evaluation process involves consultation with the stakeholder group, evaluation of access requirements; identification of the unique character of the site; and development of options to meet the intent of the Code and arrive at a solution that will work within the historical and economic scope of the project. For further information refer to: *Standards and Guidelines for the Conservation of Historic Places in Canada*.

Relaxation of accessibility requirement

The Barrier-Free Policy Administrator will review applications for relaxation of accessibility requirements. The burden rests with the applicant to prove that the request for relaxation of requirements should be granted by demonstrating that:

a. the specific requirements are unnecessary, or
b. extraordinary circumstances prevent conformance.

The Government of Alberta requires reasonable access to facilities for seniors and people with disabilities so that the same opportunities exist for everyone to be active, independent, and safe within their chosen communities. This includes:

- Safe paths of travel to, within, and through buildings and facilities that include but are not limited to doorways, ramps, elevators, and pedestrian pathways such as hallways and emergency exits.
- Access to rooms or suites within facilities, including but not limited to office areas, conference facilities, dining establishments, washrooms and recreational areas, such as swimming pools, ice rinks, theatres, etc.
- Safe paths of travel between facilities and public streets, pathways, sidewalks, parking areas, passenger loading and unloading zones, and bus stops.
- Hotel/lodging including but not limited to accommodations, restaurants, washrooms, reservation counter and conference rooms.
- Outdoor spaces including but not limited to playgrounds, picnic areas and walking trails.

The NBC(AE) takes precedence over any other codes, standards, guidelines and bylaws.

Municipal Affairs would like to hear from you. Please let us know if you find this resource helpful.

Your feedback and suggestions can be sent to:

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Alberta Municipal Affairs – Barrier-Free Policy Administrator
Toll Free: 1–866–421–6929
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The Accessibility Design Guide has been updated by Alberta Municipal Affairs with the assistance of the Safety Codes Council, the Barrier-Free Sub-Council and its stakeholders. This Guide is developed to assist designers, builders and other National Building Code - Alberta Edition users to meet and possibly exceed – within reason - the current minimum accessibility design standards and practices.

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NRC

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Markham

With permission from the City of Markham, the inclusion of their Guidelines and Standards for outdoor spaces in this edition of the Accessibility Design Guide.

VAD (Voice of Albertans with Disabilities)

With permission from the VAD, the inclusion of their best practice templates for accessible hotel rooms and bathrooms in this edition of the Accessibility Design Guide.

Contents

1.0 Scope section

1.0 Scope section

Accessibility requirements are contained in Section 3.8 Accessibility of the National Building Code 2023 Alberta Edition (NBC(AE)). The following information identifies the requirements in Section 3.8.1 Scope of the NBC(AE), the interpretation of these requirements, and best practices that can be followed. See Note A-3.8 in the NBC(AE) for more information on accessibility requirements.

3.8.1. Scope

3.8.1.1. Scope

1. This Section is concerned with the barrier-free design of buildings.
2. Buildings and facilities required to be barrier-free in accordance with Subsection 3.8.2. shall be designed in accordance with Subsection 3.8.3.
3. Residential projects of 10 or more dwelling units funded in whole or in part by the Government of Alberta are required to provide adaptable dwelling units which could be made to meet barrier-free design principles and shall be:
   a. provided as 1 per 10 dwelling units, based on the total number of dwelling units in a project, and
   b. designed in accordance with Subsection 3.8.4.
4. In addition to the requirements of Sentence (2), physician clinics and offices shall conform to Subsection 3.8.5.

INTERPRETATION

Accessibility design requirements apply to all buildings – new, additions/extensions, renovations/retrofits - including exterior property that is a part of the building site, i.e., common outdoor areas, parking areas and walkways.

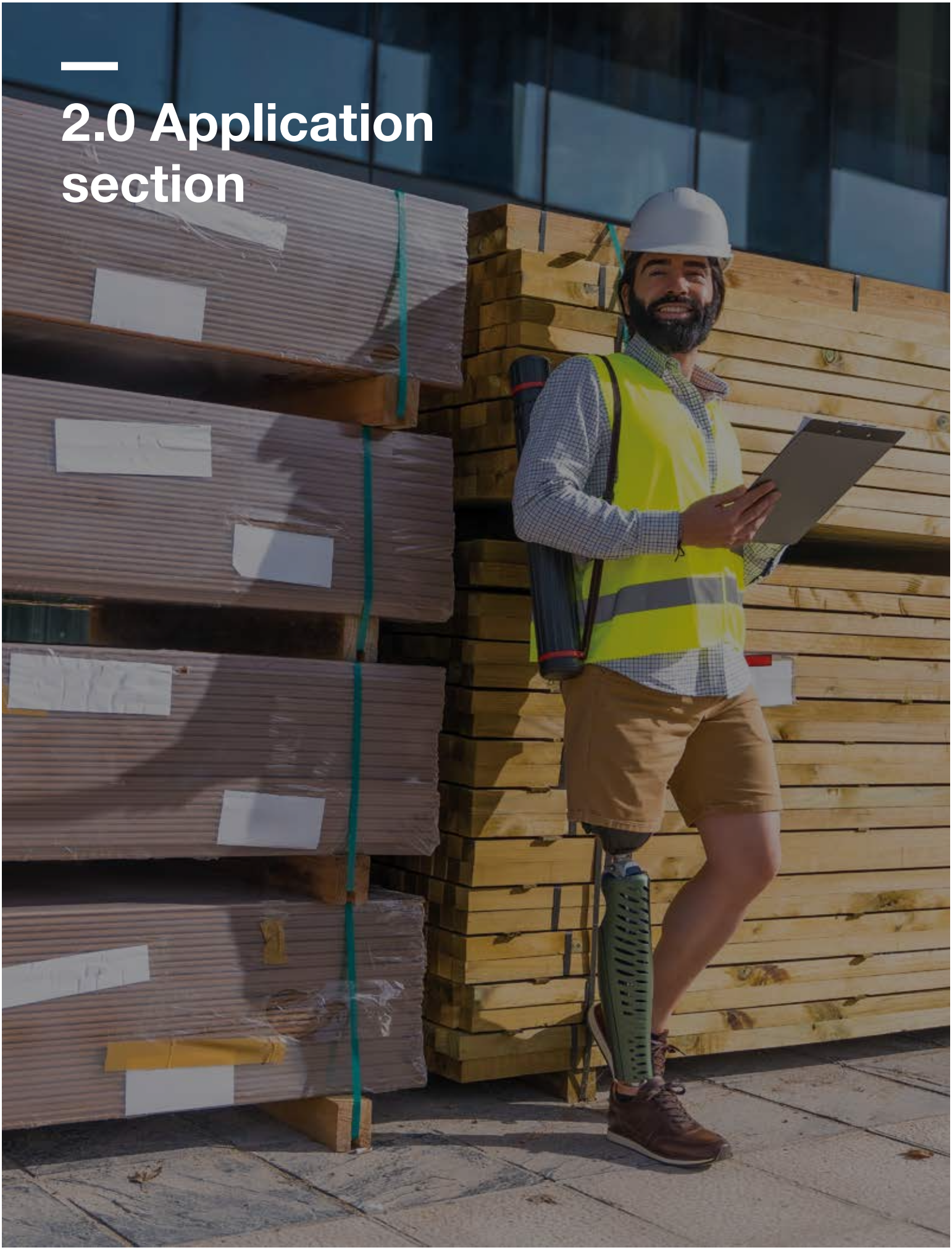
The objective of government funded projects in whole or in part is to ensure that accessible and affordable living options are created and available for people with disabilities.

Note: Accessibility design is also required to be applied to common areas for a barrier-free path of travel including but not limited to zero entry thresholds, power-operated doors, wider hallways, lobby/foyer, conference/meeting rooms, rooftop patios/decks in all buildings and facilities including residential high-rise buildings (condominiums and apartments), and hotels.

BEST PRACTICE

Even though the objective of government funded projects in part or whole is to ensure that accessible and affordable living options are created and available for people with disabilities. This should also apply to non-government funded residential development.

2.0 Application section



2.0 Application section

The following information identifies the requirements in Section 3.8.2 Application of the NBC(AE), the interpretation of these requirements, and best practices that can be followed. See Note A-3.8.2.1 in the NBC(AE) for more information on the application of accessibility requirements.

3.8.2. Application

3.8.2.1. Exceptions

(See Note A-3.8.2.1.)

1. The requirements of this Section apply to all *buildings* except
   a. **[Updated]** detached houses, semi-detached houses, houses with a *secondary suite*, duplexes, triplexes, townhouses, row houses and boarding houses that are not used in social programs (see Note A-1.4.1.2.(1) of Division A, Secondary Suite),
   b. buildings of Group F, Division 1 *major occupancy*,
   c. **[Updated]** *buildings* that are not intended to be occupied on a daily or full-time basis, including automatic telephone exchanges, pumphouses and substations, and
   d. relocatable industrial accommodations.

INTERPRETATION

Accessibility design requirements for people with disabilities and seniors apply to all buildings including the common areas such as entrances and exits ramps, power-door operators, foyers, common laundry areas, underground parking of high-rise dwellings and hotels with the following additional exceptions:

- Relocatable or modular accommodations located on industrial worksites that relate to the operation of that business, such as lunch trailers, sleeping accommodations, offices, storage, and washrooms that require employees to be physically able to perform duties reliably and safely,
- Fire & Emergency Medical Services (EMS) dormitories, including washrooms and showers,
- Industrial buildings used for heavy equipment maintenance and/or storage,
- Workers' facilities or camps located on industrial sites such as drilling, forestry or mining sites,
- Waste Management Facilities,
- Abattoirs,
- Recycling Centres – operations/sorting areas,

- Food/beverage service kiosks,
- Limited-use, limited-access washroom facilities, such as in transit turnarounds, and
- Temporary structures where barrier-free design requirements are demonstrated to be unnecessary to the Authority Having Jurisdiction (AHJ) or Safety Codes Officer (SCO).

3.8.2.2. Entrances

(See Note A-3.8.2.2.)

2. **[Updated]** Except for service entrances and entrances to *suites* described in Clause 3.8.2.3.(2)(l), all pedestrian entrances to a *barrier-free storey* of a *building* referred to in Sentence 3.8.2.1.(1) shall be *barrier-free* and shall connect to a *barrier-free* exterior path of travel complying with Sentence 3.8.2.5.(1).
3. A *barrier-free* entrance required by Sentence (1) shall be designed in accordance with Subsection 3.8.3.
4. At a *barrier-free* entrance that includes more than one doorway, only one of the doorways is required to be designed in accordance with Subsection 3.8.3.
5. If a *walkway* or pedestrian bridge connects two *barrier-free storeys* in different buildings, the path of travel from one *storey* to the other *storey* by means of the *walkway* or bridge shall be *barrier-free*.

INTERPRETATION

Entrances from the exterior, storage garage (parkade), sky bridges and so on shall provide level access to the building.

If there is a series of doors, at least one (1) of the doors or set of doors needs to be part of a barrier-free path of travel.

If there is a vestibule, both doors shall be powered.

Some buildings are divided into areas that are not interconnected on the inside. Individual barrier-free entrances must then be provided to these facilities from the outside. For example, a strip mall can have a number of shops, offices or restaurants that are only accessible from the outside. The entrances to all these facilities must be barrier-free in order to minimize or eliminate obstacles that would require assistance to accessing necessary services, social or recreational opportunities.

Note: Clear and sufficient signage is required to indicate the way to, and location of, all doors designated for use by people with physical disabilities or mobility issues.

3.8.2.3. Areas requiring a barrier-free path of travel

(See Note A-3.8.2.3.)

1. Except as permitted by Sentence (2), a *barrier-free* path of travel from the entrances required by Sentence 3.8.2.2.(1) to be *barrier-free* shall be provided throughout the entrance *storey* and within all other normally occupied floor areas. (See Article 3.3.1.7. for additional requirements regarding *floor areas* above or below the *first storey* to which a *barrier-free* path of travel is required.)

INTERPRETATION

A barrier-free path of travel is free of obstacles, including busy surface patterns that may create sensory overload, confusion and disorientation for people with low vision, dementia or intellectual disability, allowing for the unhindered movement for people with physical, hearing, developmental and sensory limitations.

A barrier-free path of travel is required to all areas where the public, in general, can be expected to travel to or within. This includes but is not limited to offices, outdoor patios, balconies, sports arenas/stadiums, pools and pool areas, conference/meeting rooms, community centres or halls, theatres, educational institutions, assisted living/care facilities, hotels/motels, classrooms, and shopping centres.

Note 1: A barrier-free path of travel is also required for floors not originally designated as residential or commercial space. For example, this applies to levels or floors originally designated for mechanical purposes—such as a basement, parkade, or rooftop—that are being converted or reclassified into spaces like a restaurant, office, or living area.

Note 2: This Sentence also applies to dwelling units or residential buildings that have a common corridor to multiple private dwelling units such as an apartment or condominium complex that do or do NOT receive government funding.

2. A *barrier-free* path of travel for persons using wheelchairs is not required
   a. to *service* rooms,
   b. to elevator machine rooms,
   c. to janitors' rooms,
   d. to *service* spaces,
   e. to crawl spaces,
   f. to *attic or roof* spaces,

BEST PRACTICE

All entrances and egress, including the primary entrance and all emergency exits of the building, shall be designed to be barrier-free for the reasons of ease of access and safety. This provides safe egress routes in case of an emergency. The requirements for an acceptable barrier-free doorway are found in Article 3.8.3.6. Should there be a ramp that leads to or from the accessible entrance or exit, the requirements are to be found in Article 3.8.3.5.

Buildings with shops, restaurants and other businesses that are not interconnected require wider walkways to accommodate doors that swing outward. Wheel stops should be provided to prevent vehicles from overlapping the walkway.

g. **[Updated]** to the floor level above or below the entrance level in *buildings* no more than 2 *storeys* in *building height* or in *2-storey suites*, unless the floor level above or below (see Note A-3.8.2.3.(2)(g))

   i. is served by a passenger elevator, a platform-equipped passenger-elevating device, an escalator or an inclined moving walk,

   ii. is 600 m2 or more in *floor area*,

   iii. **[New]** contains facilities that are not contained on the entrance level, but that are integral to the principal function of the entrance level,

   iv. contains an *assembly occupancy* more than 100 m2 in *floor area*, or

   v. contains a physician clinic or office within the scope of Subsection 3.8.5.,

h. within a parking level with no *barrier-free* parking spaces,

i. within *high-hazard industrial occupancies*,

j. within portions of a *floor area* with fixed seats in an *assembly occupancy* where those portions are not part of the *barrier-free* path of travel to spaces designated for use by persons using wheelchairs ,

k. within floor levels of a *suite of residential occupancy* that are not at the same level as the entry level to the *suite*, or

l. within a *suite* of *residential occupancy* that has not been required by other provisions of this Code to be *barrier-free*.

3. **[New]** In an *assembly occupancy*, the number of spaces designated for wheelchair use within rooms or areas with fixed seats shall conform to Table 3.8.2.3. (See also Article 3.8.3.22. for additional requirements.)

4. **[New]** The number of spaces designated for wheelchair use within waiting rooms or areas with fixed seats shall conform to Table 3.8.2.3. (See Note A-3.8.2.3.(4).) (See also Article 3.8.3.22. for additional requirements.)

5. **[New]** Except as provided in Sentence (6), in an *assembly occupancy* with more than 25 fixed seats, each row of seats served by two aisles shall have one adaptable seat conforming to Subsection 3.8.3. located adjacent to one of the aisles. (See Note A-3.8.2.3.(5) and (6) and 3.8.3.22.(1) and (4).)

6. **[New]** At least 5% of the adaptable seats required by Sentence (5) but no more than 20adaptable seats shall adjoin a *barrier-free* path of travel. (See Note A-3.8.2.3.(5) and (6) and 3.8.3.22.(1) and (4).)

BEST PRACTICE

Even though a barrier-free path of travel for persons using wheelchairs is not always required to storeys above or below the main level, it would be recommended that access – lift or elevator - be created to all levels to allow for equal access for people with disabilities. This should also apply to buildings that are less than 600 m² and all parking levels.

[Updated] table 3.8.2.3. From the NBC(AE)
Designated wheelchair spaces
Forming part of sentences 3.8.2.3.(3) And (4)

Number of fixed seats in seating area	Number of spaces required for wheelchairs
2 – 99	2
100 – 499	3, plus 1 for each additional increment of 70 seats in excess of 100
500 – 1 999	9, plus 1 for each additional increment of 80 seats in excess of 500
2 000 – 7 999	28, plus 1 for each additional increment of 95 seats in excess of 2 000
Over 7 999	91, plus 1 for each additional increment of 100 seats in excess of 8 000

INTERPRETATION

In Sentence (6), adaptable seating refers to non-fixed or removable seating for wheelchair seating that is calculated in Table 3.8.2.3..

Note: In addition, 3.8.3.22. Subclause 1(c)(ii) Spaces in Seating Area **requires** a designated companion seat for a family member or friend shall be provided adjacent designated wheelchair spaces. Therefore, the number of designated spaces in total may double.

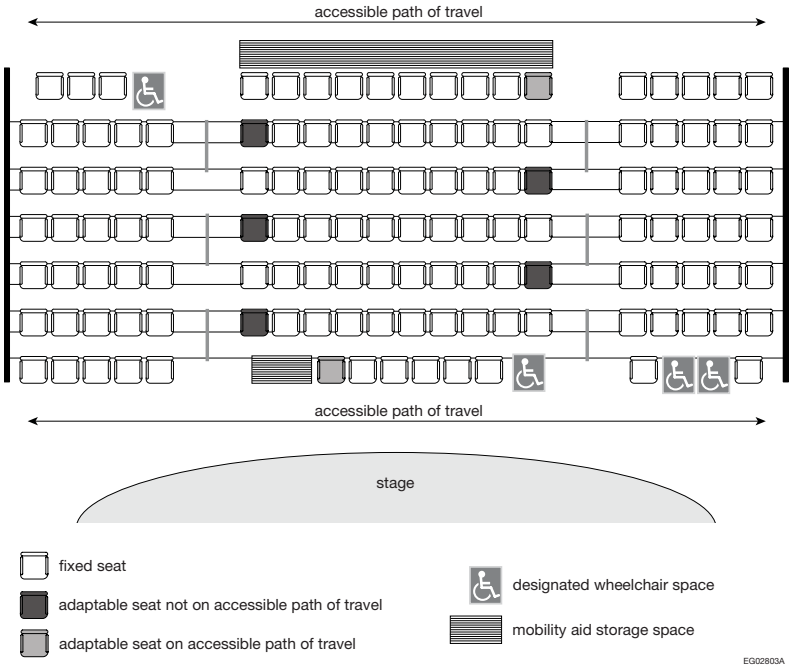


Figure A-3.8.2.3.(5) and (6) and 3.8.3.22.(1) and (4) Example of distribution of adaptable seats, designated wheelchair spaces and mobility aid storage spaces in an auditorium

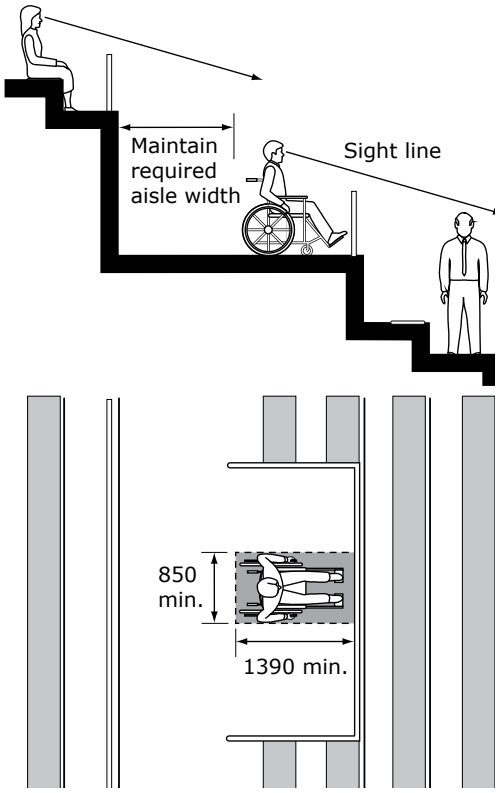


Figure 59 above from CSA B651 – Reserved viewing spaces in a place of assembly (See Clause 6.7.3.3.)

The figure illustrates an example of viewing space dimensions in a stadium or arena. The first graphic shows a profile view of a person in a wheeled mobility device sitting in a designated accessible seating area at a stadium. This graphic indicates the aisle width behind the accessible seating area shall be maintained, and the line of sight for a person seated in a designated accessible viewing space is not obstructed by a person standing two rows in front. The second graphic depicts a top view of a person in a wheeled mobility device sitting in the designated accessible seating area. It shows the dimensions of an independent seating space within this area to be a minimum 850 by 1390 mm. **Note**: All dimensions are in mm.

BEST PRACTICE

Sightlines for the viewing pleasure and comfort of seated persons need to be considered when designing wheelchair spaces. Viewing can be blocked when patrons or fans stand up in front of the designated wheelchair spaces to cheer or applaud.

Best practice should also locate designated wheelchair spaces adjacent to easily accessible exit routes in case of emergency as well as being close to washrooms, concession stands and other services within the venue.

3.3.1.8. Headroom and protruding objects

1. Except within the *floor area* of a *storage garage*, the minimum headroom clearance in every *access to exit* shall conform to the requirements of Article 3.4.3.4. for *exits*. (See also Sentence 3.3.5.4.(5).)
2. Except as permitted by Sentence (3) and except for paths of travel in *service rooms* and *dwelling units*, protruding *building* elements located within 1 980 mm of the floor shall not project more than 100 mm horizontally into paths of travel in a manner that would create a hazard. (See Note A-3.3.1.8.(2) and (3).)

3. The horizontal projection of a protruding building element referred to in Sentence (2) is permitted to be more than 100 mm, provided the clearance between the protruding element and the floor is less than 680 mm. (See Note A-3.3.1.8.(2) and (3).)

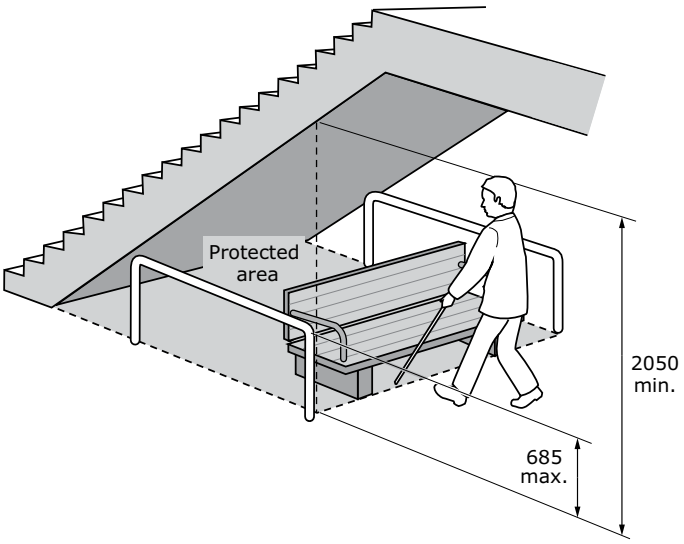


Figure 9 above from CSA B651 Overhead hazards (See Clauses 4.5.1.2 and 4.5.2.1.)

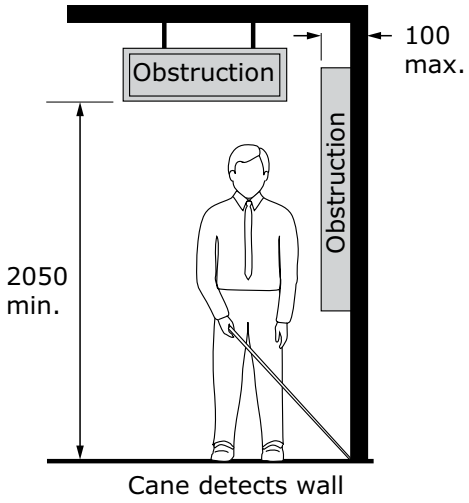


Figure 8a) above from CSA B651 Limits of protrusions and obstructions — Less than 100 mm from wall (See Clauses 4.5.1.1 and 4.5.2.2.)

BEST PRACTICE

If the overhead clearance is reduced, or open areas under hanging stair landings and escalators exist, then a cane-detectable barrier (e.g., planters, fencing, benches, railings) extending within the entire associated floor area should be used for safety reasons. It is preferred that the open areas beneath hanging stair landings and escalators be enclosed to prevent injury.

3.8.2.4. Access to storeys served by escalators and moving walks

1. In a *building* in which an escalator or inclined moving walk provides access to any floor level, an *interior barrier-free* path of travel shall also be provided to that floor level. (See Note A-3.8.2.4.(1).)
2. The route from the escalator or inclined moving walk to the *barrier-free* path of travel that leads from floor to floor as required by Sentence (1) shall be clearly indicated by appropriate signs.

Note: Clear signage indicating the location of accessible washrooms, elevators and so on should be clearly visible for ease of access. At times, signage is difficult to locate direction or location of accessible facilities or routes of travel.

[New] 3.8.2.5. Barrier-free paths of travel to building entrances

(See Note A-3.8.2.5.)

1. A *barrier-free* path of travel that complies with Subsection 3.8.3. shall be provided between a *barrier-free* entrance referred to in Article 3.8.2.2. and
   a. a designated *barrier-free* parking area not in a *storage garage*, where a parking area not in a *storage garage* is provided,
   b. a designated *barrier-free* parking area on at least one parking level in a *storage garage*, where a *storage garage* is provided,
   c. an exterior passenger-loading zone, where provided, and
   d. a public thoroughfare.
   (See Note A-3.8.2.5.(1) and (2).)
2. In *storage garages*, a *barrier-free* path of travel that complies with Subsection 3.8.3. shall be provided between each parking level with *barrier-free* parking and all other parts of the *building* required to be provided with *barrier-free* access in accordance with Subsection 3.8.2. that are served by that *storage garage*. (See Note A-3.8.2.5.(1) and (2).)
3. Exterior passenger-loading zones shall comply with Subsection 3.8.3.

INTERPRETATION

A barrier-free path of travel is required for safe passage of persons who use a wheelchair, walker or other mobility aid from a designated accessible parking, drop-off/pick-up areas and pedestrian crossings from a parking lot to an accessible entrance. The barrier-free path of travel includes curb ramps onto/off sidewalks, medians and traffic islands.

BEST PRACTICE

Malls and department stores often rely on escalators to move people from one storey to another. Where escalators are provided for the movement of people from one level to another, elevators or passenger- elevating devices must also be provided. On a sloping site, a person using a wheelchair might be able to gain access to another level by means of an exterior walkway; however, this arrangement does not meet the intent of the Code. A person using a wheelchair should not be required to travel outside the building to gain access to another level. Such buildings require elevators or platform-lifting devices, and their locations must be clearly indicated.

In creating a barrier-free path of travel for persons with visual disabilities, careful consideration shall be given to a visual and tactile or textural warning system on escalator steps and floor surfaces at the top and bottom of the escalator. This will help to orient the user.

Curbs

Sidewalk curbs are often used as wheel rests for vehicles, causing the vehicle to intrude onto the barrier-free path of travel on the sidewalk creating a hazard for persons with disabilities, seniors, those who may use mobility devices, people with vision loss, or parents with strollers. Therefore, wheel stops should be used to prevent vehicles from intruding onto the path of travel.

Curb ramps

Curb ramps that may be designed to be less steep for wheelchairs could be hazardous for people with vision loss. Curbs of any kind, and curb ramps, should be designed to be more easily detected by persons who have low vision, persons who are blind, or persons with cognitive impairments by colour or texture to distinguish the curb from the surrounding surfaces. For example, a curb ramp which offers a slope that is too gentle may work for users of wheelchairs, however the same ramp could confuse a person who is blind and could cause them to walk directly onto the street.

Note 1: Curb ramps should NOT be located along the front of or along the side of the designated or adjacent stall because the vehicle will block access to the curb ramp that is a part of the barrier-free path of travel. In a vehicle pull-up space, the curb ramp should be located between stalls (such as the access aisle). If it is a parallel parking space, the curb ramp should be located behind or in front of the allotted space.

Note 2: A median that runs the length of a street or parking lot can prevent a person using a wheelchair or other mobility aid from ease of travel, safe travel or taking a shortcut. The provision of curb ramps for access to a sidewalk or across the median might be necessary. The curb ramp should be at least 760 mm wide and 1 500 mm long.

4. Except as provided in Sentence (5), where parking stalls are required by the development authority, made pursuant to the *Municipal Government Act* and its Regulations, parking stalls for use by persons with disabilities shall be provided in conformance with Table 3.8.2.5.
5. If adaptable *dwelling units* or *barrier-free dwelling units* are provided, one parking stall per *dwelling unit* shall be provided for use by persons with physical disabilities.

Note: Table 3.8.2.5. does not apply to Sentence (5). One accessible stall per accessible or adaptable dwelling unit is required. Every adaptable unit has the potential to become a barrier-free unit, and the occupant(s) of an adaptable dwelling unit or barrier-free unit may require accessible parking. The accessible stalls are calculated and included in the overall design of the parking areas; therefore, all occupants will have a parking stall.

6. Parking stalls for use by persons with disabilities required by Sentences (4) or (5) shall be designed in accordance with Article 3.8.3.23.

BEST PRACTICE

Where a passenger loading zone is provided, accommodations should be made for side or rear loading and unloading operations. The majority of vehicles serving people with disabilities are equipped with side-operating platforms that are 760 mm wide by 1 050 mm long and can discharge patrons at sidewalk level. An area of 1 500 mm × 1 500 mm is required beyond the platform to allow a person in a wheelchair to turn around and move in a new direction. A minimum height clearance of 2 750 mm needs to be provided for most van-type transporters. Municipalities that have specialized transport vehicles may require a minimum of 3.2 m height clearance. In addition, these vehicles need at least 9 m in length to safely pull parallel to a sidewalk and safely (un) load passengers.

The barrier-free path of travel from the parking areas to the primary building entrance should be distinguishable with the use of good lighting, contrasting and continuous colour, change in texture and/or use of handrails, all of which help to identify the path. Floors within parking structures served by elevators should also be designed with accessibility and safety in mind.

Table 3.8.2.5. from the NBC(AE)
Designated Parking Spaces
Forming Part of Sentence 3.8.2.5.(4)

Number of parking stalls required	Number of designated stalls for use by persons with physical disabilities
2-10	1
11-25	2
26-50	3
51-100	4
for each additional increment of 100 or part thereof	one additional stall

Note: One criteria for the issuance of a placard is that a person cannot walk more than 50 m.

BEST PRACTICE

The *Municipal Government Act* requires that accessible parking be available for persons with disabilities. Table 3.8.2.5. shows the number of stalls currently required to be designated for use by persons with disabilities. However, it is recommended that an additional number of stalls be considered when the purpose or use of the building (assembly venues such as arenas, theatres, etc.) facilities may cause an increase in the number of seniors or persons with disabilities who require accessible parking, (e.g., arenas, grocery stores, medical services, restaurants.)

3.8.2.6. Controls

1. Except as provided in Sentence 3.5.2.1.(3), controls for the operation of *building* services or safety devices, including electrical switches, thermostats, faucets, door hardware and intercom switches, that are intended to be operated by the occupant shall comply with Subsection 3.8.3. (See Note A-3.8.2.6.(1).)

[New] 3.8.2.7. Power door operators

1. Except as provided in Sentences (2) and (3), doors shall be equipped with power door operators complying with Subsection 3.8.3. that allow persons to activate the opening of the doors in the intended direction of travel, where the doors are located
   a. in an entrance referred to in Article 3.8.2.2., including the interior doors of a vestibule where provided,
   b. in a *barrier-free* path of travel, between the entrance referred to in Clause (a) and the entrance doors to *suites* or rooms served by a *public corridor* or a corridor used by the public (see Note A-3.8.2.7.(1)(b)), and
   c. **[New]** in an entrance to a washroom with a *barrier-free* water closet.

2. Only the active leaf in a multiple leaf door in a *barrier-free* path of travel need conform to the requirements of this Article.
3. Where more than one doorway is provided at a *barrier-free* entrance, only one of them is required to comply with this Article. (See Note A-3.8.2.7.(3).)

INTERPRETATION

Power door operators are also required for hotels, assisted living or congregate living facilities, high rise residential (all entry/egress is considered as a part of the common areas), doctors' offices, and medical labs including washrooms.

[New] Clause (1)(a) and (b) applies to all doors to suites along a barrier-free path of travel (exterior walkways and interior corridors) including but not limited to all retail, offices and medical where the public is expected to frequent.

[New] Clause (1)(c) only applies to public washrooms. This does not apply to adaptable or accessible bathrooms in residential buildings or houses - unless required or requested.

3.8.2.8. Plumbing facilities

1. **[New]** Except as permitted by Sentence (3), at each location where washrooms are provided in a *storey* to which a *barrier-free* path of travel is required in accordance with Article 3.8.2.3., at least one universal washroom complying with Subsection 3.8.3. shall be provided. (See Note A-3.8.2.8.(1) to (4).)
2. Except as permitted by Sentence (3), where more than two water closets or a combination of more than one water closet and one urinal are provided in a washroom located in a *storey* to which a *barrier-free* path of travel is required in accordance with Article 3.8.2.3., the washroom shall be *barrier-free*. (See Note A-3.8.2.8.(1) to (4).)
3. Washrooms located within a *suite of residential occupancy* that has not been designated by Sentence 3.8.1.1.(3) to be accessible or a *suite of care occupancy* need not conform to the requirements of Sentence (1) or (2).
4. In a *building* in which water closets are required in accordance with Subsection 3.7.2., at least one *barrier-free* water closet shall be provided in the entrance storey, unless
   a. a *barrier-free* path of travel is provided to *barrier-free* water closets elsewhere in the *building*, or
   b. the water closets required by Subsection 3.7.2. are for *dwelling units* only.

(See Note A-3.8.2.8.(1) to (4).)

5. Where a *barrier-free* washroom is required, at least one accessible water-closet stall conforming to Subsection 3.8.3. shall be provided for every 10 stalls or part thereof.
6. Where urinals are provided in a *barrier-free* washroom, at least one urinal for persons with limited mobility conforming to Subsection 3.8.3. shall be provided for every 10 urinals.
7. **[New]** Where a *barrier-free* washroom is required, at least one stall for persons with limited mobility conforming to Subsection 3.8.3. shall be provided for every 10 stalls or part thereof.

INTERPRETATION

A limited mobility stall is wider in order to accommodate an L-shaped grab bar installed on either side of a stall for those who require additional assistance.

- If there is 1 water closet, then that washroom shall be a universal washroom with an additional (fold-down) grab bar.
- If there are 2 water closets, 1 shall be an accessible stall with an additional (fold-down) grab bar and, the second water closet may be either a standard stall or as limited mobility stall.
- If there are 10 or more stalls, there shall be both an accessible stall and a limited mobility stall included.

8. A *barrier-free* washroom shall be provided with a lavatory that complies with Subsection 3.8.3.
9. Where mirrors are provided in a *barrier-free* washroom, at least one mirror shall comply with Subsection 3.8.3.
10. At each location where one or more drinking fountains are provided, at least one of them shall comply with Subsection 3.8.3.
11. **[New]** At each location where one or more water-bottle filling stations are provided, at least one of them shall comply with Subsection 3.8.3.
12. Where showers are provided in a *building*, at least one shower stall shall comply with Subsection 3.8.3., except where showers are provided within
    a. a *suite* of *care occupancy*,
    b. a *suite* of *residential occupancy*,
    c. an *industrial occupancy*,
    d. a *business and personal services occupancy* where the showers are not required for provision of hygienic services related to the business, or
    e. a *mercantile occupancy*.

13. **[New]** At each location where a showering facility is provided for use by the general public or customers, or as part of a common-use area for employees, at least one universal dressing and shower room conforming to Subsection 3.8.3. shall be provided. (See Note A-3.8.2.8.(13).)
14. **[New]** Where a bathtub is installed in a *suite* of *residential occupancy* required to be *barrier-free*, it shall comply with Subsection 3.8.3.
15. **[New]** In *buildings* containing Group A, Group B, Division 2 or Group E *major occupancies* where at least one of these *major occupancies* has an *occupant load* of more than 500, at least one universal washroom on the *storey* on which the main *barrier-free* entrance to the *building* is located shall incorporate an accessible change space conforming to Subsection 3.8.3. (See Note A-3.8.2.8.(15).)

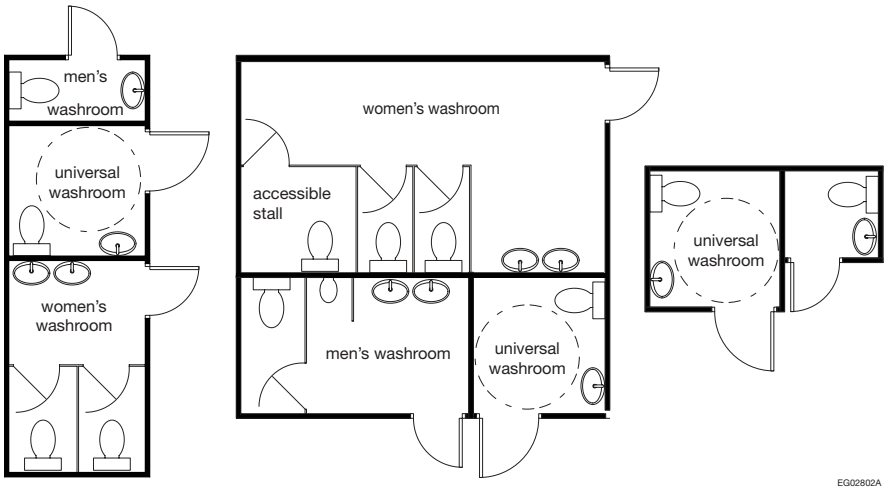


Figure A-3.8.2.8.(1) to (4) Washroom floor plan options that include accessible and universal washrooms

3.8.2.9. Assistive listening systems

1. In a *building of assembly occupancy*, all classrooms, auditoria, meeting rooms and *theatres* with an area of more than 100 m2 shall be equipped with an assistive listening system complying with Subsection 3.8.3.
2. **[New]** In each location where information, goods or services are provided to the public at service counters in *buildings of assembly occupancy*, at least one of the service counters shall be equipped with
   a. an assistive listening system or adaptive technology conforming to Subsection 3.8.3., and
   b. **[New]** an amplification system, where there is a barrier to communication, such as a glass screen.

(See Note A-3.8.2.9.(2).)

BEST PRACTICE

Health Care locations manned by staff should be equipped with a magnetic counter loop system and the "T-coil" symbol should be displayed. Examples of locations include pharmacies, reception and admitting stations in hospitals, assisted living, and extended-care reception areas.

3.8.2.10. Signs and Indicators

1. **[New]** Signs providing visual information in accordance with Subsection 3.8.3. shall be installed to indicate the location of
   a. *barrier-free* entrances,
   b. *barrier-free* washrooms,
   c. *barrier-free* showers,
   d. *barrier-free* elevators,
   e. *barrier-free* parking spaces, and
   f. assistive listening systems or adaptive technologies.
2. **[New]** Where a washroom is not designed to accommodate persons with physical disabilities in a *storey* to which a *barrier-free* path of travel is required, signs providing visual and tactile information in accordance with Subsection 3.8.3. shall be installed to indicate the location of barrier-free facilities.
3. Except for doors that serve *service* spaces or are located within a *suite*, signs installed at or near doors shall provide the same information in both visual and tactile forms in accordance with Subsection 3.8.3.
4. **[New]** Directional signs shall provide visual information in accordance with Subsection 3.8.3. (See Note A-3.8.2.10.(4).)

3.8.2.11. Counters

1. **[Updated]** Where a service counter is provided, at least one section of it shall comply with Subsection 3.8.3. (See Note A-3.8.2.11.(1).) (See also Note A-3.8.2.3.)

3.8.2.12. Telephones

1. **[New]** In each location where one or more public telephones are installed, at least one telephone shall comply with Subsection 3.8.3.

3.0 Design section

3.0 Design section

3.8.3. Design

3.8.3.1. General

1. *Buildings* or parts thereof and facilities that are required to be *barrier-free* shall be designed in accordance with this Subsection.

3.8.3.2. Barrier-free path of travel

1. **[Updated]** Except as required elsewhere in this Part or as permitted by Sentence (2) and Article 3.8.3.6. pertaining to doorways, the clear width of a *barrier-free* path of travel shall be not less than 1 000 mm.

2. **[New]** The clear width of a barrier-free path of travel is permitted to be reduced to not less than 850 mm for a length of not more than 600 mm, provided the clear floor space at either end of the reduced-clear width section is level within a rectangular area

   a. whose dimension parallel to each end of the reduced-clear width section is not less than 1 000 mm, and

   b. whose dimension perpendicular to each end of the reduced-clear width section is not less than 1 500 mm.

   c. (See Note A-3.8.3.2.(2).)

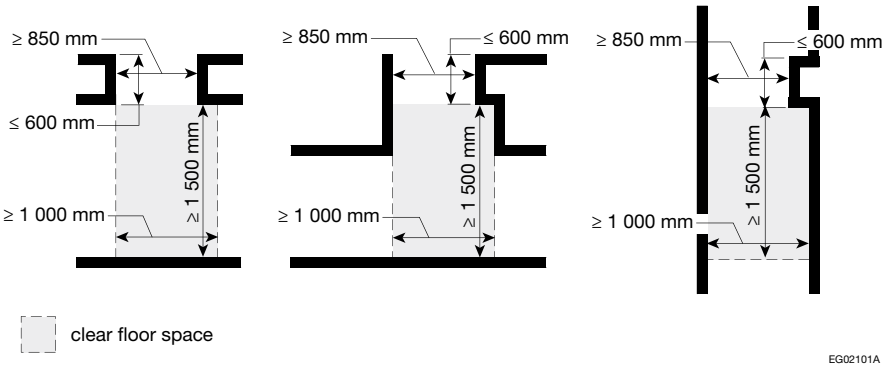


Figure A-3.8.3.2.(2) above from the NBC(AE) – Barrier-free paths of travel with a reduced clear-width section

3. Interior and exterior walking surfaces that are within a *barrier-free* path of travel shall

   a. have no opening that will permit the passage of a sphere more than 13 mm in diameter,

   b. have any elongated openings oriented approximately perpendicular to the direction of travel,

   c. be stable, firm and slip-resistant,

   d. have a cross slope no steeper than 1 in 50,

BEST PRACTICE

Sentence 2 says that a barrier-free path of travel may be reduced to no less than 850 mm. Best practice does not support this and strongly recommends the path, including corridors/hallways, be a minimum of 1200 mm. A wider wheelchair or other mobility device like a scooter will be able to travel easier and safer allowing at least 1 person to pass by easily and safely, regardless the length of the corridor.

Another thing to consider is that corners may be difficult to navigate. So, it is recommended that the "sharp" corner be rounded or curved, if possible. It is strongly recommended that older buildings with narrow corridors create curved or chamfered corners to allow for the ease and safe of travel for users of wheelchairs or other mobility devices.

e. be beveled at a maximum slope of 1 in 2 at changes in level between 6 mm and 13 mm, and

f. be provided with sloped floors or *ramps* at changes in level more than 13 mm.

(See Note A-3.8.3.2.(3).)

4. A *barrier-free* path of travel is permitted to include *ramps*, passenger elevators or other platform-equipped passenger-elevating devices to overcome a difference in level.

5. **[New]** The width of a *barrier-free* path of travel that is more than 24 m long shall be increased to not less than 1 700 mm for a length of 1 700 mm at intervals not exceeding 24 m.

6. **[New]** Where a section of a *barrier-free* path of travel is less than 1 500 mm wide for a distance of more than 12 m, it shall end in a clear floor space that is

   a. not less than 1 700 mm in diameter,

   b. not less than 1 700 mm by 1 500 mm, or

   c. T-shaped with overall dimensions measuring 1 700 mm wide by 1 500 mm long, where the two arms of the "T" are not less than 1 000 mm wide and extend not less than 300 mm from each side of the base of the "T" and the base is not less than 1 000 mm wide and extends not less than 500 mm from each arm.
   (See Note A-3.8.3.2.(6).)

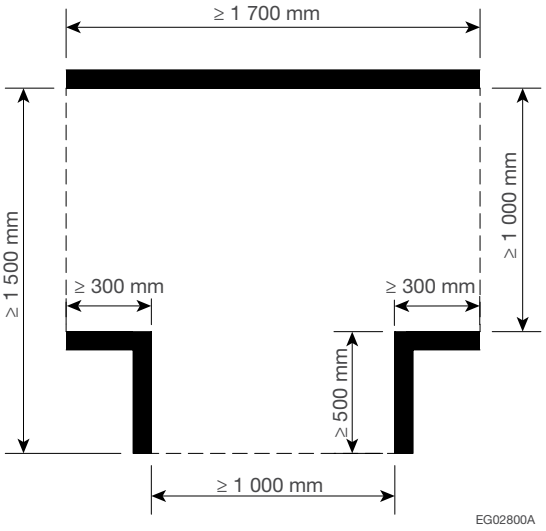


Figure A-3.8.3.2.(6) above from the NBC(AE) – T-shaped wheelchair turning space

BEST PRACTICE

An unobstructed path of travel will minimize or eliminate the likelihood that a person who requires the use of a mobility device will require the assistance of another person to aid in their movement through a building. The minimum width that should be considered for the movement of a person using a wheelchair is 1 800 mm or greater to allow two (2) persons who use a wheelchair to pass one another traveling in opposite directions. Otherwise, one person will be required to reverse direction.

7. **[New]** In a *barrier-free* path of travel, a downward change in elevation shall be signaled by the use of a tactile attention indicator surface complying with Clauses 4.3.5.3.1., 4.3.5.3.3. and 4.3.5.3.4. of CSA B651, “Accessible design for the built environment.”

INTERPRETATION

Sentence (7) requires tactile warning indicators at the top of enclosed and unenclosed stairs signaling a downward change in direction. This also includes landings that are in a long stairway.

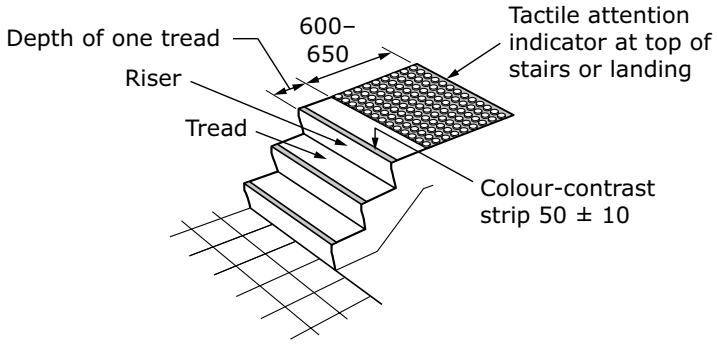


Figure 28b) above from CSA B651 – Stair detail — Tactile attention indicator (See Clause 5.4.3.1.)

This figure shows the location of a tactile attention indicator at the top of the stairs or landings. The tactile attention indicator is located one tread step depth away from the start of the stairs and is 600 to 650 mm deep. Colour contrasting strips 50 +/- 10 mm wide are also displayed at the nosing of each stair tread.

4.4.5.3.1 Configuration

A tactile attention indicator surface shall be composed of truncated domes:

a. with a height of between 4 and 5 mm;

b. with the top diameter between 12 and 25 mm and the base diameter 10 ± 1 mm greater than the top diameter;

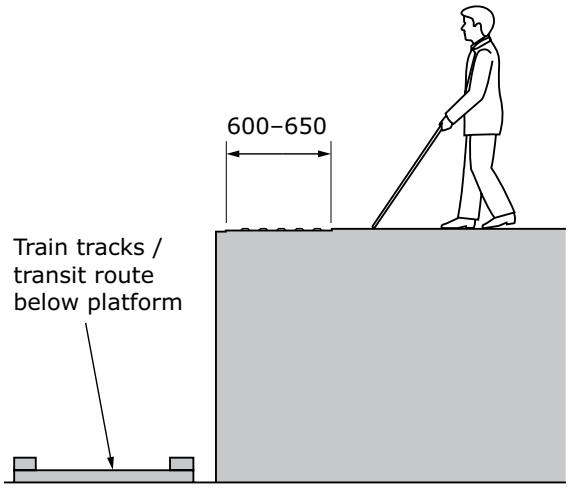
c. arranged in a square grid; and

d. with a centre-to-centre distance of adjacent domes complying with Table 5 (see Figure 5b).

Note: Selection criteria for tactile attention indicators should include an assessment of potential wear, particularly in high-traffic areas or in exterior applications where snow and ice clearing equipment is used.

Table 5 from CSA B651
Dome diameter and spacing combinations
(See Clause 4.4.5.3.1.)

Top surface diameter, mm	Base surface diameter, mm, ± 1 mm	Centre-to-centre distance between domes, mm
12	22	42–61
15	25	45–63
18	28	48–65
20	30	50–68
25	35	55–70



Tactile attention indicator surface — Change in elevation (See Clauses 4.4.5.1 and 4.4.5.3.2.)

This figure shows a tactile attention indicator surface that signals a change in elevation at a transit platform. The graphic shows a person with a cane approaching the end of the transit platform. The tactile attention indicator surface is shown at the edge of the platform with a width of 600 to 650 mm. (See Clauses 4.4.5.1 and 4.4.5.3.2.)

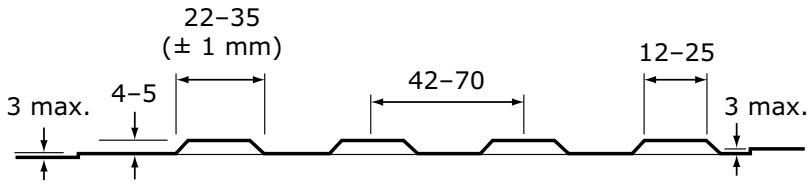


Figure 5b) above from CSA B651 – Tactile attention indicator surface — Height of domes (See Clauses 4.4.5.2 and 4.4.5.3.1.)

[New] [CSA/ASC B651:23] 4.4.5.3.3 Installation

When a tactile attention indicator surface is used to indicate a hazard, it shall be installed along the full width of the hazard:

a. to a depth between 600 and 650 mm; and

b. with one side against the edge of the hazard, unless otherwise indicated in this Standard.

Note: Tactile indicator surface domes shall be organized in a regular pattern. The height of each dome shall be 4 to 5 mm, with a full dome width of 22 to 35 mm (±1 mm), a top of dome width of 12 to 25 mm, and a distance between domes of 42 to 70 mm. The maximum height of the base surface carrying the attention indicator dome pattern is 3 mm above adjacent paving.

[New] [CSA/ASC B651:23] 4.4.5.3.4 Luminance (colour) contrast

When a tactile attention indicator surface is used to indicate a hazard, it shall have a luminance (colour) contrast of at least 50% with the adjacent surface using the Michelson contrast formula (see Clause 3.1).

Notes:

1. The specified visual contrast percentage of 50% is a minimum. It is preferable to provide a higher visual contrast whenever possible between the indicator surface and the surrounding surface.
2. The colour specifications for yellow should be:
   a. Munsell system: hue 5.0, chroma yellow 8.0/12;
   b. CIE 1931 system: 59.10% luminosity at the chroma coordinates of x=0.4562 and y=0.4788; or
   c. a version of yellow that provides an equivalent level of visibility.

[New] [CSA/ASC B651:23] 4.4.5.4 Tactile direction indicator surfaces

4.4.5.4.1 Configuration

A tactile direction indicator surface shall be composed of flat- topped, parallel, elongated bars having:

a. a height of 4 to 5 mm;
b. a top width between 17 and 30 mm and a base width 10 ± 1 mm greater than the top width;
c. a centre-to-centre distance of adjacent bars to comply with Table 6;
d. a top length not less than 270 mm and the base length 10 ± 1 mm greater than the top length; and
e. not more than a 30 mm space between the ends of in-line bars [see Figure 6 b)].

Note: Tactile direction indicator layout that is as continuous as possible is the easiest to follow.

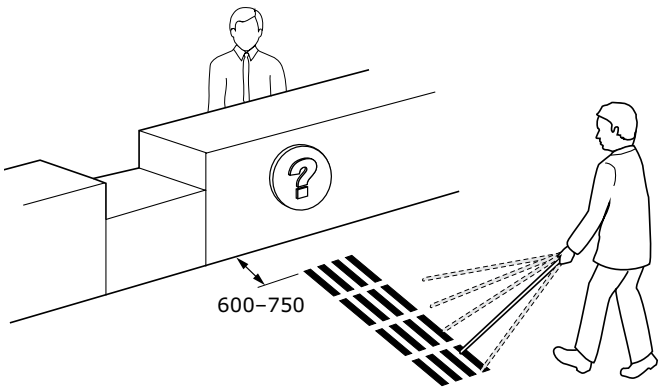


Figure 6a) above from CSA B651 – Tactile direction indicator surface (See Clause 4.4.5.4.2.)

The figure illustrates a person using a long cane walking towards an information desk along a tactile direction indicator surface. The tactile direction indicators tiles end 600 to 750 mm before the desk.

Note: When the tactile direction indicator layout is as continuous as possible it is the easiest to follow.

3.3.1.19. Tactile walking surface indicators

1. Except as provided in Sentence (2), tactile attention indicators complying with Clauses 4.3.5.3.1, 4.3.5.3.3 and 4.3.5.3.4 of CSA B651, “Accessible design for the built environment,” shall be installed

a. at the top of flights of stairs that are unenclosed, and

b. at drop-off edges with a change in elevation greater than 300 mm that are unprotected by a guard.
(See Note A-3.3.1.19.(1).)

Note: A design or solution that may minimize or eliminate an obstacle for one disability group may become an obstacle for another disability group. For instance, the installation of a gently sloping curb cut/ramp with no lip for persons in wheelchairs removes one of the sidewalk/street reference points for persons who are blind or visually impaired. A steeper slope, a small lip and deep grooves running parallel with the slope of the ramp are often used to mark the street location, making the solution cane-detectable.

BEST PRACTICE

An exterior walk should be a minimum of 1 600 mm wide which is the minimum width required for a person using a wheelchair to pass an ambulatory person with ease. However, a minimum width of 1 800 mm would allow two (2) deaf people to walk side by side and communicate using sign language.

3.8.3.3. Exterior walks

1. Exterior walks that form part of a *barrier-free* path of travel shall

   a. have a slip-resistant, continuous and even surface,

   b. be not less than 1 600 mm wide,

   c. have a level area conforming to Clause 3.8.3.5.(1)(c) adjacent to an entrance doorway, and

   d. be designed in accordance with Clause 8.2.1 of CSA B651, “Accessible design for the built environment.”

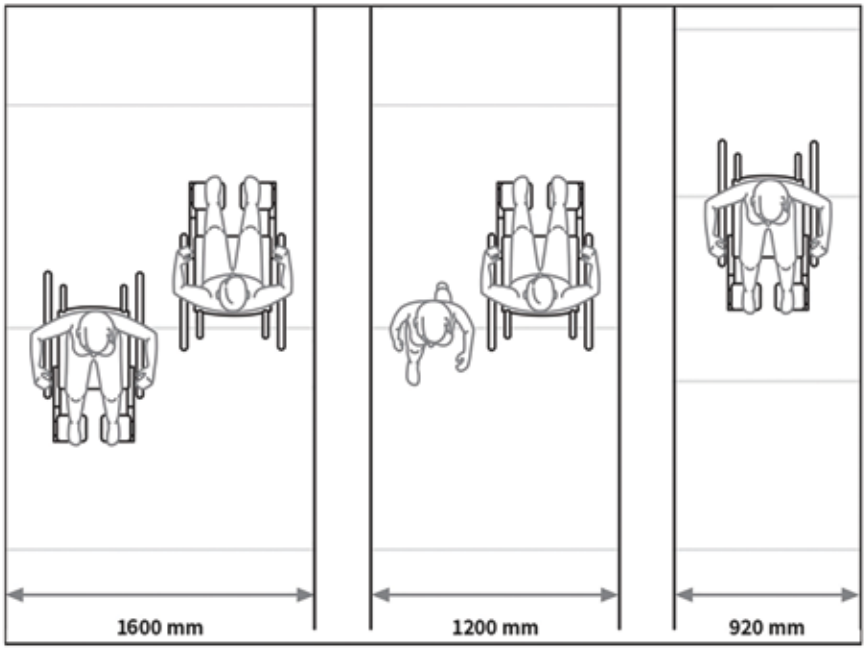


Figure A: Exterior walks

2. Curb ramps within a *barrier-free* path of travel shall comply with Clause 8.3.3. of CSA B651, “Accessible design for the built environment.”

[New] [CSA B651 2018] 8.3.3 Curb ramps and blended transitions

8.3.3.1 Running slope

The running slope at a curb ramp or blended transition shall be

a. for a curb ramp, between a ratio of 1:15 (6.66.%) and 1:10 (10%); and
b. for a blended transition, not steeper than a ratio of 1:20 (5%).

8.3.3.2 Cross slope

The cross slope at a curb ramp or blended transition shall be

a. not steeper than a ratio of 1:50 (2%) at intersections; and
b. permitted to match the street or highway gradient at mid- block pedestrian crossings.

8.3.3.3 Counter slope

The running slope of a pedestrian crossing at the foot of curb ramps, blended transitions, and turning spaces shall

a. be 1:20 (5%) maximum; and
b. have the sum of the running slope and that of a curb ramp, blended transition, or turning space not exceed 11%.

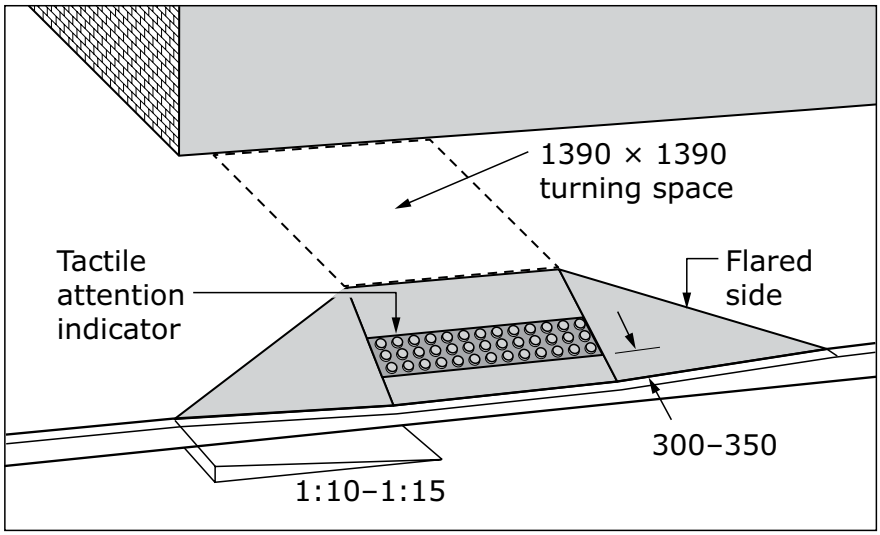


Figure 60 above from CSA B651 – Accessible route and curb ramp with flared sides (See Clauses 8.2.2 and 8.3.3.6.)

This figure shows the dimensions of a curb ramp with flared sides. The slope of the flared sides is 1:10 to 1:15 and there are tactile attention

indicators on the ramp in between the flared sides and placed 300 to 350 mm from the curb. Once up the curb ramp, a turning space measuring 1390 by 1390 mm is depicted.

INTERPRETATION

All designated public access routes should be designed to meet the needs of seniors and persons with disabilities. The surface of a walkway must have a hard and even surface that will permit a safe, continuous, and uninterrupted barrier-free path of travel.

Uneven surfaces can be hazardous to seniors, people with visual disabilities, people with physical disabilities, seniors, and to any ambulant person. Pre-cast units, such as brick pavers, concrete slabs or tiles, should not be used. However, if they are used, care must be taken to ensure that all joints are flush and level. In all cases, the selected material for the surface must be slip-resistant.

A level surface shall be maintained behind cross ramps for smooth pedestrian and wheelchair travel.

A level area of at least 1 500 mm by 1 500 mm is to be provided in front of the entrance to allow ease of access into or out of a building.

Joints in sidewalks or between bricks or stones shall not exceed 13 mm in width and 6 mm in depth and shall be flush with the adjoining surfaces.

The requirement to have an area free from obstructions is primarily to aid persons with visual impairments and persons who are blind or elderly who may require the use of a mobility aid. Examples of obstructions are directional signs, tree branches and guy wires. Overhead objects (e.g., signage, tree branches/limbs, free-standing staircases/escalators) should be at a height or 1 980 mm or greater to avoid becoming a hazard.

Note: A design or solution that may minimize or eliminate an obstacle for one disability group may become an obstacle for another disability group. For instance, the installation of a gently sloping curb cut/ramp with no lip for persons in wheelchairs removes one of the sidewalk/street reference points for persons who are blind or visually impaired.

BEST PRACTICE

A lay-by should be created where possible to allow vehicles to be removed from the flow traffic, thereby creating a safe (un)loading zone.

Overhead structures like awnings, portcullis, arches and so on should be designed closer to 3 000 mm in height to allow transportation vehicles like buses to drive and park under the overhang structures for the safe (un)loading of passengers.

3.8.3.4. Exterior passenger-loading zones

1. If an exterior passenger-loading zone is provided, it shall have
   a. an access aisle not less than 1 500 mm wide and 6 000 mm long adjacent and parallel to the vehicle pull-up space,
   b. a curb ramp, where there are curbs between the access aisle and the vehicle pull-up space, and
   c. a clear height of not less than 2 750 mm at the pull-up space and along the vehicle access and egress routes.

3.8.3.5. Ramps

1. A *ramp* located in a *barrier-free* path of travel shall
   a. **[Updated]** have a clear width not less than 1 000 mm (see Note A-3.4.3.4.),
   b. have a uniform slope along its length not more than 1 in 12 (see Note A-3.8.3.5.(1)(b)),
   c. **[Updated]** have a level area not less than 1 700 mm by 1 700 mm at the top and bottom and at intermediate levels of a *ramp* leading to a door, so that on the latch side the level area extends not less than
      i. 600 mm beyond the edge of the door opening where the door opens towards the *ramp*, or
      ii. 300 mm beyond the edge of the door opening where the door opens away from the *ramp*,
      (see Note A-3.8.3.5.(1)(c)),
   d. **[Updated]** have a level area not less than 1 350 mm long and at least the same width as the *ramp* at intervals not more than 9 m along its length,
   e. except as provided in Sentences (2) and (3), be equipped with handrails conforming to Article 3.4.6.5., except that they shall be not less than 865 mm and not more than 965 mm high,
   f. be equipped with *guards* conforming to Article 3.4.6.6.
   g. **[Updated]** have a level area not less than 1 350 mm by 1 350 mm where a *ramp* makes a 90° turn or less, and
   h. **[Updated]** have a level area not less than 1 700 mm wide that extends to not less than the outer edge of each *ramp* section, where a *ramp* makes a turn greater than 90°.
2. Handrails installed in addition to required handrails need not comply with the height requirements stated in Clause (1)(e).
3. The requirement for handrails in Clause (1)(e) need not apply to a *ramp* serving as an aisle for fixed seating.
4. The surfaces of *ramps* and landings shall
   a. be hard or resilient where the *ramp* is steeper than 1 in 15 (see Note A-3.8.3.5.(4)(a)),
   b. have a cross slope no steeper than 1 in 50, and
   c. where exposed to water, be designed to drain.
5. *Ramps* and landings not at *grade* or adjacent to a wall shall have edge protection consisting of
   a. a curb not less than 75 mm high, or
   b. a raised barrier or rail located not more than 100 mm from the *ramp* or landing surface.

BEST PRACTICE

An exterior walk should be a minimum of 1 600 mm wide which is the minimum width required for a person using a wheelchair to pass an ambulatory person with ease. However, a minimum width of 1 800 mm would allow two (2) deaf people to walk side by side and communicate using sign language.

Similar to the intent of 3.8.3.2.(5), it is recommended that at intervals not exceeding every 9 m, the walkway should be widened to a minimum of 2 000 mm for a length of 2 000 mm to act as a rest area for person using a manual wheelchair or walker.

Gratings, manhole covers, electrical vaults and other access covers shall be placed adjacent to walkways unless prevented by site constraints. If these covers must be in walkways, the gratings shall have a maximum clear opening of 13 mm.

To assist persons with visual disabilities, the surface of the walk should be easily discernible from the surrounding areas. Pathways across parking lots and large plazas can be identified by the use of different textures and contrasting colours.

Reminder: Tactile warning indicators are required for ease of cane detection and safety.

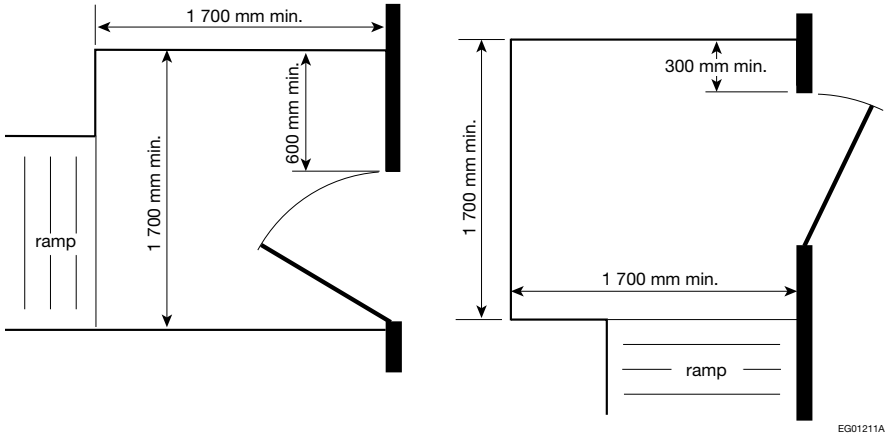


Figure A-3.8.3.5.(1)(c) above from the NBC(AE) – Landing design at doorways leading to ramps

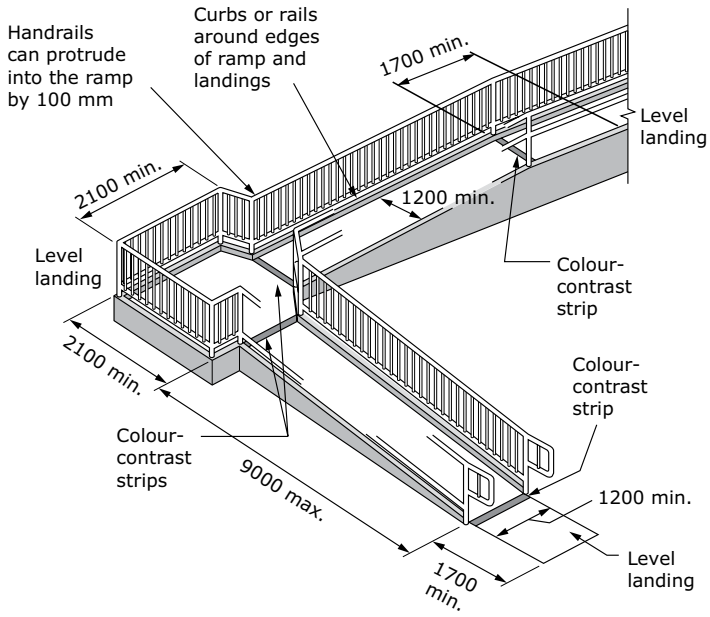


Figure 34a) above from CSA B651 – Ramps and Landings – Intermediate landing with a sharp turn (see Clauses 5.5.4 and 8.2.7.)

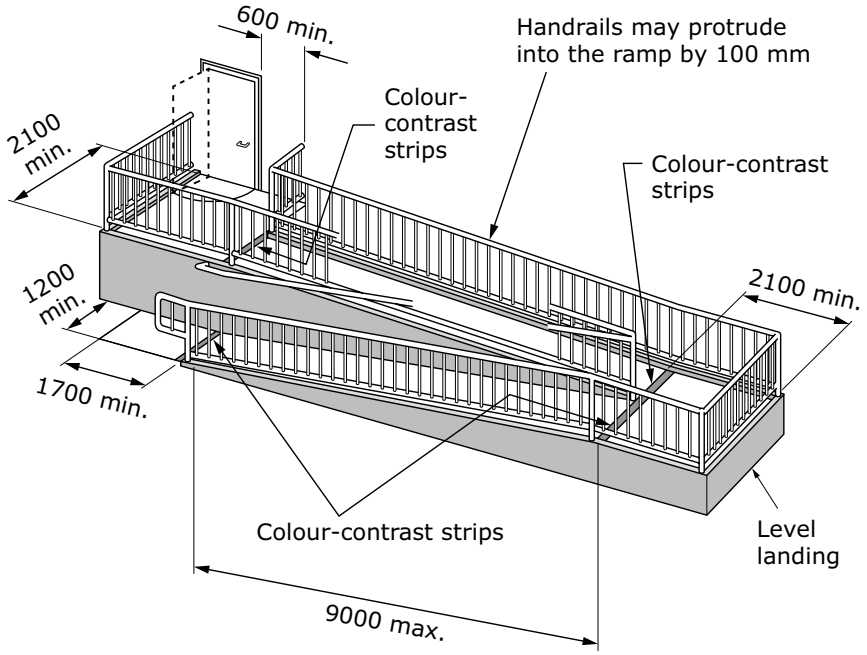


Figure 34b) above from CSA B651 – Ramps and Landings – Doorway at landing (see Clauses 5.5.4 and 8.2.7.)

3.4.6.7. Ramp slope

(See also Article 3.8.3.5.)

1. Except as provided in Sentence (2) and as provided for aisles in Article 3.3.2.5., *ramps* shall have a uniform slope along their length and a maximum slope of 1 in 12.
2. Except as provided in Section 3.8., *ramps* in industrial *occupancies* shall have a uniform slope along their length and a maximum slope of
   a. 1 in 6 for interior *ramps*, and
   b. 1 in 10 for exterior *ramps*.

3.4.6.6. Guards

1. Every *exit* shall have a wall or a well-secured *guard* on each side, where
   a. there is a difference in elevation of more than 600 mm between the walking surface and the adjacent surface, or
   b. the adjacent surface within 1.2 m of the walking surface has a slope of more than 1 in 2.
   (See Note A-9.8.8.1.)

2. Except as required by Sentence (4), the height of guards for exit stairs and exit ramps as well as their landings shall be not less than 1 070 mm.
3. The height of *guards* shall be measured vertically to the top of the *guard* from
   a. a line drawn through the outside edges of the stair nosings, or
   b. the surface of the *ramp* or landing.
4. The height of *guards* for exterior stairs and landings more than 10 m above adjacent ground level shall be not less than 1 500 mm measured vertically to the top of the *guard* from the surface of the landing or from a line drawn through the outside edges of the stair nosings.
5. Except as provided in Sentence 3.3.1.18.(3) and Articles 3.3.4.7. and 3.3.5.10., *guards* in *exits* shall not have any openings that permit the passage of a spherical object whose diameter is more than 100 mm.
6. In a stairway, a window for which the distance measured vertically between the bottom of the window and a line drawn through the outside edges of the stair nosings is less than 900 mm, or a window that extends to less than 1 070 mm above the landing, shall
   a. be protected by a *guard* that is
      i. located approximately 900 mm above a line drawn through the outside edges of the stair nosings, or
      ii. not less than 1 070 mm high measured to the top of the *guard* from the surface of the landing, or
   b. be fixed in position and designed to resist the lateral design loads specified for *guards* and walls in Articles 4.1.5.14. and 4.1.5.16.
7. Except for *guards* conforming to Article 3.3.5.10., *guards* that protect a level located more than one storey or 4.2 m above the adjacent level shall be designed so that no member, attachment or opening located between 140 mm and 900 mm above the level being protected by the *guard* facilitates climbing. (See Note A-9.8.8.6.(1).)

BEST PRACTICE

A variety of provisions can be used to prevent people using wheelchairs or other mobility aids from accidentally going over the edge of a ramp. Curbs are often combined with handrails and guards. Curbs can be of contrasting colour from the ramp and handrails can be a contrasting colour from the adjacent surface as best practice for edge protection at the sides of ramps.

3.4.6.1. Slip resistance of ramps and stairs

1. The surfaces of *ramps*, and landings and treads
   a. shall have a finish that is slip resistant, and
   b. if accessible to the public, shall have either a colour contrast or a distinctive pattern to demarcate the leading edge of the tread and the leading edge of the landing, as well as the beginning and end of a *ramp*.
2. Treads and landings of exterior *exit* stairs more than 10 m high shall be designed to be free of ice and snow accumulations.

3.4.6.2. Minimum number of risers

1. Except as permitted by Sentence 3.3.2.15.(1), every *flight* of interior stairs shall have not less than 3 risers.

3.4.6.3. Maximum vertical rise of stair flights and required landings

1. No *flight* of stairs shall have a vertical rise of more than 3.7 m between floors or landings, except that a *flight* of stairs serving as an *exit* in a Group B, Division 2 *occupancy* shall have a vertical rise not more than 2.4 m between floors or landings.
2. Except as provided in Sentence (3), a landing shall be provided
   a. at the top and bottom of each *flight* of interior and exterior stairs,
   b. at the top and bottom of every section of *ramp*,
   c. where a doorway opens onto a stair or *ramp*,
   d. where a *ramp* opens onto a stair, and
   e. where a stair opens onto a *ramp*.
3. A landing may be omitted at the bottom of an exterior stair or *ramp*, provided there is no gate, door or fixed obstruction within the lesser of
   a. the width of the stair or *ramp*, or
   b. 1 100 mm.

3.4.6.4. Dimensions of landings

(See Note A-3.4.6.4.)

1. Except as provided in Sentence (2), a landing shall be at least as wide and as long as the width of the stairway in which it occurs.
2. In a straight stairway and in a stairway that turns less than 90°, the length of the landing need not be more than the lesser of
   a. the required width of stair, or
   b. 1 100 mm.
3. The length of a landing shall be measured perpendicular to the nosing of adjacent steps, at a distance equal to half the length required in Sentence (2), from the narrow edge of the landing.
4. Where a doorway or stairway empties onto a *ramp* through a side wall, there shall be a level area extending across the full width of the *ramp*, and for a distance of 300 mm on either side of the wall opening, except one side if it abuts on an end wall.
5. Where a doorway or stairway empties onto a *ramp* through an endwall, there shall be a level area extending across the full width of the *ramp* and along its length for not less than 900 mm.

3.4.6.8. Treads and risers

(See Note A-9.8.4.)

1. Except as permitted for *dwelling units* and by Sentence 3.4.7.5.(1) for fire escapes, steps for stairs shall have a *run* of not less than 280 mm between successive steps.
2. Steps for stairs referred to in Sentence (1) shall have a rise between successive treads not less than 125 mm and not more than 180 mm.
3. Except as provided in Article 3.3.4.7. and except for fire escape stairs, stairs that are principally used for maintenance and service, and stairs that serve *industrial occupancies* other than *storage garages*, steps for stairs shall have no open risers.
4. Except in fire escape stairs and where an exterior stair adjoins a *walkway* as permitted in Sentence 3.4.6.3.(3), risers, measured as the vertical nosing-to-nosing distance, shall be of uniform height in any one *flight*, with a maximum tolerance of
   a. 5 mm between adjacent treads or landings, and
   b. 10 mm between the tallest and shortest risers in a *flight*.
5. Except in fire escape stairs, treads shall have a uniform *run* with a maximum tolerance of
   a. 5 mm between adjacent treads, and
   b. 10 mm between the deepest and shallowest treads in a *flight*.
6. Treads and risers shall not differ significantly in *run* and rise in successive *flights* in any stair system.
7. The slope of treads or landings shall not exceed 1 in 50.
8. Except as permitted by Sentence (10), the top of the nosing of stair treads shall have a rounded or beveled edge extending not less than 6 mm and not more than 13 mm measured horizontally from the front of the nosing.
9. The front edge of stair treads in *exits* and public *access to exits* shall be at right angles to the direction of *exit* travel.
10. If resilient material is used to cover the nosing of a stair tread, the minimum rounded or beveled edge required by Sentence (8) is permitted to be reduced to 3 mm.

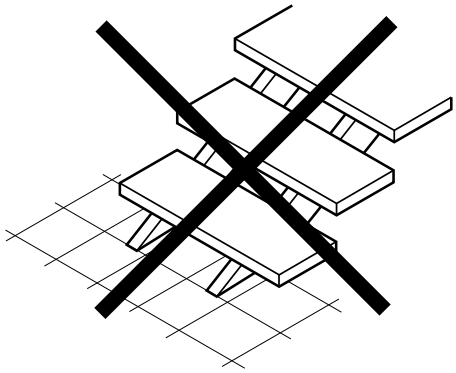


Figure 28c) above from CSA B651 – Stair detail — Open risers (See Clause 5.4.1.)

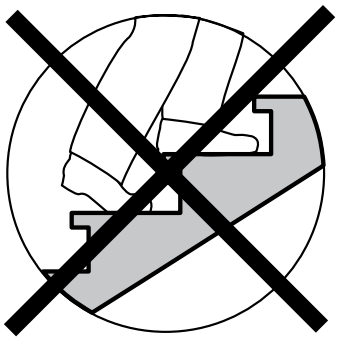


Figure 28d) above from CSA B651 – Stair detail — Abrupt undersides (See Clause 5.4.2.)

3.8.3.6. Doorways and doors

1. **[New]** Except where stated otherwise, this Article applies to swinging and sliding doors.
2. Except as required in Article 3.8.5.2., every doorway that is located in a *barrier-free* path of travel shall have a clear width not less than 850 mm when the door is in the open position. (See Note A-3.8.3.6.(2).)
3. Doorways in a path of travel to at least one bathroom within a *suite of residential occupancy* shall have a clear width not less than 850 mm when the doors are open. (See Note A-3.8.3.6.(3).)

BEST PRACTICE

Raised thresholds in doorways should be avoided. Even though the code requires any threshold at a 13 mm maximum to be beveled, the recommendation for any threshold higher than 6 mm is to have a gentle slope or ramp.

4. Door-operating devices shall
   a. comply with Clause 3.8.3.8.(1)(b), and
   b. be operable at a height between 900 mm and 1 100 mm above the floor. (See Note A-3.8.3.6.(4).)
5. A threshold for a doorway referred to in Sentence (2) and (3) shall be not more than 13 mm higher than the finished floor surface and shall be beveled to facilitate the passage of wheelchairs.
6. Power door operators required by Sentences 3.8.2.7.(1) and 3.8.5.2.(2) shall
   a. activate automatically or through the use of controls that
      i. are located in a *barrier-free* path of travel,
      ii. are marked with the International Symbol of Access,
      iii. are located clear of the door swing and no more than 1 500 mm from that door swing,
      iv. comply with Subclause 3.8.3.8.(1)(a)(iii),
      v. are operable from a height between 150 mm and 300 mm as well as between 900 mm and 1 100 mm above the floor, and
      vi. are operable by touching or approaching any part of their surface with a fist, arm or foot, and
   b. unless equipped with safety sensors,
      i. fully open the door in not less than 3 s, and
      ii. require a force not more than 65 N to stop movement of the door. (See Note A-3.8.3.6.(6) and (7).)

BEST PRACTICE

An 8 - 10 second delay before the door closes is preferred over the 3 seconds required in the code is necessary to prevent possible injury for people with a slower gait who may use walkers, canes or crutches.

[NEW] INTERPRETATION

Power-door operators are required for public washrooms with designated barrier-free or universal washrooms located on a barrier-free path of travel for public buildings. (See Clause 3.8.2.7.(1)(c).)

Power-operated doors activated by a motion detector, infrared sensor or pressure plate will meet the Code requirement. In cases where security is required, the doors may be activated by a key card or remote. The doors shall be identified by visible signage with the international symbol for accessibility.

7. A cane-detectable *guard* shall be installed on the hinged side of power-assisted doors that swing open into the path of travel. (See Note A-3.8.3.6.(6) and (7).)

8. Except as provided in Sentence (9) and except for a door with a power door operator complying with Sentence (6), when unlatched, a door in a *barrier-free* path of travel shall open when the force applied to the handle, push plate or latch-releasing device is not more than
   a. 38 N in the case of an exterior swinging door,
   b. 22 N in the case of an interior swinging door, or
   c. 22 N in the case of a sliding door.
9. Sentence (8) does not apply to a door at the entrance to a *dwelling unit*, or where greater forces are required in order to close and latch the door against the prevailing difference in air pressure on opposite sides of the door. (See Note A-3.8.3.6.(9).)
10. Except for a door at the entrance to a *dwelling unit*, a closer for an interior door in a *barrier-free* path of travel shall have a closing period of not less than 3 s measured from when the door is in an open position of 70° to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door. (See Note A-3.8.3.6.(10).)
11. Unless equipped with a power door operator complying with Sentence (6), a swinging door in a *barrier-free* path of travel shall have a clear space on the latch side extending the height of the doorway and not less than
    a. 600 mm beyond the edge of the door opening if the door swings toward the approach side, and
    b. 300 mm beyond the edge of the door opening if the door swings away from the approach side.
    (See Note A-3.8.3.6.(11).)

BEST PRACTICE

A delay of 8 – 10 seconds for the closing of a power door, is preferred, to allow anyone with less mobility to safely enter or exit a building.

It is preferable to have the second or subsequent set of doors be activated with a delayed opening of 2 – 3 seconds to allow anyone with less mobility, to approach and walk through the door without the possibility of having the door close upon them.

INTERPRETATION

The 300 mm and 600 mm clearances shall have no obstacles approaching the door, for example, cabinets, vanities, trash receptacles. Diagonal walls are acceptable, if the clearances are met.

12. **[Updated]** A vestibule located in a *barrier-free* path of travel shall be arranged to allow the movement of wheelchairs between doors and shall provide a distance between 2 doors in series of not less than 1 350 mm plus the width of any door that swings into the space in the path of travel from one door to another.
13. Only the active leaf in a multiple-leaf door in a *barrier-free* path of travel need conform to the requirements of this Article.
14. **[Updated]** Except as provided in Clause 3.8.3.5.(1)(c) and Sentence (16), the clear floor space on the pull side of a swinging door in a *barrier-free* path of travel shall be level within a rectangular area of not less than 1 700 mm by 1 500 mm measured from the hinged side of the door. (See Note A-3.8.3.6.(14) to (16).)

15. **[New]** Except as provided in Clause 3.8.3.5.(1)(c) and Sentence (16), the clear floor space on the push side of a swinging door and on each side of a sliding door in a *barrier-free* path of travel shall be level within a rectangular area
    a. whose dimension parallel to the closed door is not less than 1 200 mm, and
    b. whose dimension perpendicular to the closed door is not less than 1 500 mm.

16. **[New]** Where a door referred to in Sentences (14) and (15) is equipped with a power door operator complying with Sentence (6), the width of the clear floor space parallel to the closed door is permitted to be reduced to not less than 1 000 mm. (See Note A-3.8.3.6.(14) to (16).) (See Note A-3.8.3.6.(14) to (16).)

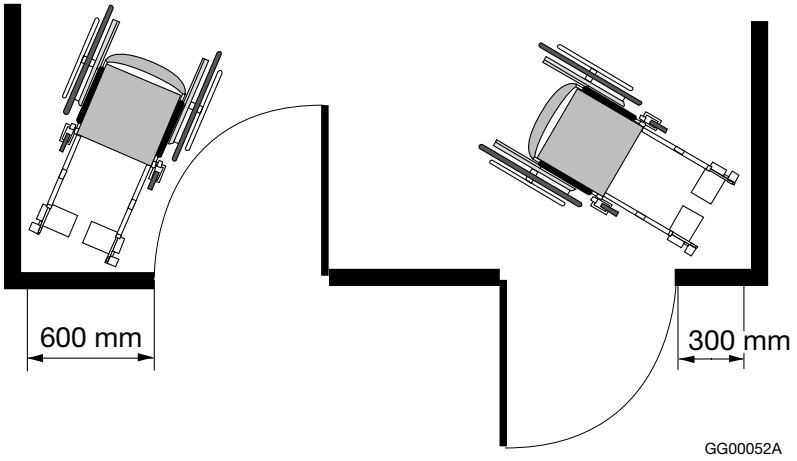


Figure A-3.8.3.6.(11) above from the NBC(AE) – Doorway clearance

17. **[New]** Except for facilities for persons with cognitive disabilities such as dementia, doorways leading from a *public corridor* or a corridor used by the public that provide access to a public area or an *exit* shall be provided with a door or door frame that has a readily apparent visual contrast with adjacent wall surfaces. (See Note A-3.8.3.6.(17).) (See also Note A-3.4.6.11.(4).)

BEST PRACTICE

Lever handles are preferred by people with limited strength or limited ability to grasp with their hands and/or to turn their wrists/ arms. Knob-type handles are not recommended as they can be difficult to grasp and manipulate.

Lever handles with the ends turned toward the door are less of a hazard than are other handle designs with sharp or abrupt edges, because people with visual disabilities often trail wall or door surfaces with their hands.

In the event of a power failure, power-operated doors must have battery back-up or be manually operable.

Doorways shall be identified by the use of contrasting colours for door frames, handles, awnings, etc. Entrances and vestibules should be well lit. Additionally, entrances from the exterior of the building and related vestibules shall be illuminated with evenly distributed and high levels of lighting.

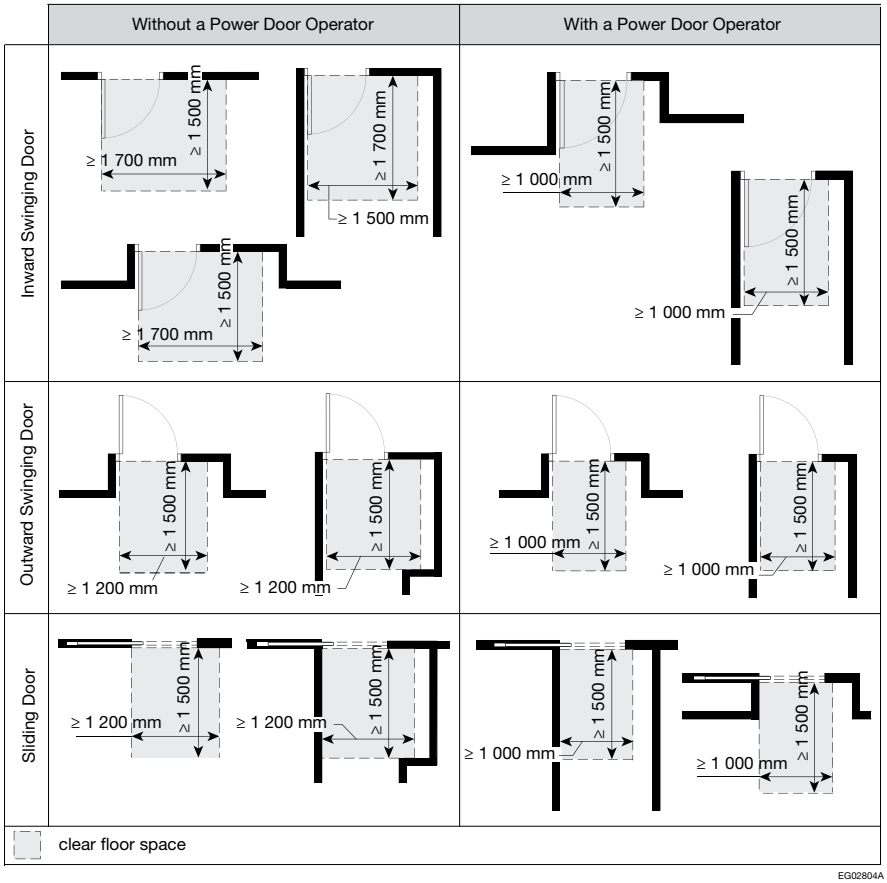


Figure A-3.8.3.6.(14) to (16) above from the NBC(AE) – Minimum clear floor space required at doors in a barrier-free path of travel

Entrance security systems

Entrances equipped with electromagnetic locks as part of a security system can create difficulties for people with hearing loss. Some entrances in walk-up apartments, for example, have security locks that are released from a remote location, such as a tenant's suite. Barrier-free design requires that both an audible and visual signal be provided to alert visitors that the locking mechanism is deactivated.

The installation of a telephone keypad configuration would be beneficial for all visitors for calling tenants from security entrances. Searching columns of buttons and corresponding long lists of names is time-consuming and often impractical, if not impossible, for visitors with visual disabilities. Ensure that the directory is visible from a seated position.

3.3.1.20. Transparent doors and panels

1. Except as permitted by Sentence (5), a glass or transparent door shall be designed and constructed so that the existence and position of the door is readily apparent, by attaching visually contrasting hardware, bars or other permanent fixtures to it.
2. The visibility of fully glazed transparent doors, sidelights and panels shall be enhanced through the inclusion of mullions, markings or other elements that
   a. are visually contrasting,
   b. are at least 50 mm high,
   c. extend the full width of the door, sidelight or panel, and
   d. are located between 1 350 mm and 1 500 mm above the floor.
3. A glass door shall be constructed of
   a. laminated or tempered safety glazing conforming to CAN/CGSB-12.1, “Safety Glazing,” or
   b. wired glass conforming to CAN/CGSB-12.11-M, “Wired Safety Glass.”
4. Except as permitted by Sentence (5), transparent panels used in an access to *exit* that, because of their physical configuration or design, could be mistaken as a *means of egress* shall be made inaccessible by barriers or railings.
5. Sliding glass *partitions* that separate a *public corridor* from an adjacent occupancy and that are open during normal working hours need not conform to Sentences (1) and (4), provided the *partitions* are suitably marked in conformance with Sentence (2) to indicate their existence and position.
6. Where vision glass is provided in doors or transparent sidelights, the lowest edge of the glass shall be no higher than 900 mm above floor level.
7. Glass in doors and in sidelights that could be mistaken for doors, within or at the entrances to *dwelling units* and in public areas, shall conform to the requirements of Article 9.6.1.4.
8. A window in a public area that extends to less than 1 000 mm above the floor and is located above the second *storey* in a *building* of *residential occupancy*, shall be protected by a barrier or railing to not less than 1 070 mm above the floor, or the window shall be non-openable and designed to withstand the lateral design loads for balcony *guards* required by Article 4.1.5.14.

3.8.3.7. Passenger-elevating devices

1. Where passenger elevators are used in a *barrier-free* path of travel, features described in Appendix E of ASME A17.1/CSA B44, "Safety Code for Elevators and Escalators," shall be included in their design and construction.
2. [New] A platform-equipped passenger-elevating device used in a *barrier-free* path of travel shall conform to the Elevating Devices Codes Regulation made pursuant to the Safety Codes Act and shall
   a. have a clear floor space not less than 1 500 mm long by 1 000 mm wide, and
   b. have entry doors or gates
      i. providing a clear width not less than 850 mm in the open position if located on the short side of the passenger-elevating device, or
      ii. providing a clear width not less than 1 000 mm in the open position if located at either end of the long side of the passenger-elevating device.

INTERPRETATION AND BEST PRACTICE

Elevators and passenger-elevating devices are mechanical devices for moving people safely and efficiently from one level to another. This section deals with the safe movement of those using wheelchairs, scooters or other mobility aids from one elevation to another.

The order of preference for the installation of elevating/movement devices are:

1. passenger elevators (minimum 6 600 kg weight capacity),
2. platform lifts (minimum 4 400 kg weight capacity). Note: Chair lifts are NOT acceptable.

Note: A platform lift is used to move wheelchairs and scooters from level to level. A chair lift is used to move people in a seated position from level to level.

Elevators

The following standards were developed by the Canadian Standards Association (CSA) to evaluate elevating devices. Reference the latest version of the Elevating Devices Codes Regulation prior to design and/or installation of the passenger-elevating device. In particular, review the harmonized codes in

- ASME A17.1-2022/CSA-B44:22, "Safety Code for Elevators and Escalators"
- CSA-B355:19 - "Platform Lifts and stair lifts for barrier-free access"

Note 1: Lifts must be designed, installed and maintained according to CSA-B355.

Note 2: The Exemption Regulation 351/2003 exempts elevating devices that serve privately owned single-family dwellings from applying CAN/CSA-B613-00.

3.5.4.1. Elevator car dimensions

1. Except as provided in Sentence (2), if one or more elevators are provided in a *building*, at least one elevator on each *storey* with access to an elevator shall have inside dimensions that will accommodate and provide adequate access for a patient stretcher 2 010 mm long and 610 mm wide in the prone position. (See Note A-3.5.4.1.(1).)
2. **[New]** The inside dimensions stipulated in Sentence (1) do not apply to limited-use/limited-application elevators designed and installed in accordance with the Elevating Devices Codes Regulation made pursuant to the Safety Codes Act.
3. An elevator satisfying the requirements of Sentence (1) shall be clearly identified on the main entrance level of the *building*.

INTERPRETATION

The NBC(AE) requires that the elevator be sized to accommodate a stretcher no less than 2 010 mm in width and 610 mm in depth.

In some circumstances, it is necessary to maintain a patient on a stretcher in the prone position during transit to a hospital or to treatment facilities. Inclining the stretcher to load it into an elevator could be fatal or detrimental to the patient's health. Many ambulance services use a mobile patient stretcher that measures 2 010 mm long and 610 mm wide. As well as space for the stretcher in the elevator, there should be sufficient additional space for at least two attendants who may be providing treatment during transit. Common elevator units that can satisfy this requirement include:

- a 1 134 kg elevator car with minimum interior dimensions of 2 032 mm wide and 1 295 mm deep with a right- or left-hand access door. The minimum access door width is 1 067 mm and it must be on the 2 032 mm side of the car.
- a 1 134 kg elevator car with minimum interior dimensions of 2 032 mm deep and 1 295 mm wide with a minimum 915 mm wide access door located on the 1 295 mm side.

Variance

The following conditions form the variance for elevators from the above requirements:

1. An elevator is permitted to be substituted in place of a lift conforming to CSA-B355 provided the elevator:
   a. Is restricted to a maximum rise of 7000 mm, and
   b. The platform/car sizes are no less than the minimum as set-out in Table 1 of CSA B355 standard.
2. The substituted elevator with a travel distance of not more than 7000 mm is not required to conform to Sentence 3.5.4.1.(1)

(For more information, see STANDATA 19-BCV-003(REV1) / 19-EDB-001 Elevator and passenger-elevating devices)

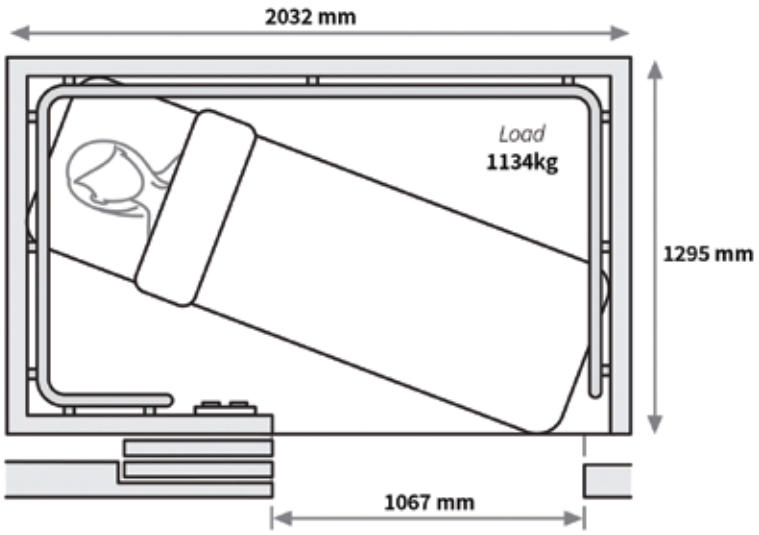


Figure B: Elevator car dimensions

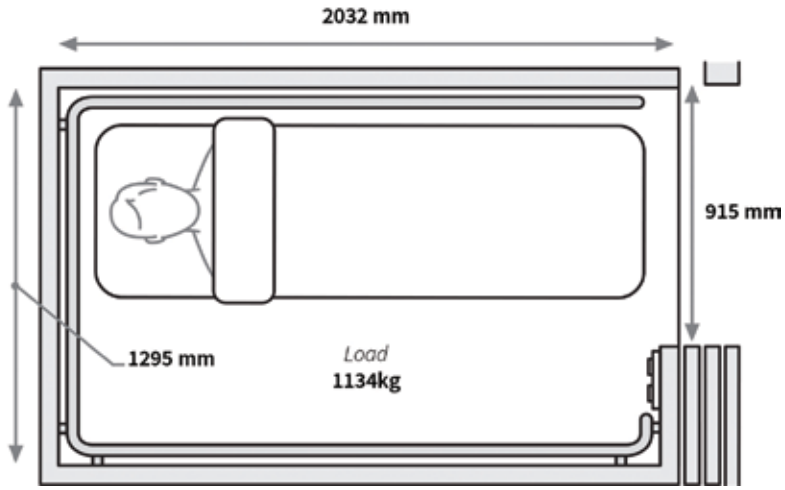


Figure C: Elevator car dimensions

See STANDATA 19-BCI-010 Elevator Operations and Accessibility for more information.

Note: Elevators should be operational in buildings in relation to barrier-free path of travel.

3.8.3.8. Controls

1. Controls described in this Section shall
   a. where located in a *storey* where a *barrier-free* path of travel is required and unless otherwise stated,
      i. be in or adjacent to the *barrier-free* path of travel,
      ii. **[Updated]** be mounted 900 mm to 1 200 mm above the floor, and
      iii. be adjacent to and centred on either the length or the width of a clear floor space of 1 350 mm by 800 mm,
   b. be operable
      i. with one hand in a closed fist position, without requiring tight grasping, pinching with fingers, or twisting of the wrist, and
      ii. unless otherwise stated, with a force not more than 22 N, and
   c. **[New]** where controls provide a feedback signal to the user, it shall be both audible and visible (see Note A-3.8.3.8.(1)(c)).

INTERPRETATION

Controls include light and other switches, thermostats, and manual fire pull stations. Note: Manual fire pull stations do not meet Clause (1)(b).

Outlets are not controls, however, it is important to make them accessible by locating them no lower than 600 mm from the finished floor surface.

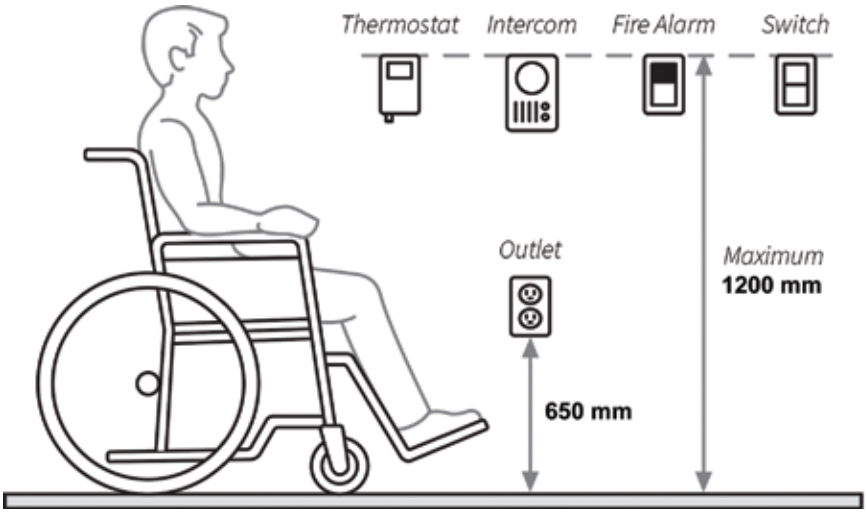


Figure D Controls

[New] 3.8.3.9. Accessible Signs

1. Visual information signs required by Subsections 3.4.5. and 3.4.6. and Article 3.8.2.10. shall comply with Clauses 4.5.2, 4.5.3 and 4.5.4 of CSA B651, “Accessible design for the built environment.” (See Note A-3.8.3.9.(1) and (2).)
2. Tactile information signs required by Subsections 3.4.5. and 3.4.6. and Article 3.8.2.10. shall
   a. have Braille and tactile characters in accordance with Clauses 4.5.6.2 and 4.5.6.3 of CSA B651, “Accessible design for the built environment,”
   b. be installed on the wall closest to the latch side of the door or on the nearest wall on the right side of the door, where there is no wall at the latch side, and
   c. be centred 1 500 mm above the finished floor with the edge of the sign located not more than 300 mm from the door. (See Note A-3.8.3.9.(1) and (2).)

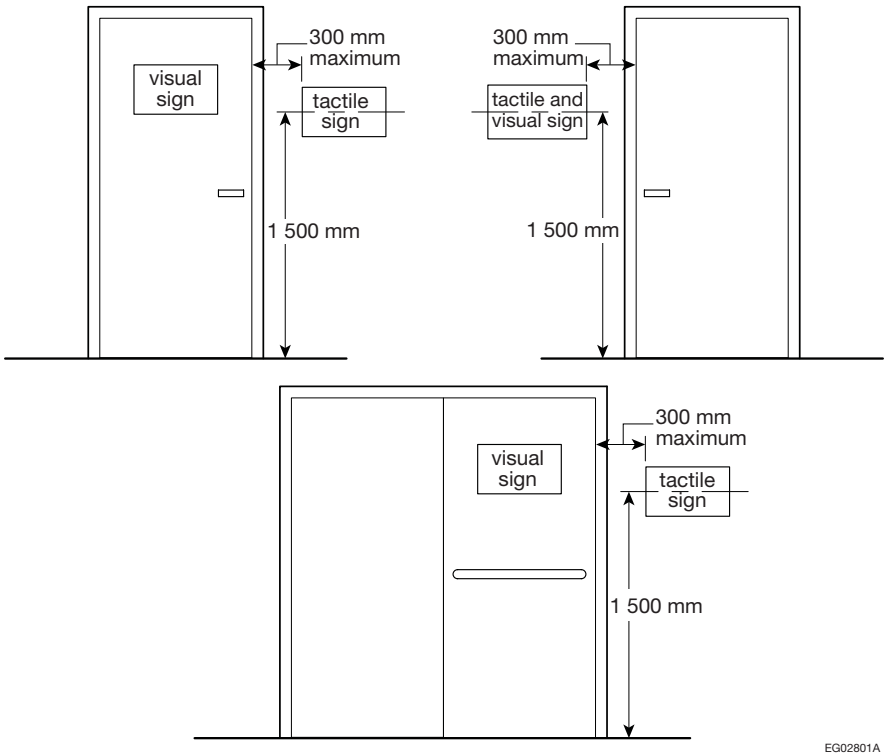
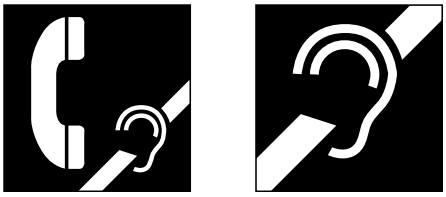


Figure A-3.8.3.9.(1) and (2) above from the NBC(AE) – Positioning of visual and tactile information signs on and near doors

3. Signs required by Article 3.8.2.10. shall incorporate the International Symbol of Access or the International Symbol of Access for Hearing Loss and appropriate graphical or textual information that clearly indicates the type of facilities available. (See Note A-3.8.3.9.(3).)

GG00049B

Figure A-3.8.3.9.(3)-A. above from the NBC(AE) – Signs indicating accessible facilities



GG00050A

Figure A-3.8.3.9.(3)-B. above from the NBC(AE) – Signs for assistive listening facilities

Note: The International Symbol of Access for Hearing Loss shown in Figure A-3.8.3.9.(3)-B, which indicates accessibility for persons with hearing loss, should be used to indicate the availability of variable volume controls on telephones, assistive listening systems and text telephones (TT). These latter devices may also be referred to as teletypewriters (TTY) or telecommunications devices for the deaf (TDD).

Directories

Building directories should be conveniently located, tactile in nature, and located on a sloping plane 760 mm to 900 mm above the floor. Characters that are raised at least 0.7 mm are needed.

Persons who are blind can be given directions by the use of pre-recorded messages or the use of tactile maps and signs. Guide dogs and canes are also used to aid the blind. Those with visual disabilities or who are deaf-blind rely on the following cues for orientation:

- colour contrast/brightness
- changes in illumination
- sounds
- textures (different flooring materials to indicate change in direction or use)
- standard architectural features
- patterns
- placement of elements

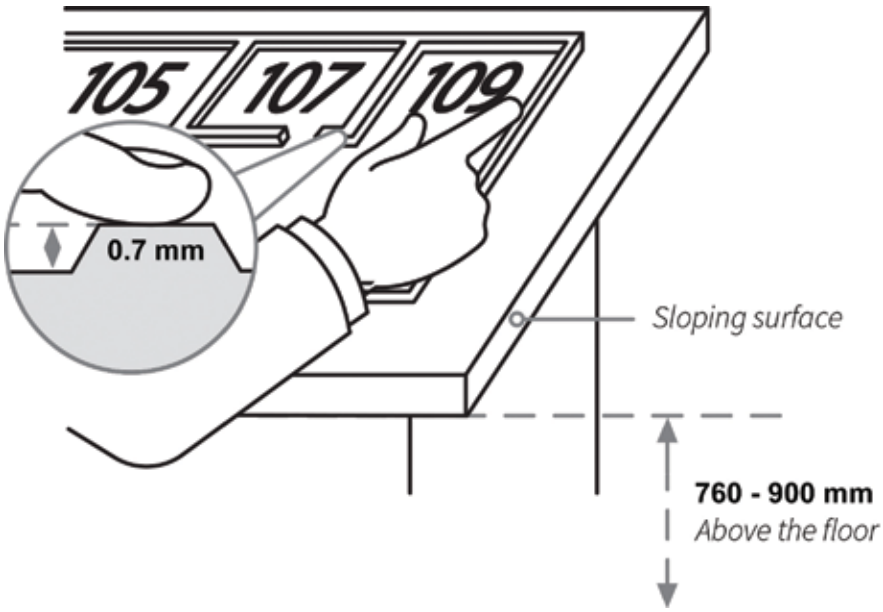


Figure E Accessible building directories that use tactile maps and signs

Alternate forms of communication for people with visual disabilities

Recent technology (such as a product known as Talking Signs) offers infrared wireless communication systems, where pedestrians who are visually impaired may use a receiver to pick up remote directional voice messages. Destination points in a structure can be equipped with infrared equipment that provides beams of invisible light to receivers that pedestrians would use. Verbal messages can then be provided through the receiver directly or through a headset. Such technology may be used in both internal and external environments. This would, for people who have visual impairments, either augment or replace the need for sighted guides or tactile/high-contrast directories.

Signage

People with visual disabilities rely on cues to find their way. Doors and openings that lead from public places and through which the public is permitted to enter should be identified by specific tactile signs with letters not less than 60 mm high, raised 0.7 mm above the surface located 1 200 mm above the floor surface, and beginning not more than 150 mm from the door openings.

Accessibility for persons with visual disabilities

Persons with visual disabilities rely on

- lighting cues, i.e., the intensity and distribution of lights used to accent areas and passageways,
- audible cues, i.e., subtle sounds, such as a fountain, clock, music, machine, or verbal announcement, to help with orientation,
- tactile cues, i.e., different types of flooring that mark a pathway, or change from one area to another, thus serving as a warning that a change in direction is to take place,
- colour/contrast cues, i.e., used to defi ne the location of doorways, building controls (such as light switches and thermostats) and protruding elements, such as handrails and fire extinguishers, and
- ergonomic cues, i.e., the design of rooms and the arrangement of furnishings that allow people to move efficiently and safely along pathways within rooms and from room to room.

Accessibility for persons with language difficulties

The use of graphics or internationally recognized symbols to indicate direction or identify facilities and services will be beneficial to persons with:

- developmental disabilities,
- learning disabilities,
- brain injuries,
- mental illnesses causing disorientation or confusion, and
- little or no knowledge of the local written language.

However, if wording is to be used on signs, the language on them should be simple and concise to be accessible for most building users.

Colour contrast

The identification of floors and other signs intended to help orient people who are visually disabled should offer maximum colour contrast to be effective. For this reason, it is recommended that white on black or black on white is used, as this combination produces the best legibility.

It is also recommended that sign surfaces be processed to prevent glare. Assigned floor numbers should have a glare-free surface and be mounted on a background in a contrasting colour.

3.8.3.10. Drinking fountains

1. Drinking fountains located in a *storey* where a *barrier-free* path of travel is required, shall
   a. be located along the *barrier-free* path of travel,
   b. have a minimum clear floor space of 800 mm by 1 350 mm in front of them,
   c. where they have frontal access, provide a knee clearance in accordance with Clause 3.8.3.16.(1)(e), and
   d. have a spout that
      i. is located near the front of the unit, at a height between 750 mm and 915 mm above the floor, and
      ii. directs water flow in a trajectory that is nearly parallel to the front of the unit, at a height not less than 100 mm, and
   e. be equipped with controls that
      i. activate automatically, or
      ii. comply with Clause 3.8.3.8.(1)(b) and are located on the front or on both sides of the fountain.
      (See Sentences 3.3.1.8.(2) and (3) on horizontal projections.)

[New) 3.8.3.11. Water-bottle filling stations

1. Water-bottle filling stations located in a *storey* where a *barrier-free* path of travel is required shall
   a. be located along the *barrier-free* path of travel,
   b. have a clear floor space of 800 mm by 1 350 mm in front of them (see Note A-3.8.3.11.(2)(b) and (d)),
   c. where they have frontal access, provide a knee clearance in accordance with Clause 3.8.3.16.(1)(e),
   d. be operable at a height of not more than 1 200 mm above the floor (see Note A-3.8.3.11.(2)(b) and (d)), and
   e. be equipped with controls that
      i. activate automatically, or
      ii. comply with Sentence 3.8.3.8.(1).
      (See Sentences 3.3.1.8.(2) and (3) on horizontal projections.)

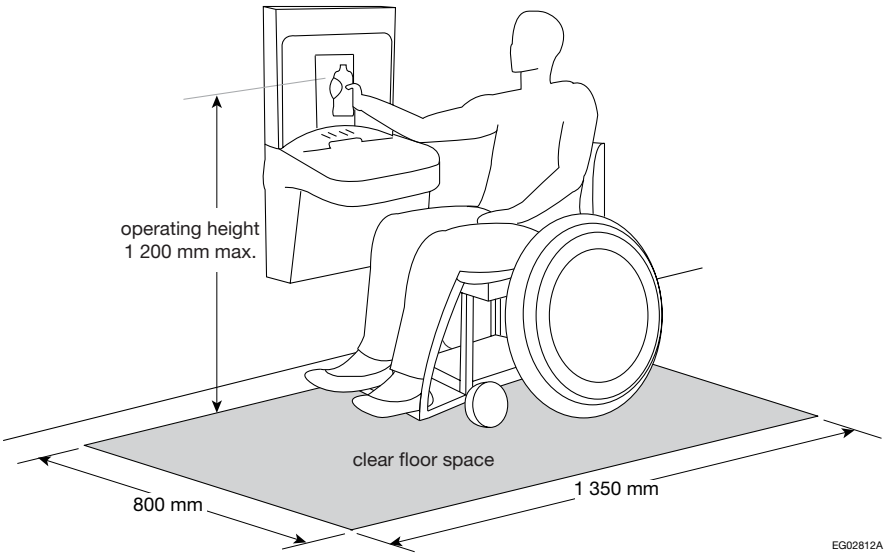


Figure A-3.8.3.11(2)(b) and (d) above from the NBC(AE) – Clear floor space and operating height requirements for water-bottle filling stations

Note: There are clear floor space and operating height requirements for water bottle filling stations.

3.8.3.12. Accessible water-closet stalls

1. Water-closet stalls and enclosures required by Sentence 3.8.2.8.(5) shall
   a. be designed to allow a person using a wheelchair to turn in an open space that has a diameter not less than 1 500 mm,
   b. **[New]** have a clear lateral transfer space adjacent to the water closet that
      i. is at least 1 500 mm long, measured from the wall behind the water closet, and
      ii. is at least 900 mm wide, measured from the closest edge of the water closet seat,
      (see Note A-3.8.3.12.(1)(b))

Note: Objects such as a paper towel dispenser are hazards to a person transferring on/off the toilet, therefore, these shall not be located above or within the transfer space. A folding/flip-up/pull-down grab bar is allowed adjacent the transfer space.

   c. **[New]** have a clear floor space of 1 700 mm by 1 700 mm in front of the accessible stall,

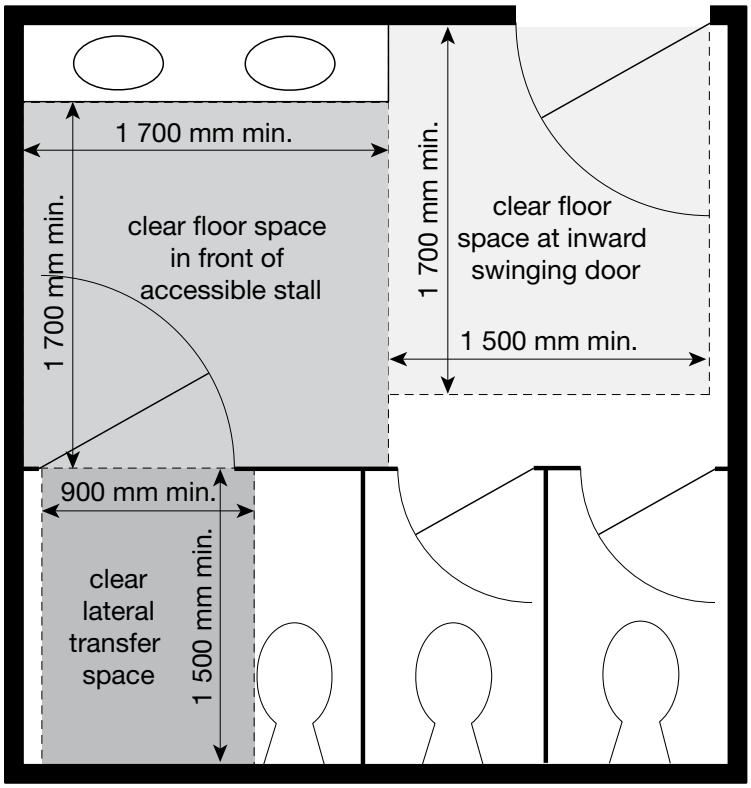


Figure A-3.8.3.12.(1)(d)(v) above from the NBC(AE) – Water-closet stalls

d. be equipped with a door that

   i. can be latched from the inside with a mechanism located 900 mm to 1 100 mm above the floor that conforms to Clause 3.8.3.8.(1)(b),

   ii. **[New]** is aligned with either the transfer space adjacent to the water closet or with a clear floor space not less than 1 700 mm by 1 700 mm within the stall,

   iii. provides a clear opening not less than 850 mm wide when it is open,

   iv. is self-closing so that, when at rest, the door is ajar by not more than 50 mm beyond the jamb,

   v. swings outward, unless there is sufficient floor space within the stall for the door to swing inward in addition to a clear floor space of at least 800 mm by 1 350 mm (see Note A-3.8.3.12.(1)(d)(v)),

BEST PRACTICE

The turning diameter within an accessible stall should be 1 700 mm rather than the recommended minimum of 1 500 mm in order to be consistent with the new turning diameter of 1 700 mm in front of the stall.

vi. where the door swings outward, is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the inside such that its midpoint is 200 mm to 300 mm from the hinged side of the door and 800 mm to 1 000 mm above the floor (see Note A-3.8.3.12.(1)(d)(vi)), and

vii. is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the outside such that its midpoint is 120 mm to 220 mm from the latch side and 800 mm to 1 000 mm above the floor,

e. have a water closet that

i. conforms to Article 3.8.3.14., and

ii. is located so that the distance between the centre line of the fixture and the wall on one side is 460 mm to 480 mm,

f. be equipped with an L-shaped grab bar that

i. is mounted on the side wall closest to the water closet,

ii. has horizontal and vertical components not less than 760 mm long mounted with the horizontal component 750 mm to 850 mm above the floor and the vertical component 150 mm in front of the water closet (see Note A-3.8.3.12.(1)(f)(ii)), and

iii. complies with Article 3.7.2.7.,

g. be equipped with either one grab bar at least 600 mm long and centred over the water closet, or two grab bars at least 300 mm long and located either side of the flush valve, that

i. conform to Article 3.7.2.7.,

ii. are mounted on the rear wall, and

iii. are mounted at the same height as the grab bar on the side wall or 100 mm above the top of the attached water tank, if applicable,

h. be equipped with a coat hook mounted not more than 1 200 mm above the floor on a side wall and projecting not more than 50 mm from the wall, and

i. be equipped with a toilet paper dispenser mounted on the side wall closest to the water closet such that

i. the bottom of the dispenser is 600 mm to 800 mm above the floor, and

ii. the closest edge of the dispenser is 300 mm from the front of the water closet.

BEST PRACTICE

The placement of the horizontal grab bar adjacent to the toilet is best when installed at 300 mm – 375 mm above from the surface of the toilet seat because not all accessible water closets are installed at the same height.

If there is more than one (1) accessible water closet stall provided, it is best to design the stall for one (1) toilet with an adjacent grab bar for a right-handed user and one (1) for a left-handed user.

As a safety measure, an additional folding/flip-up/pull-down grab bar may be located on the opposite side of the toilet (within the lateral transfer space) at the same height as the permanent grab bar for the convenience and use for a person who has greater strength and mobility or the use of the opposite hand or arm.

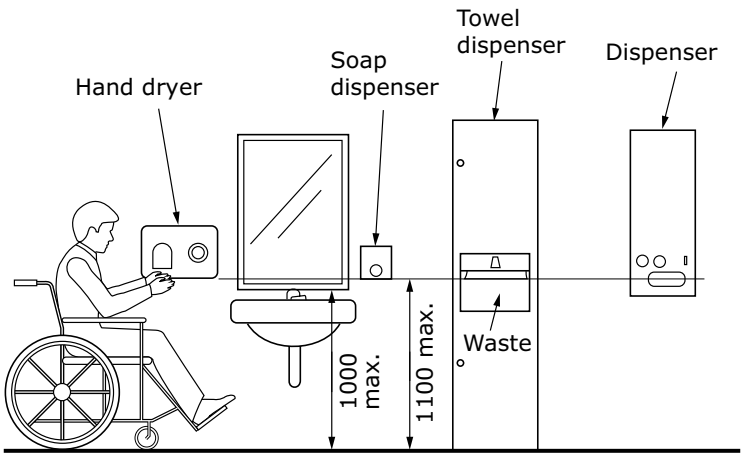


Figure 44 above from the CSA B651 – Washroom accessory heights (see Clauses 6.2.4.2 to 6.2.4.4.)

The figure above shows the height of washroom accessories in an accessible lavatory. The graphic shows a person in a wheeled mobility device using the washroom hand dryer. The primary access point of the hand dryer and other washroom accessories, including a soap dispenser, towel dispenser, and general dispensing unit are positioned at a maximum of 1100 mm above the floor, while the base of the mirror is positioned a maximum of 1000 mm above the floor.

3.7.2.7. Grab bars

1. Grab bars shall
    a. be slip-resistant and free of any sharp or abrasive elements,
    b. be mounted on surfaces that are free of any sharp or abrasive elements,
    c. be able to resist a load of not less than 1.3 kN applied vertically or horizontally,
    d. be 30 mm to 40 mm in diameter, and
    e. where mounted on a wall, have a clearance of 35 mm to 45 mm from the wall.

Note: Grab bars are safety devices designed to enable a person to maintain balance, lessen fatigue while standing, hold some of their weight while maneuvering, or have something to grab onto in case of a slip or fall. A caregiver may use a grab bar to assist with transferring a patient from one place to another. A worker may use a grab bar to hold on to as they climb, or in case of a fall.

3.8.3.13. Universal washrooms

(See Note A-3.8.3.13.)

1. A universal washroom shall
   a. be served by a *barrier-free* path of travel,
   b. have a door complying with Article 3.8.3.6. that
      i. has a latch-operating mechanism located 900 mm to 1 100 mm above the floor that complies with Clause 3.8.3.8.(1)(b) and is capable of being locked from the inside, and released from the outside in case of emergency, and
      ii. if it is an outward swinging door that is not self-closing, has a door pull not less than 140 mm long located on the inside so that its midpoint is not less than 200 mm and not more than 300 mm from the hinged side of the door and not less than 900 mm and not more than 1 100 mm above the floor (see Note A-3.8.3.12.(1)(d)(vi)),
   c. have one lavatory conforming to Article 3.8.3.16.,
   d. have one water closet conforming to Article 3.8.3.14. and Subclause 3.8.3.12.(1)(e)(ii),
   e. **[New]** have a clear lateral transfer space adjacent to the water closet that conforms to Clause 3.8.3.12.(1)(b),
   f. have grab bars conforming to Clauses 3.8.3.12.(1)(f) and (g),
   g. have a coat hook conforming to Clause 3.8.3.12.(1)(h),
   h. have a toilet paper dispenser conforming to Clause 3.8.3.12.(1)(i),
   i. unless a counter is provided, have a shelf located not more than 1 200 mm above the floor, and
   j. **[New]** be designed to permit a wheelchair to turn in an open space not less than 1 700 mm in diameter.

BEST PRACTICE

The placement of the horizontal grab bar adjacent to the toilet is best when installed at 300 mm – 375 mm above the surface of the toilet seat.

A universal washroom should include a pull-down grab bar on the opposite side of the wall-mounted grab bar as an option, in case an individual requires the use of the additional grab bar.

INTERPRETATION

A universal washroom requires a power-operated door since it is along a barrier-free path of travel. (See 3.8.2.7. Power Door Operators)

Note: It is best if the power-operated door does not overlap the 1 700 mm turning diameter.

2. **[New]** A universal washroom required to have an accessible change space as stipulated in Sentence 3.8.2.8.(15) shall
   a. be equipped with an adult-sized change table,
   b. have a clear floor space to accommodate the adult-sized change table that is 810 mm wide by 1 830 mm long and does not overlap with the clear spaces required by Clauses (1)(e), (1)(j) and (c), and

c. have a clear transfer space of 900 mm by 1 350 mm adjacent to the long side of the clear floor space for the adult-sized change table.

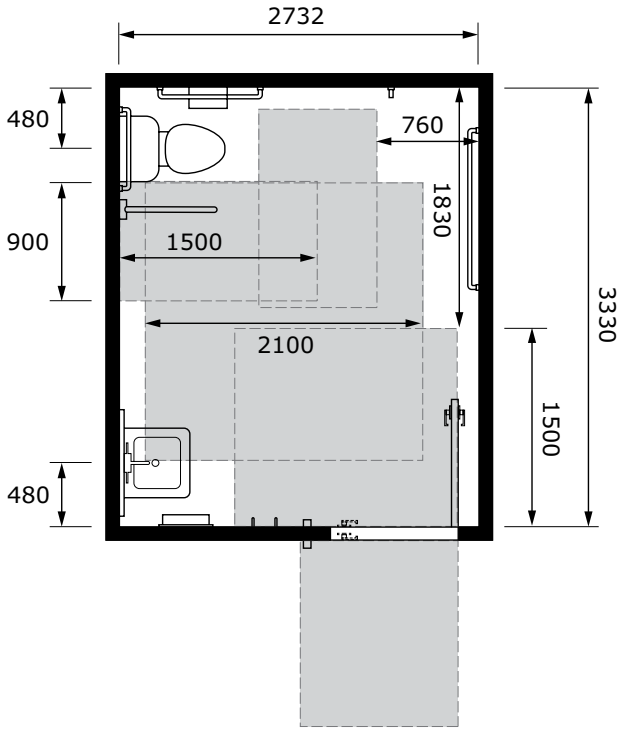


Figure 49a) above from CSA B651 – Universal washrooms – Example layout (see Clause 6.3.1.1.)

The figure above shows a dimensioned plan of an example layout of a universal washroom. Included in the layout is a clear central-turn area of 2 100 by 2 100 mm.

3.8.3.14. Water closets

1. A water closet for a person with physical disabilities shall
   a. be equipped with a seat located 430 mm to 460 mm above the floor,
   b. flush automatically or be equipped with a flushing control that
      i. is located 500 mm to 900 mm above the floor,
      ii. is located no more than 350 mm from the transfer side, and
      iii. complies with Clause 3.8.3.8.(1)(b),
   c. be equipped with a seat lid or other back support, and
   d. where it has a tank, have a securely attached tank top. (See Note A-3.8.3.14.(1).)

BEST PRACTICE

Washroom Design:
Multiple stall washrooms shall include:

- Accessible stall
- Limited mobility stall
- Urinal

Privacy walls (may required)
Universal washroom may double as a limited mobility if there is only 1 universal washroom.

[New] 3.8.3.15. Water-closet stalls and urinals for persons with limited mobility

1. Water-closet stalls for persons with limited mobility required by Sentence 3.8.2.8.(7) shall
   a. be at least 1 500 mm deep and 890 mm to 940 mm wide,
   b. be equipped with a door that
      i. has a latch-operating mechanism conforming to Clause 3.8.3.8.(1)(b) that can be locked from the inside and released from the outside in the event of an emergency,
      ii. provides a clear opening not less than 850 mm wide when it is open,
      iii. swings outward, unless the minimum dimensions required by Clause (a) do not overlap with the area of the door swing,
      iv. is self-closing so that, when at rest, the door is ajar by not more than 50 mm beyond the jamb, and
      v. has a door pull on both sides of the door, near the latch side, located 900 mm to 1 100 mm above the finished floor,
   c. have one water closet conforming to Article 3.8.3.14. centered within the stall,
   d. have a horizontal grab bar conforming to Article 3.7.2.7. on each side of the water closet that
      i. is located 750 mm to 850 mm above the floor,
      ii. begins not more than 300 mm from the wall behind the water closet, and
      iii. extends at least 450 mm in front of the toilet seat, and
   e. be equipped with a coat hook mounted not more than 1 200 mm above the floor on a side wall and projecting not more than 50 mm from the wall.

BEST PRACTICE

The placement of both horizontal grab bars adjacent to the toilet is best measured at 300 mm – 375 mm from the surface toilet seat. Not all toilets are the same height or mounted at the same height from the floor.

INTERPRETATION

The stall(s) for limited mobility use is in addition to a barrier-free stall(s). If there are only two (2) stalls in a group of water closet stalls, one (1) shall be barrier-free and the other shall be for limited mobility use.

2. **[New]** Urinals described in Sentence 3.8.2.8.(6) shall
   a. be wall-mounted, with the rim located not more than 430 mm above the floor,
   b. be adjacent to an accessible route,
   c. have a clear width of approach that is at least 800 mm wide by 1 350 mm long centred on the urinal and unobstructed by privacy screens,

d. have no step in front of it,

e. have a flush control that

   i. is automatic, or

   ii. complies with Clause 3.8.3.8.(1)(b) and is located 900 mm to 1 100 mm above the floor, and

f. have a vertically mounted grab bar installed on each side that

   i. complies with Article 3.7.2.7.,

   ii. is not less than 600 mm long, with its centre line 1 000 mm above the floor, and

   iii. is located not more than 380 mm from the centre line of the urinal.

3.8.3.16. Lavatories and mirrors

1. Lavatories required by Sentence 3.8.2.8.(8) shall

   a. be equipped with faucets complying with Sentence 3.7.2.3.(4),

   b. be located so that the distance between the centre line of the lavatory and any side wall is not less than 460 mm,

   c. **[New]** have a clear floor space in front of the lavatory that is at least

      i. 800 mm wide, centred on the lavatory, and

      ii. 1 350 mm long, of which no more than 430 mm is beneath the lavatory,

   d. have a rim height not more than 865 mm above the floor,

   e. have a clearance beneath the lavatory not less than

      i. 800 mm wide, centred on the lavatory,

      ii. 735 mm high at the front edge,

      iii. 685 mm high at a point 200 mm back from the front edge, and

      iv. 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge,
      (see Note A-3.8.3.16.(1)(e))

   f. have insulated water supply and drain pipes where these pipes are exposed (see Note A-3.8.3.16.(1)(f)),

   g. have a soap dispenser that

      i. is automatic, or

      ii. complies with Clause 3.8.3.8.(1)(b) and is located not more than 1 100 mm above the floor, within 500 mm from the front of the lavatory (see Note A-3.8.3.16.(1)(g)), and

BEST PRACTICE

Generally, mobility devices such as wheelchairs are wider and the person usually rides higher, therefore, it is reasonable to locate the lavatory no higher than 815 mm from the finished floor.

h. have a towel dispenser or other hand-drying equipment located close to the lavatory, not more than 1 200 mm above the floor in an area that is accessible to persons in wheelchairs.

2. Mirrors required by Sentence 3.8.2.8.(9) shall be
   a. mounted with their bottom edge not more than 1 000 mm above the floor, or
   b. fixed in an inclined position so as to be usable by a person in a wheelchair.

BEST PRACTICE

Automatically operating faucets are preferred over the manual control type Clause (b) for ease of access and use as well as being more hygienic.

3.7.2.3. Lavatories

1. Except as permitted by Sentence (2), at least one lavatory shall be provided in a room containing one or 2 water closets or urinals, and at least one additional lavatory shall be provided for each additional 2 water closets or urinals.
2. Wash fountains in circular form are permitted to be provided in lieu of lavatories required by Sentence (1) provided each 500 mm of circumference is considered to be the equivalent of one lavatory.
3. Any shelf or projection above a lavatory shall be located so that it will not be a hazard.
4. Lavatories required by Sentence (1) shall be equipped with faucets that
   a. operate automatically, or
   b. have a manual control that
      i. complies with Clause 3.8.3.8.(1)(b),
      ii. does not require the application of continuous force to maintain water flow, and
      iii. where metered, provides at least 10 s of water flow.

Note: The Plumbing code requires automatic faucets in public facilities for hygiene.

3.8.3.17. Showers

1. Showers required by Sentence 3.8.2.8.(12) shall
   a. be not less than 1 500 mm wide and 900 mm deep,
   b. have a clear floor space at the entrance to the shower that is not less than 900 mm deep and the same width as the shower, except that fixtures are permitted to project into that space provided they do not restrict access to the shower (see Note A-3.8.3.17.(1)(b)),
   c. have no doors or curtains that obstruct the controls or the clear floor space at the entrance to the shower,
   d. have a slip-resistant floor surface,

e. have a threshold not more than 13 mm higher than the finished floor, and where it is higher than 6 mm, beveled to a slope no steeper than 1 in 2 (50%),

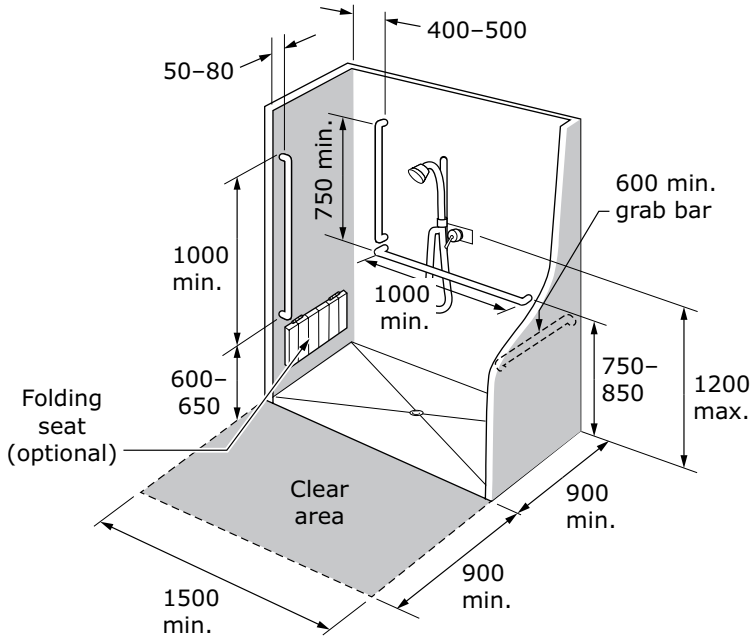


Figure 51 above from the CSA B651 – Roll-in shower stall (see Clauses 6.5.5.2 and 6.5.5.3.)

f. have 2 grab bars

   i. that conform to Sentence 3.7.2.7.(1),

   ii. one of which is not less than 1 000 mm long and located vertically on the side wall 50 mm to 80 mm from the adjacent clear floor space, with its lower end 600 mm to 650 mm above the floor, and,

   iii. one of which is L-shaped and located on the wall opposite the entrance to the shower, with a horizontal member not less than 1 000 mm long mounted 750 mm to 870 mm above the floor and a vertical member not less than 750 mm long mounted 400 mm to 500 mm from the side wall on which the other vertical grab bar is mounted,
   (see Note A-3.8.3.17.(1)(f)),

BEST PRACTICE

Accessible showers should be designed as curb less or zero threshold. If there is a threshold, it should not exceed 6 mm for safety and shall be beveled to a slope no steeper than 1 in 4 to prevent tripping and allow for a shower chair with wheels to enter with greater ease and safety.

If there is a concern with water flow outside of the shower area, a flexible dam or barrier may be installed.

T-shaped and tube-style shower dams are both effective in retaining water inside the shower stall. The adhesive substance holding them in place can dry out over time and will periodically need to be reapplied. Shower dam models that get screwed into the shower floor are a more permanent, long-term solution.

Water dams are only one means of preventing the water from escaping the confines of a curbless shower. In most cases (unless the shower stall is unusually large) the water dam will not be sufficient to contain the water all by itself. Water dams work best when coupled with a long, weighted shower curtain and a shower splash guard, which helps to hold the shower curtain more flush against the sidewalls. For more tips on water retention methods, read the article “Curbless Shower: 8 Ways to Contain the Water Inside” at Homeability.

g. have a hinged seat that is not spring-loaded or a fixed seat with a smooth, slip-resistant surface and no rough edges, the seat being

   i. not less than 450 mm wide and 400 mm deep,

   ii. mounted on the same side wall as the vertical grab bar, at 460 mm to 480 mm above the floor, and

   iii. designed to carry a minimum load of 1.3 kN,

h. have a pressure-equalizing or thermostatic-mixing valve and other controls that

   i. comply with Clause 3.8.3.8.(1)(b),

   ii. are mounted on the wall opposite the entrance to the shower at not more than 1 200 mm above the floor and within reach of the seat,

i. have a hand-held shower head with not less than 1 800 mm of flexible hose located so that it

   i. can be reached from a seated position,

   ii. can be used in a fixed position at a height of 1 200 mm and 2 030 mm, and

   iii. does not obstruct the use of the grab bars, and

j. have recessed soap holders that can be reached from the seated position and located on the side wall between 100 mm and 200 mm in front of the seat.

2. **[New]** A universal dressing and shower room required by Sentence 3.8.2.8.(13) shall

   a. be located in a *barrier-free* path of travel,

   b. have a door capable of being locked from the inside and released from the outside in the event of an emergency,

   c. have a lavatory and a mirror conforming to Article 3.8.3.16.,

   d. have a shower conforming to Sentence (1),

   e. have a bench that is at least 1 830 mm long by 760 mm wide and 480 mm to 520 mm high,

   f. have a clear transfer space adjacent to the long side of the bench that is 900 mm wide and as long as the bench (see Note A-3.8.3.17.(2)(f)), and

   g. have a coat hook conforming to Clause 3.8.3.12.(1)(h).

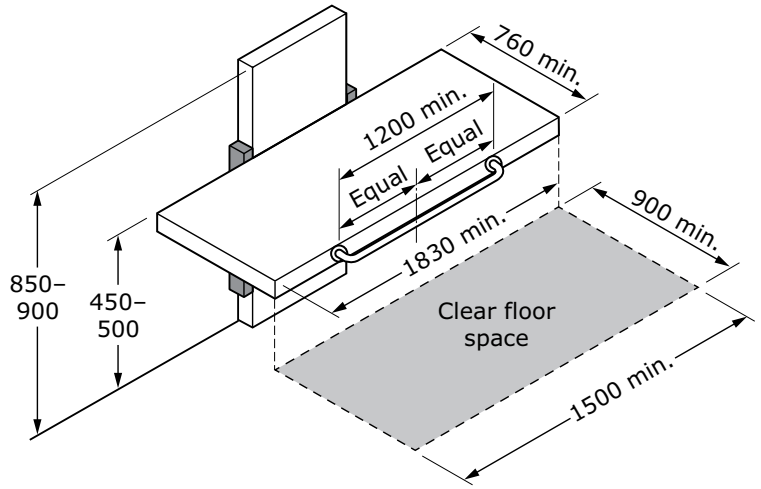


Figure 50a) above from the CSA B651 – Adult change table (see Clauses 6.3.4.1 and 6.3.4.2.)

This figure shows the dimensions of an adult change table and clear floor area adjacent to the change bench. The graphic shows a minimum clear floor space 900 by 1830 mm in front of a change bench. The change bench is 760 by 1830 mm, with a surface height above the finished floor that can be adjusted from between 450 and 500 mm at the low range to between 850 and 900 mm at the high range. A grab bar attached to the change bench is mounted horizontally and is a minimum of 1200 mm long.

3.8.3.18. Accessible bathtubs

1. A bathtub required by Sentence 3.8.2.8.(14) shall
   a. be located in a room with a clear floor space not less than 1 700 mm in diameter,
   b. be not less than 1 500 mm long,
   c. have a clear floor space not less than 900 mm wide adjacent to its entire length,
   d. be capable of being accessed along its full length with no tracks mounted on its rim,
   e. have faucets and other controls that
      i. conform to Clause 3.8.3.8.(1)(b), and
      ii. are located on the centre line or between the centre line of the bathtub and the exterior edge of the bathtub rim, at a maximum height of 450 mm above the rim,

f. have three grab bars

   i. that conform to Sentence 3.7.2.7.(1),

   ii. that are not less than 1 200 mm long,

   iii. two of which are located vertically at each end of the bathtub, set 80 mm to 120 mm in from the outside edge of the bathtub, with their lower end 180 mm to 280 mm above the bathtub rim, and

   iv. one of which is located horizontally along the length of the bathtub at 180 mm to 280 mm above the bathtub rim,

g. have a slip-resistant bottom surface, and

h. be equipped with a hand-held shower head with not less than 1 800 mm of flexible hose that can be used in a fixed position at a height of 1 200 mm and 2 030 mm.

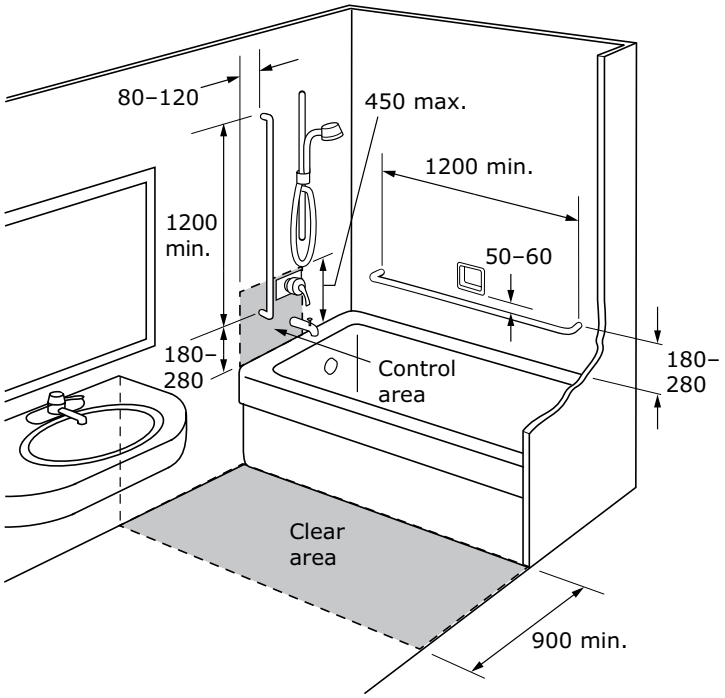


Figure 52 above from CSA B651 – Bathtub area and grab bars (see Clauses 6.5.6.1 and 6.5.6.2.)

This figure shows the dimensions of a clear floor area in front of a bathtub with grab bars depicted. The clear floor area is 900 mm deep and situated between the lavatory and the bathtub. There is one minimum 1200 mm long vertical grab bar mounted on the left side of the showerhead. The second minimum 1200 mm long horizontal grab bar is mounted on the adjacent wall 180 to 280 mm above the bathtub and 50 to 60 mm from any wall cavities.

3.8.3.19. Assistive listening systems

(See Note A-3.8.3.19.)

1. Assistive listening systems required by Sentence 3.8.2.9.(1) shall encompass the entire seating area.
2. Assistive listening systems or adaptive technologies required by Sentence 3.8.2.9.(2) shall provide for the clear communication required for the exchange of information, goods and services.

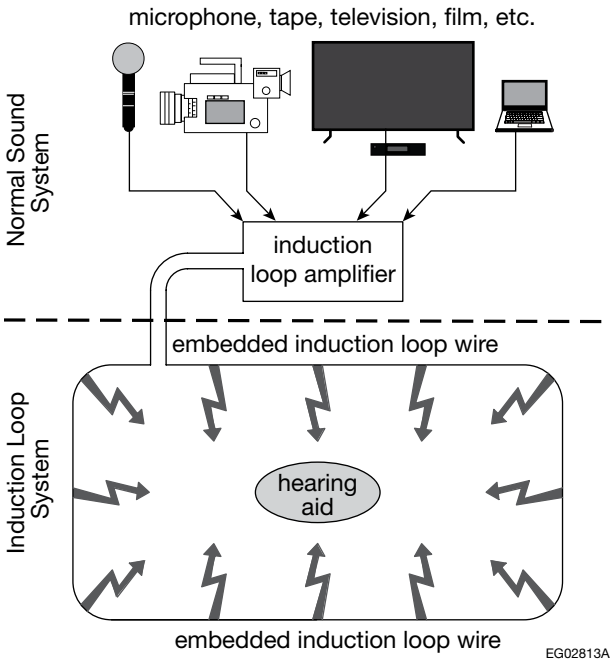


Figure A-3.8.3.19.-C above from the NBC(AE) – Induction loop sound transmission system

3.8.3.20. Counters

1) A section of a service counter required to be *barrier-free* in accordance with Sentence 3.8.2.11.(1) shall

a. be not less than 800 mm long centred over a knee space conforming to Clause (c),

b. have a surface not more than 865 mm above the floor, and

c. where forward-facing interaction with a person or a device is required, have a knee space underneath it that is (see Note A-3.8.3.20.(1)(c))

i. not less than 800 mm wide,

ii. not less than 685 mm high, and

iii. not less than 485 mm deep.

BEST PRACTICE

An induction or infrared system is preferred. Locations equipped with a magnetic counter loop system should have “T coil” symbol displayed. Examples of locations include pharmacies, reception areas & admitting stations in hospitals, assisted living and extended care reception areas.

Public areas that require PA systems for reasons of safety must be equipped with a magnetic induction loop system:

- Airports
- Train platforms
- Public transportation vehicles (buses, LRT cars, taxi cabs)

The Canadian Hard of Hearing Association,installers, and suppliers of designs and systems can be consulted for more information.

Also see Assistive Listening Systems under Other Design Considerations in this Guide.

3.8.3.21. Telephones

1. A telephone required to be *barrier-free* in accordance with Article 3.8.2.12. shall
   a. be adjacent to and centred on either the length or the width of a clear floor space not less than 1 350 mm by 800 mm,
   b. where a forward approach is provided, have a knee space underneath it conforming to Clause 3.8.3.20.(1)(c), and
   c. be located so that its receiver and operable parts are not more than 1 200 mm above the floor.
2. Where provided, shelves or counters for public telephones shall
   a. be level,
   b. be not less than 305 mm deep,
   c. have, for each telephone provided, a clear space not less than 250 mm wide having no obstruction within 250 mm above the surface, and
   d. have a section with a surface not more than 865 mm above the floor serving at least one telephone.
   (See Note A-3.8.3.21.(2).)

3.8.3.22. Spaces in seating area

1. Spaces designated for use by persons using wheelchairs in assembly occupancies as required by Sentence 3.8.2.3.(3) shall conform to the following:
   a. at least one designated space shall be clear and level for each increment of 200 seats and the remaining designated spaces shall be level and have removable seats,
   b. they shall be not less than 900 mm wide and 1 700 mm long to allow a person using a wheelchair to enter from a side approach and 1 350 mm long where the person using a wheelchair enters from the front or rear of the space,
   c. they shall be arranged so that
      i. at least two designated spaces are located side by side, and
      ii. at least one fixed seat is located beside each designated space,

INTERPRETATION

Subclause 1(c)(ii) a refers to a designated companion seat for a family member or friend adjacent each designated space for a wheelchair or scooter. The companion seat may be fixed or not but shall be provided.

   d. they shall be located adjoining a barrier-free path of travel without infringing on egress from any row of seating or any aisle requirements, and

e. they shall be situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place in each

   i. floor level of seating, and

   ii. viewing section.

(See Note A-3.8.2.3.(5) and (6) and 3.8.3.22.(1) and (4).)

2. **[New]** Spaces designated for wheelchair use in waiting rooms or areas as required by Sentence 3.8.2.3.(4) shall

   a. be clear and level, and

   b. comply with Clauses (1)(b) and (d).

3. **[New]** Adaptable seats required by Sentence 3.8.2.3.(5) shall

   a. be located adjoining an aisle without infringing on egress from any row of seating or any aisle requirements,

   b. [New] be equipped with a movable or removable armrest on the side of the seat adjoining the aisle, and

   c. be situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.

4. **[New]** Storage spaces for mobility aids shall be provided in a location

   a. that is on the same level as and in proximity to the adaptable seats required by Sentence 3.8.2.3.(5),

   b. that is within the room side of the *fire separation* required by Article 3.3.2.2., and

   c. where they will not infringe on egress.

(See Notes A-3.8.3.22.(4) and A-3.8.2.3.(5) and (6) and 3.8.3.22.(1) and (4).)

3.8.3.23. Parking stalls

1. A parking stall intended for use by persons using a wheelchair or other mobility aid shall

   a. be designed as a 2.4 m wide parking stall adjacent to a 2.4 m wide access aisle where the access aisle is demarcated to indicate no parking,

   b. have a firm, slip-resistant and level surface,

   c. be clearly marked and identified by

      i. a vertically mounted sign, located near the centre line of each designated stall, with the centre of the sign between 1 600 mm to 2 500 mm from the finished surface, and

      ii. the International Symbol of Access painted on the pavement,

d. be located adjoining a *barrier-free* path of travel leading to the nearest *barrier-free entrance*, and

e. be designed so that parked vehicles do not obstruct access to an elevated and level surface.

INTERPRETATION

Two (2) standard width parking stalls can be designated as accessible parking when one (1) of the stalls is demarcated with diagonals as an access aisle. The accessible stall is now 4800 mm in width.

Note: The 2.4 m wide parking stall is the required minimum width to create a barrier-free or accessible parking stall. Municipalities may have a greater minimum width for a parking stall, such as 2.6 m. The requirement is for 2 adjacent stalls to be designated as barrier-free, including the access aisle.

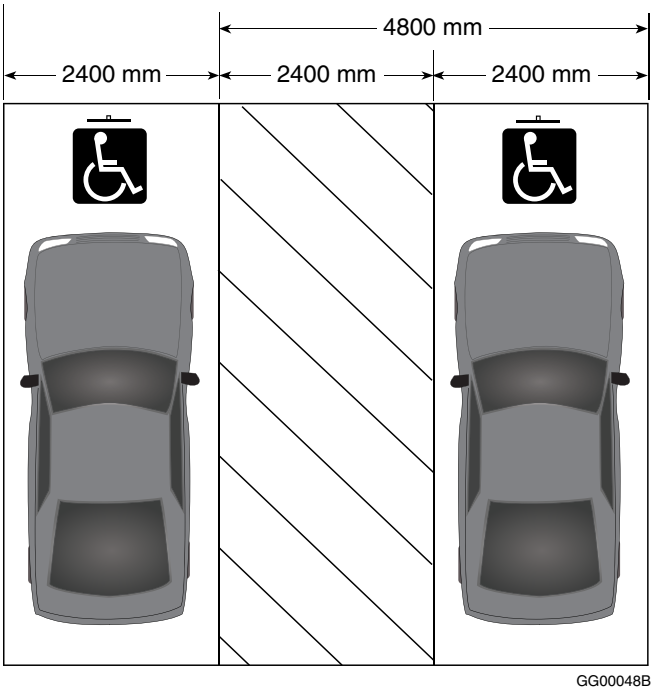


Figure A-3.8.3.23.(1)-A above from the NBC(AE) – Common access aisle

Note: The width of the stall does not need to be 2 400 mm as shown. The width will be whatever standard your bylaw dictates, i.e., 2 600 mm. The access aisle will then be that same width.

4.0 Adaptable dwelling units

4.0 Adaptable dwelling units

3.8.4. Adaptable dwelling units

3.8.4.1. Application

1. Where adaptable *dwelling units* are required in accordance with Sentence 3.8.1.1.(3), they shall be designed in accordance with this Subsection.

INTERPRETATION

Adaptable means a certain amount of flexibility is incorporated into the design of a dwelling unit that allows the unit to be altered in the future to be consistent with the principles of accessible design with minimal renovations and cost.

3.8.1.1. Scope

1. Residential projects of 10 or more dwelling units funded in whole or in part by the Government of Alberta are required to provide adaptable dwelling units which could be made to meet barrier-free design principles and shall be:
   a. provided as 1 per 10 dwelling units, based on the total number of dwelling units in a project, and
   b. designed in accordance with Subsection 3.8.4.

INTERPRETATION

The number of required adaptable dwelling units are based on the *total* number of units in a project and not on the number of units designated as affordable for which government funding is provided.

3.8.4.2. General accessibility

1. At least one entrance serving an adaptable *dwelling unit* shall be *barrier-free*. (See also Article 3.8.2.2. for common entrances to *buildings* and Article 3.8.2.5. for parking stalls.)
2. A *barrier-free* path of travel that complies with Subsection 3.8.3. shall be provided between a *barrier-free* entrance referred to in Sentence (1) and
   a. a designated *barrier-free* parking area not in a *storage garage*, where a parking area not in a *storage garage* is provided,
   b. a designated *barrier-free* parking area on at least one parking level in a *storage garage*, where a storage garage is provided,
   c. an exterior passenger-loading zone, where provided, and
   d. a public thoroughfare.

3. A *barrier-free* path of travel shall be provided between the interior living space of the *dwelling unit* and any ancillary space serving it, including the garage, balcony or deck.
4. Entryways, kitchens, washrooms, laundry rooms and other areas of a *dwelling unit* shall be designed with an unobstructed turning diameter of not less than 1 700 mm.
5. Openable windows shall
   a. be equipped with opening devices located not more than 60 mm above the window sill and of a design that does not require tight grasping, pinching with fingers, or twisting of the wrist as the only means of operation, and
   b. be located so that the sill is not less than 400 mm from the floor level and not more than 865 mm above the floor level.
6. Controls for the operation of *building* services or safety devices, including electrical switches, electrical panels, thermostats and intercom switches, shall conform to Article 3.8.3.8.
7. Electrical receptacles shall be mounted between 400 mm and 1 200 mm above the finished floor.
8. Every doorway within the *dwelling unit* shall have a clear width not less than 850 mm when the door is in the open position.
9. A doorway referred to in Sentence (8) or present in the *barrier-free* path of travel referred to in Sentences (1) to (3) shall conform to Sentences 3.8.3.6.(4) and (10).
10. Door and window frames and baseboards shall be contrasting in colour to doors, walls and floors.

BEST PRACTICE

More than one electric outlet should be mounted above the kitchen counter to accommodate appliances such a microwave, air fryer, or coffee pot that may be plugged in consistently. Cords should be hidden and out of the way.

INTERPRETATION

Every adaptable, even barrier-free, dwelling unit should incorporate all of the above, in addition to the more detailed requirements for bathrooms and kitchen following the general requirements listed here.

3.8.4.3. Bathrooms

1. An adaptable *dwelling unit* shall be provided with a bathroom containing either a shower or bathtub in accordance with the following:
   a. where there is an even number of adaptable *dwelling units* required, 50% of the *dwelling units* shall have a bathroom containing a shower, and the remaining 50% shall have a bathroom containing a bathtub, and
   b. where there is an odd number of adaptable *dwelling units* required, the number of *dwelling units* with a bathroom containing a shower shall exceed the number of *dwelling units* with a bathroom containing a bathtub by 1.

2. The bathroom referred to in Sentence (1) shall have the
   a. shower conform to Clauses 3.8.3.17.(1)(a) to (e) and (h) where a shower is provided, and
   b. bathtub conform to Clauses 3.8.3.18.(1)(a) to (d) where a bathtub is provided.
3. The bathroom referred to in Sentence (1) shall be provided with a lavatory conforming to Clauses 3.8.3.16.(1)(b) to (e).
4. The bathroom referred to in Sentence (1) shall be provided with a water closet conforming to Clause 3.8.3.13.(1)(d).
5. The bathroom referred to in Sentence (1) shall be designed to allow for the installation of grab bars conforming to
   a. Clause 3.8.3.12.(1)(f) and (g) to serve the water closet,
   b. Clause 3.8.3.17.(1)(f) to serve the shower where one is provided, and
   c. Clause 3.8.3.18.(1)(f) to serve the bathtub where one is provided.

3.8.4.4. Kitchens

1. Every kitchen counter shall have at least one section that complies with Article 3.8.3.20.
2. Counters intended for the installation of a kitchen sink or a *cooktop* shall be provided with a means of adjusting their height so that the counter surface is
   a. not less than 710 mm above the finished floor, and
   b. not more than the height of the adjacent counter surface.
3. The kitchen sink or *cooktop* referred to in Sentence (4) shall be provided with a clearance beneath the sink or *cooktop* of not less than
   a. 800 mm wide,
   b. 685 mm high at a point 205 mm back from the front edge, and
   c. 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge.

INTERPRETATION

A section of the counter that may be adjustable in height with knee space beneath the counter is designed as a separate section from the static counter. This counter section may be pneumatic allowing it to be dynamic. If it is to be static but still adjustable in height, it should be designed with secure anchoring and or bracing to prevent injury. There should be at least three (3) evenly spaced optional heights.

4. Overhead kitchen cabinets shall be provided with a means of adjusting their height by not less than 500 mm, provided the minimum clearances for *cooktops* specified in Subsection 9.10.22. are not reduced at the lowered height.

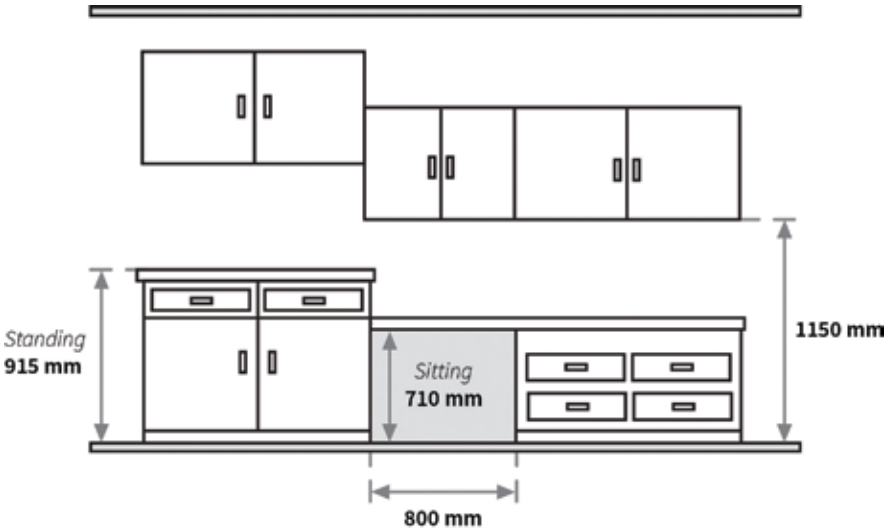
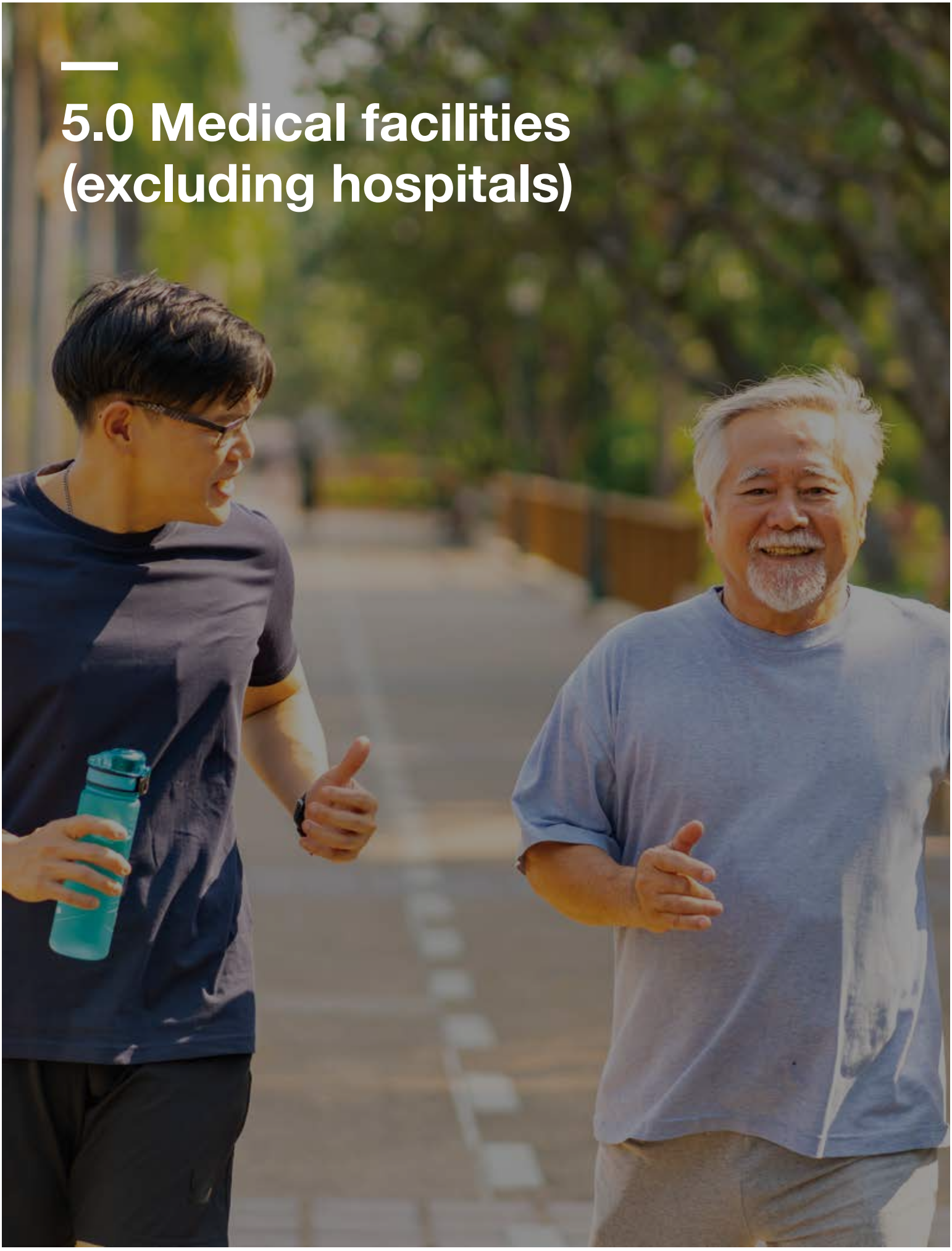


Figure F Kitchens

5.0 Medical facilities (excluding hospitals)



5.0 Medical facilities (excluding hospitals)

3.8.5. Access to physician clinics and offices

3.8.5.1. Application

1. This Subsection applies to physician clinics and offices that provide *professional health care services*.

3.8.5.2. Physician clinics and offices

1. Every doorway that is located in a *barrier-free* path of travel to a physician clinic or office shall have a clear width not less than 915 mm when the door is in the open position.
2. Every door that is located in a *barrier-free* path of travel to a physician clinic or office shall be equipped with a power door operator that complies with Subsection 3.8.3. and allows persons to activate the opening of the door in the intended direction of travel.
3. The main waiting area shall be designed to allow a person using a wheelchair to turn in an open space not less than 1 700 mm in diameter.
4. An assistive listening system in accordance with Sentence 3.8.2.9.(2) shall be provided at the main reception area and in at least one physical examination or treatment room. (See Note A-3.8.3.19.)

3.8.5.3. Accessible examination and treatment rooms

1. One in every five examination rooms or part thereof shall
   a. have a doorway with a clear width not less than 915 mm when the door is in the open position,
   b. be designed to allow a person using a wheelchair to turn in an open space not less than 1 700 mm in diameter, and
   c. have one lavatory conforming to Article 3.8.3.16., where provided,
2. One in every five treatment rooms or part thereof shall
   a. have a doorway with a clear width not less than 915 mm when the door is in the open position,
   b. be designed to allow a person using a wheelchair to turn in an open space not less than 1 700 mm in diameter, and
   c. have one lavatory conforming to Article 3.8.3.16., where provided.

BEST PRACTICE

This should or may include but is not limited to dental, optometrists, ophthalmologists, orthodontists, labs and chiropractic offices/clinics.

This should or may also include optometric and ophthalmology offices/clinics (this means adjustable height optometry equipment, lift and sliding tables with ophthalmology equipment for eye health of young and old).

6.0 Fire safety

6.0 Fire safety

3.3.1.7. Protection on floor areas with a barrier-free path of travel

1. Every *floor area* above or below the *first storey* that is not *sprinklered* throughout and that has a *barrier-free* path of travel shall
   a. be served by an elevator
      i. conforming to Sentences 3.2.6.5.(6) to (8),
      ii. protected against fire in conformance with Clause 3.2.6.5.(5)(b) or (c), and
      iii. in a *building* over 3 storeys in *building height*, protected against smoke movement so that the hoistway will not contain more than 1% by volume of contaminated air from a fire floor during a period of 2 h after the start of a fire, assuming an outdoor temperature equal to the January design temperature on a 2.5% basis determined in conformance with Subsection 1.1.3.,
   b. be divided into at least 2 zones by *fire separations* conforming to Sentences (2), (3) and 3.1.8.5.(6) so that (see Note A-3.3.1.7.(1)(b))
      i. persons with physical disabilities can be accommodated in each zone, and
      ii. the travel distance from any point in one zone to a doorway leading to another zone shall be not more than the value for travel distance permitted by Sentence 3.4.2.5.(1) for the *occupancy* classification of the zone,
   c. in the case of *residential occupancies*, be provided with balconies conforming to Sentence (4), except on the *storey* containing the *barrier-free* entrance required by Article 3.8.2.2.,
   d. have an exterior *exit* at ground level, or
   e. have a *ramp* leading to ground level.

(See Note A-3.3.1.7.(1).)

2. Except as permitted by Sentence (3), the *fire separations* referred to in Clause (1)(b) shall have a *fire-resistance* rating not less than 1 h.
3. The *fire-resistance rating* of the *fire separations* referred to in Clause (1)(b) is permitted to be less than 1 h but not less than 45 min provided the *fire-resistance rating* required by Subsection 3.2.2. is permitted to be less than 1 h for
   a. the floor assembly above the *floor area*, or
   b. the floor assembly below the *floor area*, if there is no floor assembly above.
4. A balcony required by Clause (1)(c) shall
   a. have direct *barrier-free* access from the *suite* or *floor area*
   b. be not less than 1.5 m deep from the outside face of the exterior wall to the inside edge of the balcony, and

BEST PRACTICE

In houses that are used as group homes for persons with developmental disabilities or brain injury that are housed on a level such as a basement that does not have an exit leading directly to the exterior of the house, a separate and enclosed (45-minute fire rating) set of stairs should be added for safe evacuation of individuals.

c. provide not less than 1.5 m2 of balcony space for each non-ambulatory occupant and 0.5 m2 for each ambulatory occupant.

Note: The above measures are intended to provide temporary places of refuge for persons with disabilities. In all situations, a plan to evacuate persons with disabilities must be developed and approved by the local fire authorities. This is a mandatory requirement as cited in the Alberta Fire Code.

3.3.3.6. Areas of refuge

1. Compartments containing rooms such as operating rooms, recovery rooms, delivery rooms and intensive care units, from which it is impracticable to move patients in an emergency, shall be
   a. separated from adjacent spaces by *fire separations* having a *fire-resistance rating* not less than 1 h, and
   b. provided with a mechanical air supply so that during a period of 2 h after the start of a fire in another space, the compartments will not contain more than 1% by volume of contaminated air from the fire area.

3.3.3.7. Contained use areas

1. A *contained use area* shall conform to Sentences (2) to (5).
2. A *contained use area* shall be separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
3. Except as permitted by Sentence (4), a *building* that includes a *contained use area* shall be *sprinklered* throughout.
4. A *continued use area*, in a *building* for which Articles 3.2.2.20. to 3.2.2.92. do not require the installation of an automatic sprinkler system, is not required to be *sprinklered* as required by Sentence (3) provided
   a. the *building* is designed so that during a period of 2 h after the start of a fire in the *contained use area* other *fire compartments* will not contain more than 1% by volume of contaminated air from the *contained use area*,
   b. the *building* is designed so that during a period of 2 h after the start of a fire in another part of the *building* the *contained use area* will not contain more than 1% by volume of contaminated air from the other part of the *building*,
   c. all doors are designed to be remotely released in conformance with Sentence 3.3.1.13.(6), and
   d. the *contained* use area does not contain any rooms lined with *combustible* padding.

5. A corridor serving a *contained use area* shall have no dead-end portion unless the area served by the dead-end portion has a second and separate *means of egress*.

3.2.4.17. Alert and alarm signals

1. In a 2-stage fire alarm system described in Sentence 3.2.4.4.(2), the same audible signal devices are permitted to be used to sound the *alert signals* and the *alarm signals*.
2. If audible signal devices with voice reproduction capabilities are intended for paging and similar voice message use, other than during a fire emergency, they shall be installed so that alert signals and *alarm signals* take priority over all other signals.
3. Audible signal devices forming part of a fire alarm or voice communication system shall not be used for playing music or background noise.

3.2.4.18. Audibility of alarm systems

(See Note A-3.2.4.18.)

1. Audible signal devices forming part of a fire alarm system shall be installed in a *building* so that
   a. *alarm signals* are clearly audible throughout the *floor area*, and
   b. *alert signals* are clearly audible in continuously staffed locations, and where there are no continuously staffed locations, throughout the *floor area*.
   (See Note A-3.2.4.18.(1).)
2. The sound pattern of an *alarm signal* shall conform to the temporal pattern defined in Clause 4.2 of ISO 8201, "Acoustics – Audible emergency evacuation signal." (See Note A-3.2.4.18.(2).)
3. The sound patterns of *alert signals* shall be significantly different from the temporal patterns of *alarm signals*. (See Note A-3.2.4.18.(3).)
4. The fire *alarm signal* sound pressure level shall be not more than 110 dBA in any normally occupied area. (See Note A-3.2.4.18.(4).)
5. The sound pressure level in a sleeping room from a fire alarm audible signal circuits in accordance with Clause (9)(b) need not include a means for manual signal **device shall be not less than 75 dBA in a** *building of residential* or *care occupancy* when any intervening doors between the device and the sleeping room are closed. (See Note A-3.2.4.18.(5).)
6. Audible signal devices in sleeping rooms in a *building* of *residential* or *care occupancy* shall emit a low frequency signal. (See Note A-3.2.4.18. (6).)
7. Except as required by Sentence (5), the sound pressure level from a fire alarm system's audible signal device within a *floor area* shall be not less

than 10 dBA above the ambient noise level and not less than 65 dBA when any intervening doors between the device and the rest of the *floor area* are closed.

8. Except as permitted by Sentence (12), audible signal devices located within a *dwelling unit* shall include a means for them to be manually silenced for a period of not more than 10 min, after which time the devices shall restore themselves to normal operation. (See Note A-3.2.4.18.(8).)
9. Audible signal devices within a *dwelling unit* or a *suite* of *residential* or *care occupancy* shall be connected to the fire alarm system
   a. in a manner such that a single open circuit at one device will not impair the operation of other audible signal devices on that same circuit that serve the other *dwelling units* or *suites* of *residential* or *care occupancy,* or
   b. on separate signal circuits that are not connected to the devices in any other *dwelling unit*, *public corridor* or *suite* of *residential* or *care occupancy*. (See Note A-3.2.4.18.(9) and (10).)
10. In a *building* or part thereof classified as a *residential* or *care occupancy*,
    a. separate circuits shall be provided for audible signal devices on each *floor area*, and
    b. audible signal devices within *dwelling units* or *suites* of *residential* or *care occupancy* shall be wired on separate signal circuits from those not within *dwelling units* or *suites* of *residential* or *care occupancy*. (See Note A-3.2.4.18.(9) and (10).)
11. Audible signal devices shall be installed in a *service space* referred to in Sentence 3.2.1.1.(8) and shall be connected to the fire alarm system.
12. Audible signal devices within *dwelling units* that are wired on separate signal circuits in accordance with Clause (9)(b) need not include a means for manual signal silencing as required by Sentence (8), provided the fire alarm system includes a provision for an automatic signal silence within *dwelling units*, where
    a. the automatic signal silence cannot occur within the first 60 s of operation or within the zone of initiation,
    b. a subsequent alarm elsewhere in the *building* will reactuate the silenced audible signal devices within *dwelling units*,
    c. after a period of not more than 10 min, the silenced audible signal devices will be restored to continuous audible signal if the alarm is not acknowledged, and
    d. the voice communication systems referred to in Articles 3.2.4.22. and 3.2.4.23. have a provision to override the automatic signal silence to allow the transmission of voice messages through silenced audible signal device circuits that serve the *dwelling units*. (See Note A-3.2.4.18.(8).)

13. If a 2-stage fire alarm system has been installed with an automatic signal silence as described in Sentence (12), the system shall be designed so that any silenced audible signal devices serving *dwelling units* are reactuated whenever an *alarm signal* is required to be transmitted as part of the second stage. (See Note A-3.2.4.18.(8).)

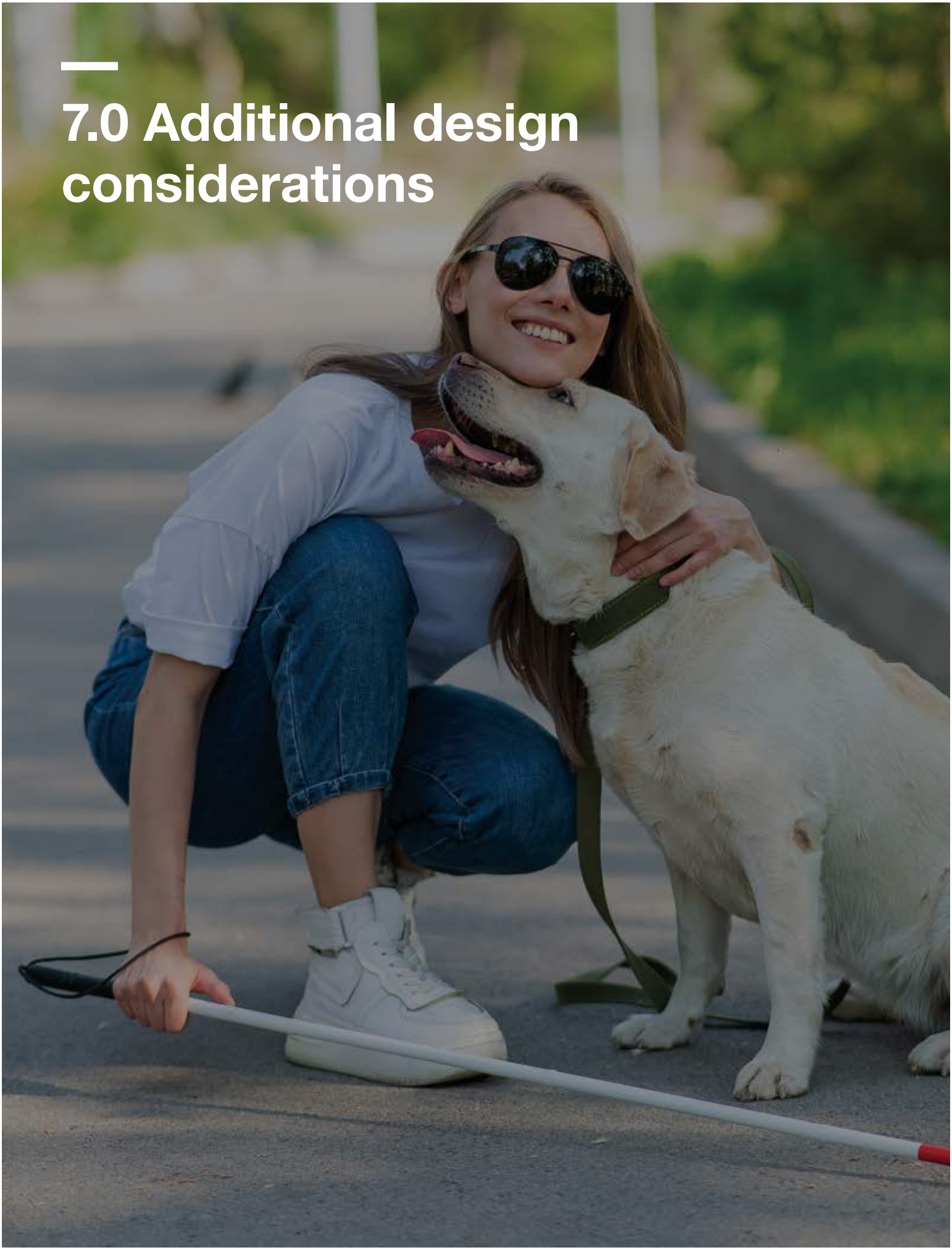
3.2.4.19. Visible signals

1. Where a fire alarm system is installed, visible signal devices shall be provided in addition to *alarm signal* devices
   a. in *buildings* or portions thereof intended for use primarily by persons with a hearing impairment,
   b. in *assembly occupancies* in which music and other sounds associated with performances could exceed 100 dBA,
   c. in any *floor area* in which the ambient noise level is more than 87 dBA,
   d. in any *floor area* in which the occupants
      i. use ear protection devices,
      ii. are located in an audiometric booth, or
      iii. are located in sound-insulating enclosures,
   e. in *public corridors* serving a Group B, C, D or E *major occupancy*,
   f. in corridors used by the public serving a Group A *major occupancy*,
   g. in not less than 10% of the *suites* of *residential occupancy* in a hotel or motel (see Note A-3.2.4.19.(1)(g)),
   h. in washrooms, except those located within
      i. *suites* of *residential occupancy*,
      ii. *suites* of *care occupancy*,
      iii. patients' sleeping rooms, or
      iv. single toilet rooms, and
   i. in universal washrooms provided in accordance with Article 3.8.3.12.
2. Visible signal devices are permitted to be installed in lieu of audible signal devices in the compartments referred to in Article 3.3.3.6.
3. Except as provided in Sentence (4), visible signal devices required by Sentence (1) shall be installed so that the signal from at least one device is visible throughout the *floor area* or portion thereof in which they are installed. (See Note A-3.2.4.19.(3).)
4. Visible signal devices in *suites* of *residential occupancy* shall be located such that at least one device is located within the principal living area.

BEST PRACTICE

Sentence 4) should also specify the placement of visual signals in bedrooms and bathrooms for safety. This is because individuals with hearing loss, during sleep or bathing, will not have their hearing aids on, or if they are Deaf, they will most often not see or hear the fire alarm from the principal living area or living room space.

7.0 Additional design considerations



7.0 Additional design considerations

7.1 Wayfinding

There should be wayfinding design and unobstructed movement within a building, its facilities, and other spaces, including its exterior property, such as pedestrian pathways and parking areas.

Wayfinding is integral to orientation and often key in the safe and effective mobility of many populations; in particular, people with visual disabilities. Wayfinding design organizes the built environment to provide useful information for navigation by ensuring there is the opportunity to use cognitive and perceptual information to arrive independently at the desired destination.

There are four basic wayfinding information types: orientation, direction, identification, and general information. There are four primary senses that are used in building information: visual, auditory, tactual, and olfactory. People who have visual disabilities may use any combination of the following design elements in wayfinding.

- Logical and intuitive space,
- Textural contrasts and tactile cues,
- Acoustics,
- Colour and brightness contrast,
- Signage, including tactile, Braille, and audible signs, and
- Appropriate, well-designed lighting,

This becomes even more important in the event evacuation becomes necessary. It is recommended that all buildings have well-planned and well-marked evacuation routes. Wayfinding can have a dramatic effect for any building user.

For more information on wayfinding or designing for vision loss, go to or contact the Canadian National Institute for the Blind.

7.2 Assistive listening systems

Frequency modulation (FM) or infrared (IR) systems can be designed to broadcast signals that cover the entire room, and thus do not restrict seating to any one area. The transmitter for these wireless systems can be connected to the existing sound system amplifier or be used independently with separate microphones.

Any public telephone or bank of telephones should retain a cane-detectable partition in order for a person with visual disabilities to detect that they are approaching an area with projecting shelves and telephones.

7.2 Assistive listening systems

A TTY provides a screen and keyboard for transmitting visual messages. There are two types of devices: portable devices that can be used with any telephone, and devices that are built into the bases of public telephones. The latter are expensive and should be placed in areas that are supervised, in order to prevent vandalism. In large complexes, such as shopping malls, where more than one bank of pay telephones is provided, signs should indicate the location of the TTY.

Assistive Listening Devices (ALD) should be installed in all areas of any building where occupancy might be 50 persons and more. The appropriate number of ALDs required for each area can be determined with the assistance of the Canadian Hard of Hearing Association.

These same organizations can assist in choosing the most appropriate system (including information on cost, installation, and maintenance; suitability to the audience; ease of operation; and attention to the need for privacy) and report on designers and suppliers.

FM or IR Systems can be installed when the background Electrical Magnetic Interference (EMI) is greater than -32 DBs (-20 DB's, for example).

Where secure transmission of audio is a requirement then an IR System should be installed.

All ALDs should be checked once per year to ensure proper operation. Public areas that require PA systems for reasons of safety should be equipped with a magnetic induction loop systems.

- Airports
- Train platforms
- Public transportation vehicles (buses, LRT cars, taxi cabs)

Where an induction loop system is deployed, the building should have 1 loop receiver for every 50 occupants so that people without hearing aids or with hearing aids that do not have a "t coil" will be able to receive the audio using the loop receiver and a hearing appliance.

In areas where there is seating, only half of the seating area in a room needs to be encompassed.

Installation of induction loop shall comply with the IEC60118-4 2014 Standard, and a Certificate of Conformity should be issued to ensure proper operation; the installer should supply a Certificate of Conformity.

Once per year each loop installation should be checked and a Certificate of Conformity shall be issued in accordance with the Standard.

The Canadian Hard of Hearing Association, installers, and suppliers of designs and systems can be consulted for more information.

Assistive listening device systems

Wireless sound transmission systems, such as FM, infrared, or an induction loop, improve sound reception for those who are hard of hearing by providing amplification that can be adjusted by the user. In many cases the only way to increase speech intelligibility is to cut the distance between the sound source and the listener and at the same time reduce the present noise. This can basically be achieved with the use of three different techniques: induction loop, FM, or IR systems. These systems block out unwanted background noise. They transmit signals that are picked up by special receivers worn by the person who has a hearing impairment. This person does not necessarily have to use a hearing aid. These systems do not interfere with the listening enjoyment of others.

Audio-frequency induction-loop systems are widely used to provide a means for hearing aid users, whose hearing aids are fitted with induction pick-up coils, generally known as “telecoils.”

In normal use, hearing aids are equipped with a highly sensitive microphone for amplifying near-field speech. While this is effective for local conversations/quiet environments, it is less effective for listening to speech or music at a distance or in front of a security screen at a ticket counter. This is because the hearing aid’s microphone also picks up any background noise in the room and unwanted speech from other conversations. An induction loop system works by moving the required sound closer to the hearing aid via the hearing aid’s telecoil, which is activated by turning it to the “T” or “MT” position.

Hearing aids do not amplify all frequencies equally; they are tailored to suit the user’s hearing requirements and amplify different bands by different amounts. This gives maximum intelligibility, so the user has the best chance of understanding what is said. The t coil is incorporated so that the audio that is received by the t coil is then amplified in the same way that the microphone is, and thus maximum intelligibility is obtained. Hearing aids with a telecoil can be set to receive only the audio from the t coil and all signals, including background audio, are not picked up, further increasing speech intelligibility. When set to the microphone and t coil setting, there is a mix of the two signals and the intelligibility is somewhat reduced, depending on the ratio of microphone to t-coil signal. Individuals requiring hearing assistance can use a loop receiver (loop listener) that amplifies the audio, and the user then uses a headphone or earphone but in the same manner as the IR or FM system.

When the background EMI is less than -32DBs, transmission of an audio-frequency signal via an induction-loop system establishes an acceptable signal-to-noise ratio in conditions where a purely acoustical transmission would be significantly degraded by reverberation and background noise.

BEST PRACTICE

Heath Care locations manned by staff should be equipped with a magnetic counter loop system and the “t coil” symbol should be displayed. Examples of locations include pharmacies, reception areas and admitting stations in hospitals, assisted living, and extended-care reception areas.

7.2 Assistive listening systems

Induction-loop systems are installed in churches, theatres, cinemas, music halls, airports, arenas, ferries, trains, etc., for the safety and richer listening experience of hearing-impaired people. The use of induction-loop systems has been extended to many transient communication situations such as ticket offices, bank counters, drive-in/drive-through service locations, lifts/ elevators, etc.

There are three types of loop configuration: counter loops used for transient communication systems (background EMI should be -22 DBs or less); perimeter loops where magnetic spillage or significant metal in the structure is not an issue; and a phased array system that keeps the magnetic field contained in a room (allowing adjacent rooms to have a looped system and have each system isolated from the other) and overcomes absorption, which may not be possible with a perimeter design.

The induction loop system requires users to sit in the area circumscribed by the loop. Though installation of the loop is relatively simple, the installer should be knowledgeable about these systems to ensure proper functioning.

FM or infrared systems can be designed to broadcast signals that cover the entire room, and thus do not restrict seating to any one area. The diagram shows the general configuration of FM and infrared systems. The transmitter for these wireless systems can be connected to the existing sound system amplifier or be used independently with separate microphones.

Generally, the systems installed in church halls, auditoria, theatres, and similar places of assembly are not portable; they are installed as part of the fixed-sound system for the facility.

Hard-wired systems (where a jack is provided at a particular seat) require special individual volume control provisions to accommodate people with varying degrees of hearing impairment.

For international information on developing accessible technology-based communications, see our standard on Accessibility requirements for ICT products and services - Accessibility Standards Canada

(EN 301 549:2021, IDT)

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7.3 Communication and cognition design considerations

Certain disabilities, like Communication & Cognition, are not covered in the National Building Code. Persons with these disabilities have concerns with access (e.g. avoiding certain environments because they are noisy), but if the environment does not support communication, that can also impact their safety (e.g. not understanding an important message).

7.3 Communication and cognition design considerations

One in six people have a speech, language or hearing disorder. (*Reference: Speech-Language & Audiology Canada:* https://www.sac-oac.ca/). In addition to Communication, a person may also have a Cognitive disability, which affects their ability to learn. Cognitive disabilities are varied – some persons may have problems reading, while others may have problems with numbers, or their short term memory. It is possible for a person to have both a communication and a cognitive disability.

There are many different disorders and diseases where speech and cognition can be affected: Stroke, Aphasia, Epilepsy, MS, ALS, Alzheimer's, Dementia, Cerebral Palsy, Huntington's disease, Parkinson's, Autism, intellectual or developmental disabilities, etc.

For more information, see Communication Disabilities Access Canada (CDAC).

Design recommendations

Proper acoustic design and intuitive wayfinding are very important aspects of design for persons with these types of disabilities.

Space planning

Persons with neurodiversity and those with communication and cognitive disorders may require accommodations, use an assistive communication device and/or have an assistant. Ensure sufficient space and quiet space options are provided to accommodate all persons, as well as a small table for a communication device. There are many different types of devices, such as speech generating communication devices, a wireless device with apps, or a simple communication book with pictures and short phrases to point to. Provide quiet spaces with reduced visual stimulation and signage for people with neurodiversity.

Signage

- Wording on signs should be simple and concise. Signage requirements are similar to those with visual disabilities (e.g. color contrast, lighting).
- For cognitive disabilities, a combination of both text and pictograms on signage would be helpful.
- Provide visual pathways to indicate how to find quiet spaces with reduced visual and auditory stimulation.
- If translation services is provided in a building, include a sign guiding persons to that staff area.
- Communication Access and Hearing Access symbols and strategies should be displayed at reception desks and other areas where staff have been trained in how to facilitate conversations with persons that have communication and/or cognitive disabilities. Displaying the Communication Access Symbols

- Display simple strategies in public and staff areas to guide interactions with people who have cognitive, speech and language or hearing difficulties. Communication Access Poster
- Also see Communication Access Symbol – Communication Disabilities Access Canada.

There is additional information on functional and cognitive barriers (4.7.1) and acoustics (4.7.3) in the CSA B651:23, Accessible design for the built environment.

For international information on developing accessible technology-based communications, see Accessibility requirements for ICT products and services - Accessibility Standards Canada (EN 301 549:2021, IDT)

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7.4 Bariatric design considerations

The field of bariatric medicine focuses on the care of people living with obesity. Bariatric design is not currently covered in the National Building Code. Bariatrics can be a potential safety issue (e.g. fixtures or furniture may not be able to support a higher weight) – both for the person and their helpers, but the issues also have to do with lack of access. For example, a person with obesity may be hesitant to leave home if they are unsure their destination will be able to accommodate their size.

Approximately 29% of Albertans are living with obesity. The prevalence of severe obesity (BMI > 35) is 8.2% in males and 9.0% in females. [*Reference: Health Quality Council of Alberta, 2014: https://www.hqca.ca/surveys/overweight-obesity/*]. Bariatrics is defined when a person's body mass index (BMI) is 30kg/m2 or more, however using a patient's weight that is 113kg (250lbs) or higher may be a better indicator to assess if a person has bariatric care needs (i.e. higher weight capacity equipment, appropriate space to accommodate a larger body size and use of a bariatric walker or wheelchair). [Bariatric Friendly Health Care Service - Obesity Canada.]

Design recommendations

Bariatric design requirements are published in the CSA Z8000 Healthcare Facilities standard, clause 7.8.8 Accommodation of bariatric persons.

The following table outlines some of the differences between typical barrier-free requirements and bariatric requirements:

Distance, area	Barrier-free	Bariatric	Difference
Patient room doorway (also accommodates a stretcher)	1140 mm	1220 mm (with additional 305 mm side leaf for moving wider beds and stretchers)	+ 80 mm
Wheelchair turning radius	1700 mm x 1700 mm	1800 mm x 1800 mm	+ 300 mm x 300 mm

Weight ratings	Standard	Bariatric	Difference
Washroom fixtures *(toilet, sink, grab bars)*	250 lbs. (113 kg)	1000 lbs. (453 kg)	+ 750 lbs.
Waiting rooms chairs	250 lbs. (113 kg)	550 lbs. (270 kg)	+ 300 lbs.
Hospital bed	350 lbs (159 kg)	750 lbs. (341 kg)	+ 400 lbs.

Medical offices should have a portable lift or ceiling lift that can accommodate higher weights. These lifts can assist clients from moving from their wheelchairs to the exam table, and back again.

Alberta Health Services (AHS) has published a “Guideline for the Care of Hospitalized Patients with Bariatric Care Needs” Bariatric Friendly Hospital Initiative | Alberta Health Services. In addition to clinical staff information, it also includes recommendations on an ideal hospital design and room set up, including furniture and equipment. Like with universal design, bariatric design should strive to show the similarities, rather than the differences. The rooms should be designed to be flexible, so that it can still be used by all patients.

For further information on bariatrics, please visit Alberta Health Services Primary Health Care Resource Centre.

7.5 Outdoor spaces design considerations

The following information is reprinted with permission from the following:

- The City of Markham's Accessibility Design Guidelines (2022) Sections 6.15-6.17, and

While some information indicates a requirement, the information is provided as guidance in this document and industry best practice. The requirements apply only in the respective municipalities to which they apply.

Outdoor public use eating areas

This section applies to newly constructed and redeveloped outdoor public use eating areas at public facilities, which typically provide tables (e.g., picnic tables) intended for public use as a place to consume food.

When planning the design and layout of outdoor public use eating areas consider the following requirements:

a. ensure a minimum of twenty percent (20%) of tables and no fewer than one (1) in outdoor public use eating area are accessible;
b. ensure accessible tables provide suitable knee and toe clearances (Figure 105b);
c. provide a clear space of 2000 mm (minimum) on all sides of the table (Figure 105a);
d. locate on an accessible path of travel or trail;
e. ensure ground surface leading to and under tables is fi rm, stable, and no steeper than 1:50 (2%);
f. provide directional signage at strategic locations to identify the location(s) of accessible tables and or public use eating areas;
g. where barbecues are provided in outdoor public-use eating areas, ensure that they are placed away from the accessible path of travel and on a surface with high tonal and textural contrast with the adjacent surfaces; and
h. where washrooms are provided, ensure accessible features (e.g., at least one universal toilet room per cluster of regular washrooms).

BEST PRACTICE

Disperse the locations of accessible tables in outdoor public use eating areas to provide a choice for users with disabilities.

Consider fixing accessible tables and seating so that they cannot be moved to an inaccessible location.

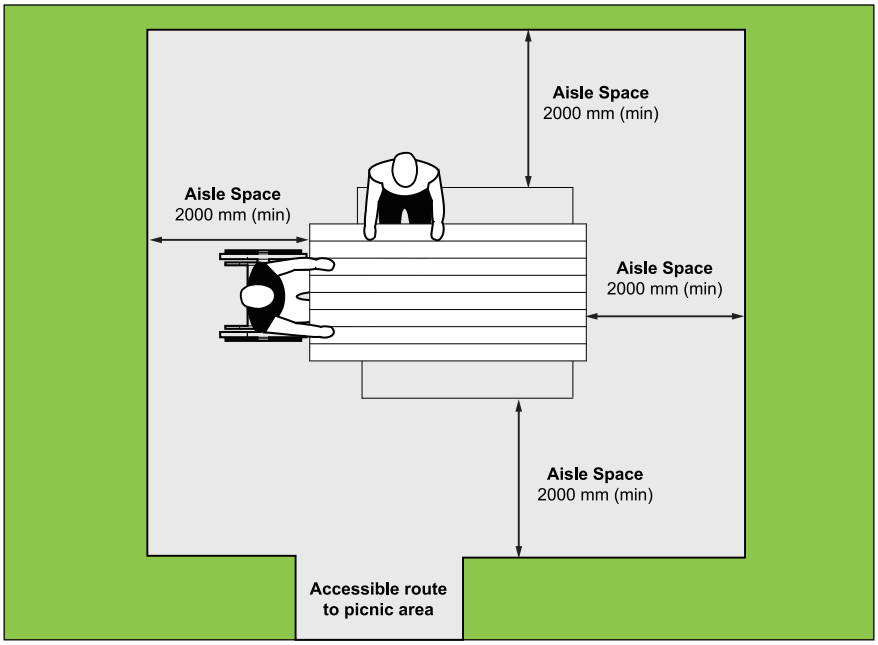


Figure 101a: Picnic table design and features-plan view

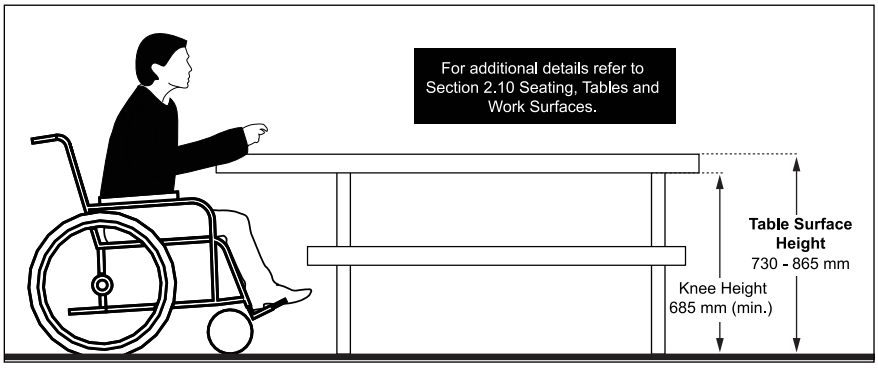


Figure 101b: Picnic table design and features-elevation view

7.5 Outdoor spaces design considerations

Recreational trails, beach access routes, and boardwalks

Regarding recreational trails, beach access routes, and boardwalks, this section applies to:

- newly constructed and redeveloped recreational trails that the City intends to maintain; however, it does not apply to trails solely intended for cross-country skiing, mountain biking, or the use of motorized snow vehicles or off-road vehicles, wilderness trails, backcountry trails, and portage routes;
- newly constructed and redeveloped beach access routes that the City intends to maintain, including permanent and temporary routes that are established through the use of manufactured goods, which can be removed for the winter months; and
- boardwalks that are part of newly constructed or redeveloped recreational trails and beach access routes that the City intends to maintain.

Recreational trails - consultation requirements

Before constructing new or redeveloping existing recreational trails, the City will consult with the Accessibility Advisory Committee, the public, and persons with disabilities on:

a. the slope of the trail;
b. the need for, and location of, ramps on the trail; and
c. the need for, location and design of,
    i. rest areas;
    ii. passing areas;
    iii. viewing areas;
    iv. amenities on the trail; and
    v. any other pertinent feature.

Note: Trails are not considered the same as exterior routes, paths, and walkways. Trails do not include pathways such as public sidewalks or pathways between buildings.

Designated trailheads

Ensure designated trailhead information signage are integrated as part of the trail design at key entrance and exit points along the trail, intermediate areas on lengthy trails, or decision points (e.g., changes in elevation or where there is option to go in multiple directions) where required. Typically, a case-by-case review and analysis is required, based on trail type, location, and other conditions (Figure 106).

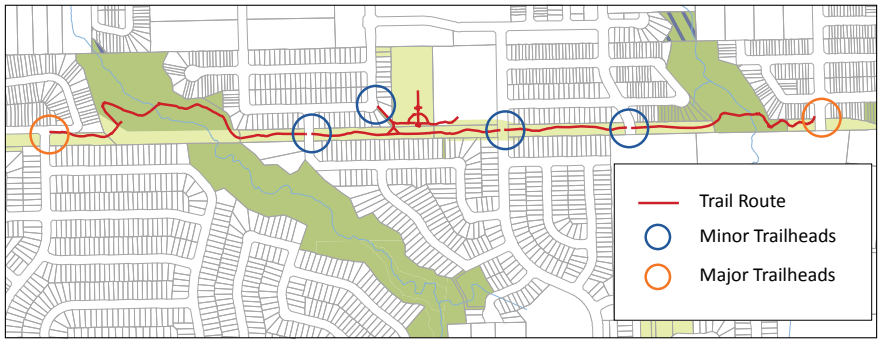


Figure 102: example of trail with multiple trailhead options

BEST PRACTICE

Trails with options for entry and exit at multiple trailheads typically can enhance accessibility when requirements of this section are integrated.

Trail entrance/exit points

a. provide 850 mm to 1000 mm clear opening whether entrance includes a gate, bollard, or other entrance design; and

b. ensure that entrances are maintained and clear of obstructions that can reduce the clear width of the entrance.

Trail clear width

Some trail clear width instructions include:

a. provide clear width of 1000 mm (minimum) to 1800 mm (preferred);

b. where the clear width is less than 1800 mm, provide a passing space of 1800 mm wide by 1800 mm (minimum) long, at intervals no more than 30 m (Figure 107);

c. ensure headroom clearance is 2100 mm (minimum) above the trail; and

d. ensure that there are no obstructions or projections along trail.

Note: A trailhead is a designated point of access that may contain a parking area, information kiosks, information signage, rest areas, washrooms, water fountains, or other user amenities, which are typically reached by vehicular or pedestrian access.

Trail surfaces

a. ensure that surface is fi rm and stable;

b. ensure that openings must not allow passage of an object that has a diameter of more than 20 mm (13 mm diameter preferred), and that any elongated openings are oriented approximately perpendicular to the direction of travel;

c. ensure that surface is resistant to damage by normal weather conditions, with ability to sustain typical wear and tear between planned maintenance cycles; and

d. ensure that type of surface used and expected conditions that may change over time are identified in information signage provided at trailhead.

Note: Where trail width is minimal, ensure that this occurs for the shortest distance possible.

BEST PRACTICE

Where running or cross slopes exceed 1:20 (5%), provide level rest areas, 1800 mm by 1800 mm (minimum), every 30 m.

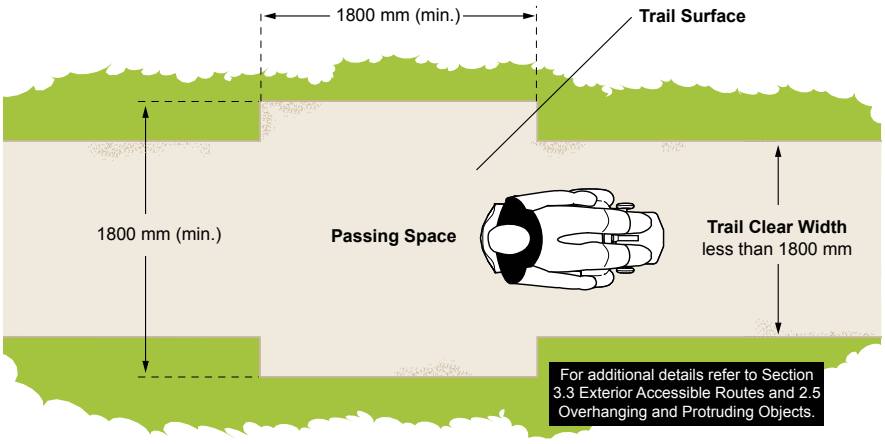


Figure 103: trail clear width

Note: For detailed guidance on trail surface design and slope requirements for unique conditions, refer to the “Ontario’s Best Trails Guidelines and Best Practices for the Design Construction and Maintenance of Sustainable Trails for All Ontarians” resource document.

Trail running and cross slopes

a. provide a running slope that is as gentle as possible, as permitted by the terrain, to minimize amount of strength and stamina required to use the trail; and

b. ensure that cross slopes are as gentle as possible, as permitted by the terrain, to provide an even surface for diverse users, including people using mobility aids or have difficulty with balance.

Ramps

Where ramps are provided on trails:

a. provide a running slope no greater than 1:10 (10%); and
b. with the exception of the running slope, ensure compliance with ramp requirements from Section 2.2 and elsewhere in this document.

Edge protection

Where recreational trails are constructed adjacent to water or a drop-off, provide edge protection with the following requirements:

a. constitute of an elevated barrier that runs along the edge the recreational trail to prevent users from slipping over the edge;
b. have the top of the edge protection at 50 mm (minimum) high above the trail surface; and
c. be designed so as not to impede the drainage of the trail surface.

Note: Colour, texture, and tonal contrast can be integrated to assist users with identification of edge protection.

Example of protective barrier where there is a large elevation change, or trail is adjacent to water feature.

Exception

Where there is a protective barrier that runs along the edge of a recreational trail that is adjacent to water or a drop-off, edge protection does not have to be provided.

Trailhead signage

a. For each trailhead along recreational trails, provide signage with the following information (Figure 108):
    i. the length of the trail;
    ii. the type of surface of which the trail is constructed;

BEST PRACTICE

Existing trails for which information has not been developed should be marked (e.g., temporary site signage) to indicate that the information is not yet available and the expected date it will be available.

Use multiple communication strategies to provide trail information, including onsite (e.g., maps, trailhead kiosk or vertical signage), in alternate formats at key City locations, and online (e.g., City website or trail related websites, such as “Trail Explorer”, www.trailexplorer.org).

iii. average and minimum trail width;

iv. average and maximum running and cross-slopes;

v. the location of features and amenities, where provided;

vi. extreme or unique conditions (e.g., steep slopes, obstacles, or narrow widths); and

b. ensure that signage text has high tonal contrast with its background in order to assist with visual recognition, with text that includes characters that use a sans serif font.

BEST PRACTICE

Provide contact information at trailheads where the public can report any damages, safety hazards, or vandalism on the trail.

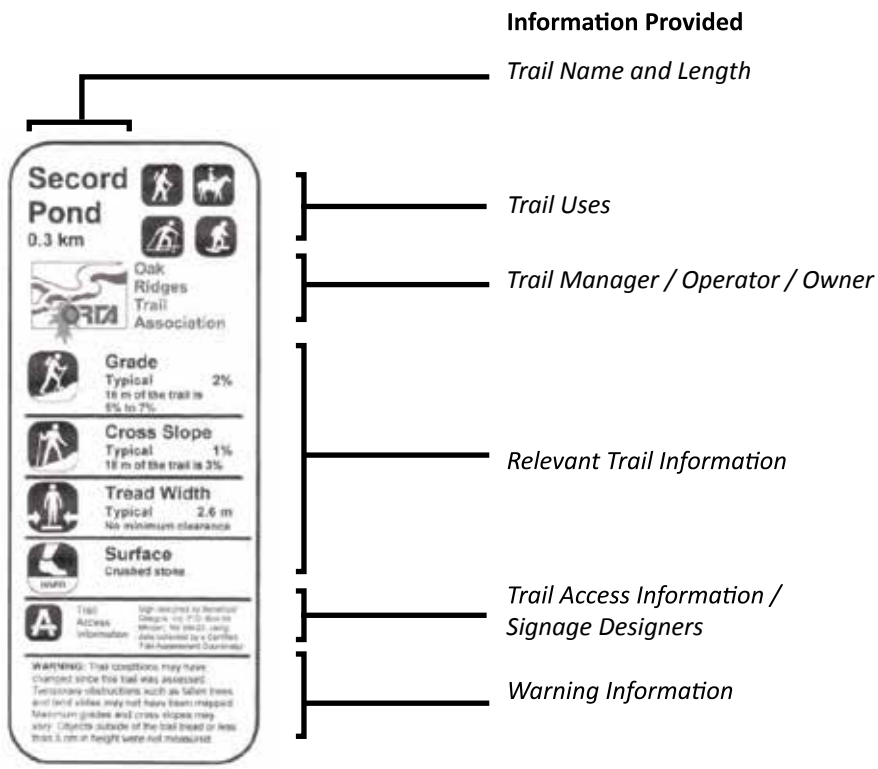


Figure 104: example of typical universal trail assessment process (utap) signage

Note: The information provided must be objective to allow users with or without disabilities to make an informed decision before using a trail. This recognizes varied conditions in trail environments but also encourages the maximum use of trails.

Other media

Where other media such as park websites or brochures are used to provide information about the recreational trail, beyond advertising, notice, or promotion, provide the same information identified on the trailhead signage.

Understanding the Universal Trail Assessment Process (UTAP)

The UTAP was developed by Beneficial Designs Inc. and is considered an objective method of documenting trail conditions and evaluating trails accessibility levels.

The UTAP method relies on systematically evaluating trail measurements and data collected by auditors. Auditors begin at a station point (e.g., trailhead) and mark subsequent station points along the trail, which defi ne trail segments. Typically, station points occur where there is a change in the trail characteristics, such as at the beginning/end of a slope, at an intersection, or at a major feature. For each trail segment, key measurements (e.g., running slope, cross slope, surface, width and length of trail) are gathered using the “Segment Data Collection Sheet.”.

After collection, the data is entered into the “Trailware” software, which formally evaluates the data based on the UTAP methodology and generates a Trail Access Information (TAI) report. This report can then be used to provide trail accessibility information to all users.

Additional resources for understanding the UTAP include:

- Ontario’s Best Trails
- Universal Trail Assessment Process (UTAP):

Beach access routes

Entrances

a. provide 1000 mm clear opening whether entrance includes a gate, bollard. or other entrance design.

Clear width

a. provide clear width of 1000 mm (minimum); and
b. provide headroom clearance of 2100 mm (minimum) above beach access route.

Surfaces

a. ensure surface is fi rm and stable;
b. ensure that openings must not allow passage of an object that has a diameter greater than 13 mm and that any elongated openings are oriented approximately perpendicular to the direction of travel; and
c. where the surface of the route is constructed (e.g., not natural):
    i. ensure surface has 1:2 bevel at changes in level between 6 mm and 13 mm;
    ii. provide a maximum running slope of 1:10 (10%) at changes in level between 14 mm and 200 mm; and
    iii. provide a ramp where changes in level are greater than 200 mm.

7.5 Outdoor spaces design considerations

Running and cross slopes

a. ensure the running slope is 1:10 (10%) (maximum);
b. ensure the cross slope is 1:50 (2%) (maximum), where the surface area of the beach access route is constructed (e.g., not natural); and
c. where surface area is not constructed, ensure the maximum cross slope is the minimum slope required for drainage.

Ramps

Where ramps are provided on beach access routes:

a. provide a running slope no greater than 1:10 (10%); and
b. with the exception of the running slope, ensure compliance with ramp requirements from Section 2.2 and elsewhere in this document.

BEST PRACTICE

Trail accessibility features should be assessed using the Universal Trail Assessment Process (UTAP).

Boardwalks

Where a recreational trail or beach access route is equipped with a boardwalk, apply the following requirements.

Clear width

a. provide clear width of 1000 mm (minimum);
b. where the clear width is less than 1800 mm, provide a passing space of 1800 mm wide by 1800 mm (minimum) long, at intervals no more than 30 m; and
c. ensure that headroom clearance is 2100 mm (minimum) above the boardwalk.

Surfaces

a. ensure surface is fi rm and stable; and
b. ensure that openings must not allow passage of an object that has a diameter of more than 20 mm (13 mm diameter preferred), in any direction and that any elongated openings are oriented approximately perpendicular to the direction of travel.

Running and cross slopes

a. ensure that the running slope is 1:20 (5%) (maximum);
b. where the running slope is steeper than 1:20 (5%), it must meet the requirements for ramps identified in this section; and
c. ensure that the gradient of the cross slope is the minimum required for drainage.

Edge protection

a. provide edge protection that is 50 mm (minimum) high; and
b. ensure that the design allows suitable drainage of boardwalk surface.

Recreational trail design checklist

The information in the Checklist is intended to assist municipal staff when reviewing key design options for providing accessible recreational trails for users of all ages and abilities.

A formal accessibility assessment of recreational trails, using the Universal Trail Assessment Process (UTAP), is recommended for existing recreational trails. The UTAP is considered an objective method of documenting trail conditions and evaluating accessibility levels for diverse users and is recognized as a current best practice.

1. Key trail features			
1.1 Trailhead			
1.1.1	Are there multiple **TRAILHEADS** to allow accessible entry and exit points along the trail? Identify number and location of trailheads.	Y N	Comments:
1.1.2(a)	Are **EXTERIOR AMENITIES** provided at trailheads (e.g., parking, accessible routes, public washrooms, etc.)? If yes, identify provisions and location of amenities	Y N	Comments:
1.1.2(b)	If provided, have the City's amenities been reviewed for compliance with relevant sections of the City of Ottawa Accessibility Design Guidelines?	Y N N/A	Comments:
1.2 Trail clear width			
1.2.1	Is the **CLEAR WIDTH** of the trail at least 1000 mm (1800 mm preferred)? Note: Ensure placement of vegetation and permanent design features (e.g., bollards and decorative boulders) does not create obstruction or projection along accessible route.	Y N	Comments:
1.2.2	Where there are changes in level along the trail, are **EDGE PROTECTION** at least 50 mm high provided and edges clearly marked (e.g., colour and texture contrast) to assist identification?	Y N N/A	Comments:
1.2.3	Is the **HEADROOM CLEARANCE** above the trail at least 2100 mm?	Y N N/A	Comments:
1.3 Trail slopes			
1.3.1	Is the **RUNNING SLOPE** as gentle as possible, as permitted by the terrain?	Y N	Comments:
1.3.2	Is the **CROSS SLOPE** as gentle as possible, as permitted by the terrain?	Y N	Comments:
1.4 Trail surface			
1.4.1	Is the **TRAIL SURFACE** firm and stable? Identify type of surface and material used to meet accessibility requirements.	Y N	Comments:

7.5 Outdoor spaces design considerations

2. Signage			
2.1(a)	Is there suitable **TRAIL NAME / IDENTIFICATION SIGNAGE** at trailheads and key access points, with accessibility features (e.g., large print, use of strong tonal contrast and pictograms) identifying amenities that may be available?	Y N	Comments:
2.1(b)	If yes, does the signage include the following information:		Comments:
	Trail name	Y N	
	Trail map	Y N	
	Trail length	Y N	
	Trail surface type	Y N	
	Trail running slope (grade)	Y N	
	Trail cross slope	Y N	
	Trail manager / operator	Y N	
	Note: Identifying this information in accessible format allows users of all ages and abilities to make an informed decision about using the trail. Refer to Section 6.16 Recreational Trails, Beach Access Routes and Boardwalks for more information on the UTAP.		
2.2	Have any barriers to accessibility (e.g., steep slopes or difficult topography) along the trail been identified on signage at strategic locations? If yes, describe information to provide on signage.	Y N	Comments:
3. Additional considerations			
3.1	Does the trail reflect the varied needs of users, the varied natural landscape and the shared desire for varied trail experience? Note: Design should incorporate both sustainable and universal design features to ensure the widest range of users can benefit.	Y N	Comments:
3.2	Does the trail offer areas for rest and options for shorter or longer on-trail adventures so that trail users can choose the experience that most suit them?	Y N	Comments:
3.3	Is there a policy in place to address maintenance issues for trails designed for year-round use (e.g., removal of debris and obstructions on trail surfaces etc)?	Y N	Comments:
3.4	If reviewing the design of an existing trail and related environments, has the UTAP been implemented to address the needs of diverse trail users of all ages and abilities?	Y N	Comments:

Note: Refer to Section 6.15 Recreational Trails, Beach Access Routes and Boardwalks, for detailed information on accessibility criteria for recreational trails and the UTAP.

The following information is reprinted with permission from the following:

- The City of Markham Accessibility Guidelines (2022) Sections 6.18–6.20.

While some information indicates a requirement, the information is provided as guidance in this document and industry best practice. The requirements apply only in the respective municipalities to which they apply.

7.6 Inclusive play space design considerations

This section applies to play spaces designed for children. Play spaces can be located in a variety of public settings (e.g., parks, schools, childcare facilities, or community/recreation centres). Play spaces typically require consideration for accessibility features related to:

- the number and types of play structures, equipment, elements, and features provided;
- play areas surrounding the play structures; and
- site amenities and features surrounding the play space.

Criteria provided in this section are intended to summarize key features for inclusive play spaces and reference to applicable standards. Detailed planning and design are required for provision of inclusive play spaces.

Consultation requirements

When constructing new or redeveloping existing outdoor play spaces, consultation on the needs of children and caregivers with various disabilities must occur with:

a. the public and persons with disabilities; and
b. your local Accessibility Advisory Committee if available.

Note: Inclusive play spaces ensure that children with disabilities have equal opportunities for peer interaction and development of socialization skills. They also provide an opportunity for parents with disabilities to interact with their children.

Note: Requirements related to the area surrounding or beyond the play space, including, but not limited to, parking lots, washrooms, drinking fountains, and recreation facilities, are referenced elsewhere in this document.

Design requirements

When constructing new or redeveloping existing play spaces consider:

a. incorporate accessibility features, such as sensory and active play components, for children and caregivers with various disabilities into the design of outdoor play spaces; and

7.6 Inclusive play space design considerations

b. ensure that outdoor play spaces have ground surface that is firm, stable, and has impact-attenuating properties for injury prevention and sufficient clearance to provide children and caregivers with various disabilities the ability to move through, in, and around the outdoor play space.

Play spaces are typically designed for different age groups as they provide age-specific play components.

Provide a minimum of two accessible ingress/egress points:

a. that are located as part of an adjacent accessible route;
b. that ensure that accessible connections provided to play space surfaces are fi rm, stable, and slip-resistant, as well as providing direct connections to individual play components; and
c. provide clear width of 1525 mm (minimum).

Note: A level approach, gradually sloped route or ramps are examples of types of accessible entry/exit points to a play space.

Accessible routes

Consider the available accessible routes, including:

a. provide at least one accessible route within the boundary of the play space, connecting ground-level play components and elevated play components, including entry and exit points of the play components;
b. ensure that the clear width of an accessible route is 1 525 mm (minimum); and
c. ensure that the maximum slope for an accessible route connecting ground-level play components within the boundary of a play space is 1:16 (6.25%).

Play space ground surface

Provide accessible surface materials for play spaces such as poured-in-place rubber, accessible turf, rubber mats and tiles, bonded and engineered wood fibers or shredded rubber.

An example of accessible entry / exit point and accessible route leading to elevated play components.

Note: Refer to exceptions and detailed requirements, including gradient, clear width, and reduced width criteria, identified in CSA, Annex H.

Play components

Provide a high tonal contrast between a play component and its surroundings.

Examples of inclusive play space ground surfaces. From left to right: rubber tile, engineered wood fiber and shredded rubber.

7.6 Inclusive play space design considerations

Elevated play components

An elevated play component is a play component reached from above or below grade and is part of a composite play structure.

Ensure that at least 50% of elevated play components are connected to a ramp or transfer system, as identified in Table 13 below.

Total number of elevated play components	Total percentage of elevated play components connected by ramp or transfer system
20 or more	50% minimum (25% ramp, and other 25% ramp or transfer system)
Less than 20	50% minimum (transfer system instead of ramp permitted)

Examples of elevated play components.

Transfer systems

Consider the following in transfer systems:

a. provide transfer systems to connect elevated or ground-level play components (e.g. transfer steps or platforms);

b. ensure transfer steps are used where movement is intended from a transfer platform to a level that provides elevated play components on an accessible route; and

provide a minimum clear floor space of 915 mm wide by 1370 mm long adjacent to all transfer locations onto play components (see Figure 109 below).

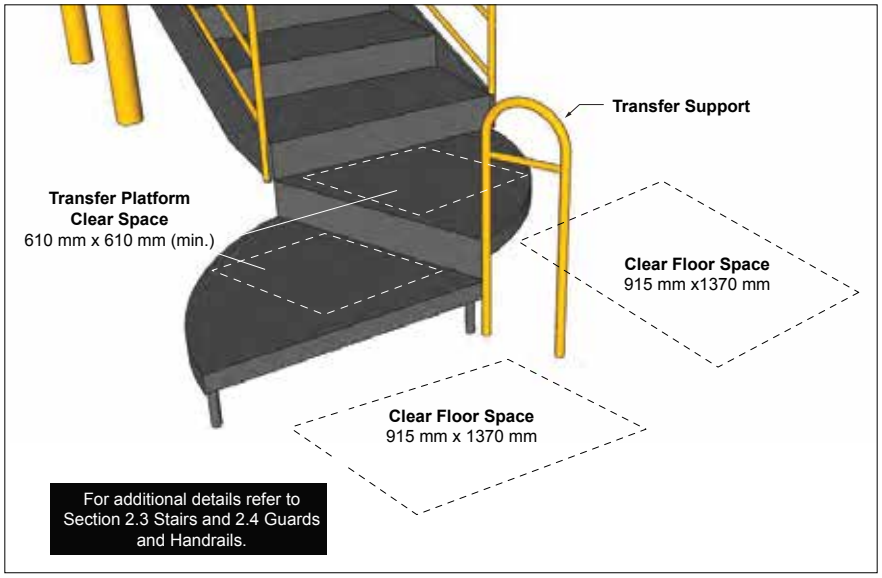


Figure 105: transfer systems

Note: A transfer platform is used where transfer is intended from a wheelchair or other mobility aid. Refer to detailed requirements, e.g., means of support and surface sizes, identified in CSA, Annex H.

Examples of supports include a rope loop, a loop-type handle, a slot in the edge of a flat horizontal or vertical member, poles or bars, or solid D-shaped rings affixed to corner posts.

7.6 Inclusive play space design considerations

Turning space

For turning space, provide clear turning space for mobility aids of 1675 mm (preferred) or 1500 mm (minimum) diameter on the same level as play components as shown below.

BEST PRACTICE

The distance covered by the transfer steps should be the shortest possible.

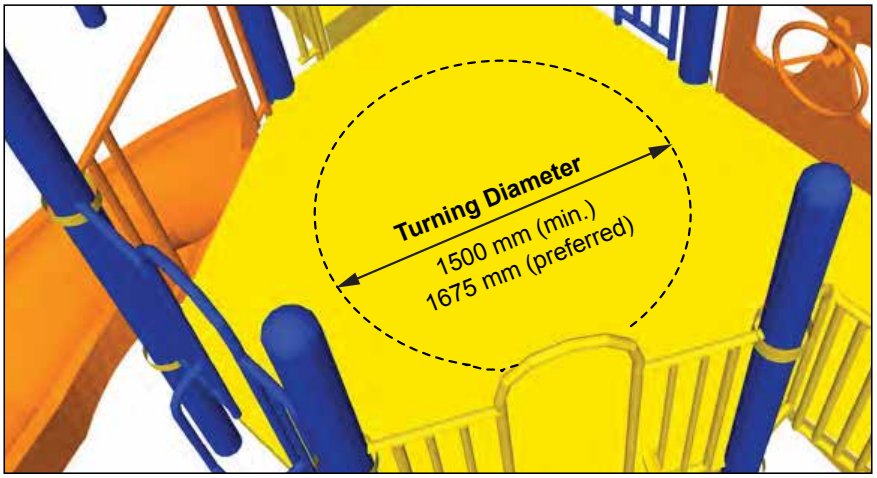


Figure 106: turning space - plan view

Number of elevated play components provided	Minimum number of groundlevel play components required to be on an accessible route	Minimum number of different types of ground-level play components required to be on accessible route
1	n/a	n/a
2 to 4	1	1
5 to 7	2	2
8 to 10	3	3
11 to 13	4	3
14 to 16	5	3
17 to 19	6	3
20 to 22	7	4
23 to 25	8	4
More than 25	8 plus 1 for each additional 3 over 25, or fraction thereof	5

Table 14: Ground-Level Play Component Alternatives to Elevated Play Components
Source: Canadian Standards Association (CAN / CSA Z614-14, Annex H)

Ground level play components

A ground-level play component is a play component that is approached and exited at the ground level. Provide the ratio of ground-level play component alternatives, compared to elevated play components, as identified in Table 14 below.

Examples of ground-level play components.

Inclusive play space design guide

This design guide is provided for use by municipal staff when designing new inclusive play spaces.

The Inclusive Play space Design Guide identifies key design features for planning and designing an inclusive play space, with a focus on the main accessibility features that are required to meet the diverse needs of users of all ages and abilities, including children using the play space as well as caregivers and companions. Additional design considerations may also be required related to the broader play space context and environment, including requirements for the site and park where the play space is located (e.g., seating and viewing areas for parents or caregivers). Overall, this Guide is intended to welcome and address the needs of children, caregivers and users of all age and abilities, emphasizing opportunities for inclusive and shared play.

Note: This guide does not provide all requirements for designing an inclusive play space; only key requirements are provided. Refer to Section 6.17, Inclusive Play Spaces of these Standards and CAN / CSA Z614-14 (Annex H), for more details.

7.6 Inclusive play space design considerations

Key features of an inclusive play space

Play spaces that offer children of all abilities the opportunity to interact and play with each other are essential to promoting diversity and inclusion.

The following diagram identifies important best practices when designing an inclusive play space.

Key features are indicated on the diagram and described in this guide.

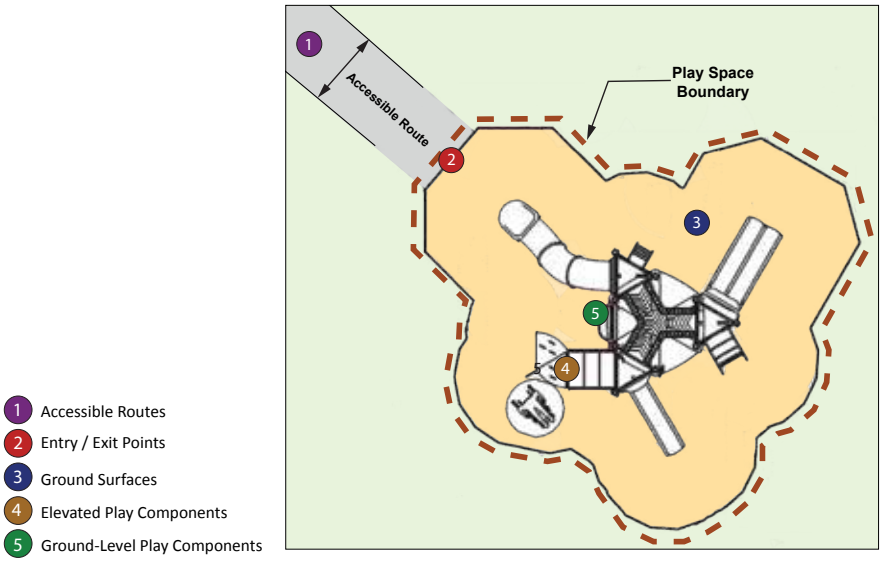


Diagram of Typical Play Space Features

Note: Play spaces come in different shapes and sizes. This diagram is provided for guidance and reference only.

Inclusive play space checklist

The information in the following checklist is intended to assist with reviewing key design options for providing inclusive play spaces. Information in this checklist may need to be updated based on new design standards identified during implementation and is only provided as a reference.

General information

Reference (Identification # / park name): _____

Play space type: Junior | Senior | Adventure | Combination | Water features

identify total number of play areas or zones: _____

Reviewed by

Name: _____

Title / position: _____

Department: _____

1. Key design consideration			
1.1 Accessible routes			
1.1.1	Is there at least one (1) accessible route within the boundary of the play space?	Y N	Comments:
1.2 Entry / exit points			
1.2.1	Is there at least one (1) entry / exit point to the play space (2 or more preferred) connected to an accessible route?	Y N	Comments:
1.3 Ground surfaces			
1.3.1	Is the play space ground surface accessible (specify surface type)? If yes, does ground surface material meet CSA standards for equipment and layout?	Y N	Comments:
1.4 Elevated play components			
1.4.1	Are at least 50% of elevated play components located on an accessible route and connected by a ramp or transfer system?	Y N	Comments:
1.5 Ground-level play components			
1.5.1	Are the minimum number and variety of ground-level play components required to be along an accessible route provided? **Note**: Use calculator identified in CAN / CSA Z614-14 (Annex H) to determine required number of play components.	Y N	Comments:
2. Additional considerations			
2.1	Are creative features that stimulate the senses provided (Examples include: water and sand features, scent gardens, wind chimes and winding pathways)? If yes, provide a description, including site context and amenities provided adjacent to play space or in the park.	Y N	Comments:
2.2	Does play equipment foster inclusive play and allow children of all ages and abilities to be part of the action / activities? If yes, describe.	Y N	Comments:
2.3	Does play space equipment meet accessibility requirements of CAN / CSA Z614 (Annex H)? Note: A detailed assessment may be required.	Y N	Comments:

7.6 Inclusive play space design considerations

Use this Checklist when reviewing individual areas of each play space, depending on the overall layout, features, and type of equipment that is provided.

When selecting play equipment from a supplier look for the following directions that should be included:

1. Provide age range and number of children using the play space;
2. Describe the vision for the proposed play space. Provide a Design Program which outlines the goals and objectives for the play space;
3. Describe the site context–what is around the play area and how it will be used;
4. Provide a budget for the equipment, keeping in mind costs for landscaping and natural features;
5. Follow CAN/CSA Z614-14, Annex H accessibility standards and Section 6.17 Inclusive Play Spaces; and
6. Emphasize that equipment should fit into site plan, not vice versa.

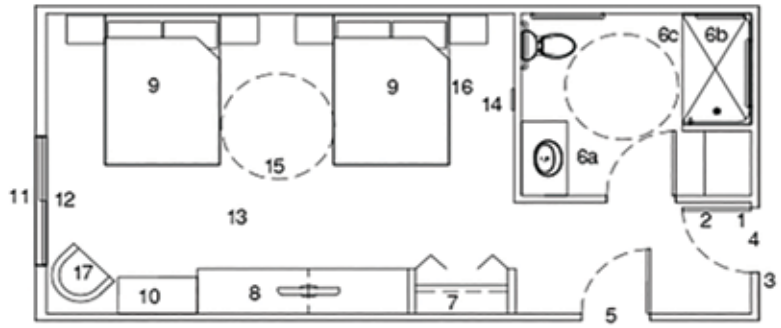
Source: Adapted from “Let’s Play: Creating Accessible Playspaces: A Tool Kit for School-Based Groups”, Rick Hansen Foundation.

Note: Refer to CAN/CSA Z614-14 (Annex H) for detailed information and accessibility criteria when designing a new inclusive play space.

7.7 Hotel design considerations

The following are recommendations on the layout of fully accessible hospitality rooms. The accessibility requirements for all barrier-free rooms, including bathroom design, turning diameters, counter heights, heights of controls and electrical outlets, power operated doors are found in the current NBC(AE).

Double queen bed room layout



1. Automatic door with hold opener delay 30 seconds
2. Peep holes at designated height 1000 mm - 1100 mm
3. Push plate to operate door opener
4. Door openings 850 mm min.
5. Door to connecting suite

6a. Slip resistent bathroom flooring

6b. Non-slip shower flooring

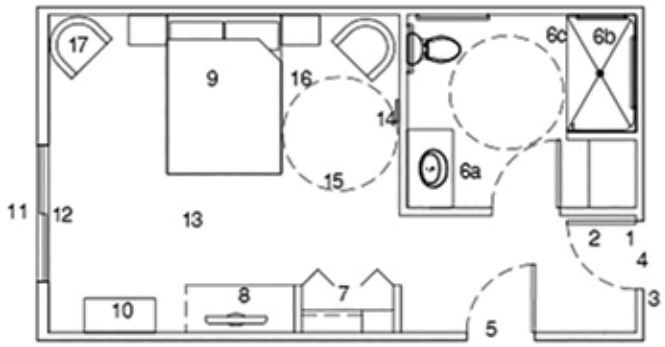
6c. Solid threshold - not to exceed 13 mm -use soft rubber

7. Wardrobe with shelving and pull down hanging rack
8. Dresser and TV
9. Bed
10. Work table for computer
11. Level floor access to balcony
12. Curtains min. 6-8 inches above floor
13. Flooring with low pile carpet or resilient flooring tiles
14. Door bell and audio/ visual alarm
15. Turning radius 1500 mm min.
16. Open under bed for use of lift
17. Chairs have arms

Figure G: Double queen bed room layout single queen bed room layout

7.7 Hotel design considerations

Singe queen bed room layout



1. Automatic door with hold opener delay 30 seconds
2. Peep holes at designated height 1000 mm - 1100 mm
3. Push plate to operate door opener
4. Door openings 850 mm min.
5. Door to connecting suite

6a. Slip resistent bathroom flooring

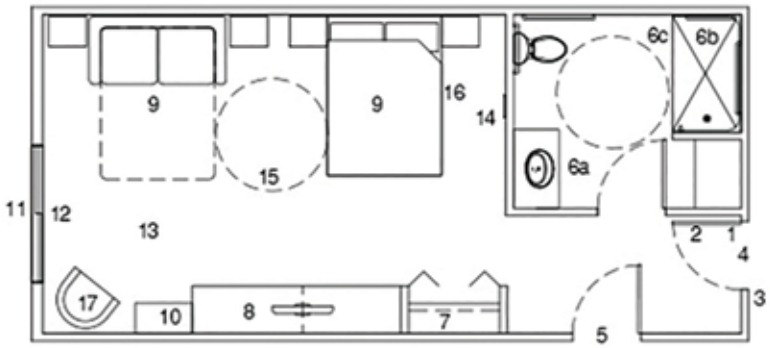
6b. Non-slip shower flooring

6c. Solid threshold - not to exceed 13 mm -use soft rubber

7. Wardrobe with shelving and pull down hanging rack
8. Dresser and TV
9. Bed
10. Work table for computer
11. Level floor access to balcony
12. Curtains min. 6-8 inches above floor
13. Flooring with low pile carpet or resilient flooring tiles
14. Door bell and audio/ visual alarm
15. Turning radius 1500 mm min.
16. Open under bed for use of lift
17. Chairs have arms

Figure H: Single queen bed room layout

Double bed room with pullout sofa layout



1. Automatic door with hold opener delay 30 seconds
2. Peep holes at designated height 1000 mm - 1100 mm
3. Push plate to operate door opener
4. Door openings 850 mm min.
5. Door to connecting suite

6a. Slip resistent bathroom flooring

6b. Non-slip shower flooring

6c. Solid threshold - not to exceed 13 mm - use soft rubber

7. Wardrobe with shelving and pull down hanging rack
8. Dresser and TV
9. Pull out couch / Bed
10. Work table for computer
11. Level floor access to balcony
12. Curtains min. 6-8 inches above floor
13. Flooring with low pile carpet or resilient flooring tiles
14. Door bell and audio/ visual alarm
15. Turning radius 1500 mm min.
16. Open under bed for use of lift
17. Chairs have arms

Figure I: Double bed room with pullout sofa layout

7.7 Hotel design considerations

Bed elevation

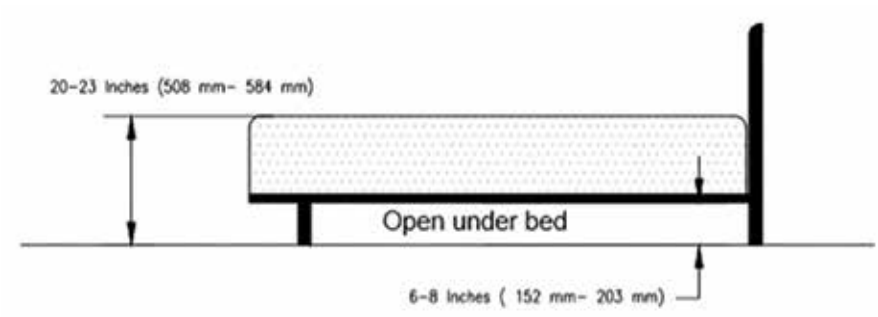


Figure J: Bed elevation

Wardrobe elevation

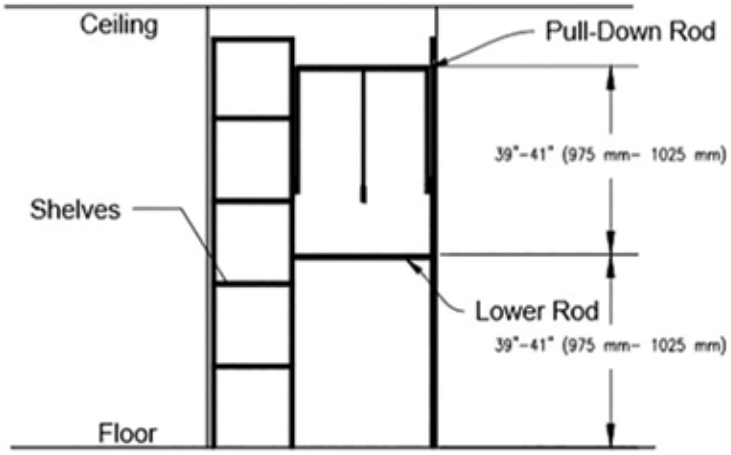


Figure K: Wardrobe elevation

7.8 Visitable housing

The concept of Visitable Housing is to design and build homes with basic accessibility features that will provide easy access on the **main level** for everyone, including people with physical disabilities, seniors, strollers, delivery persons, and even current residents with temporary disabilities. Building with this concept in mind is considered best practice.

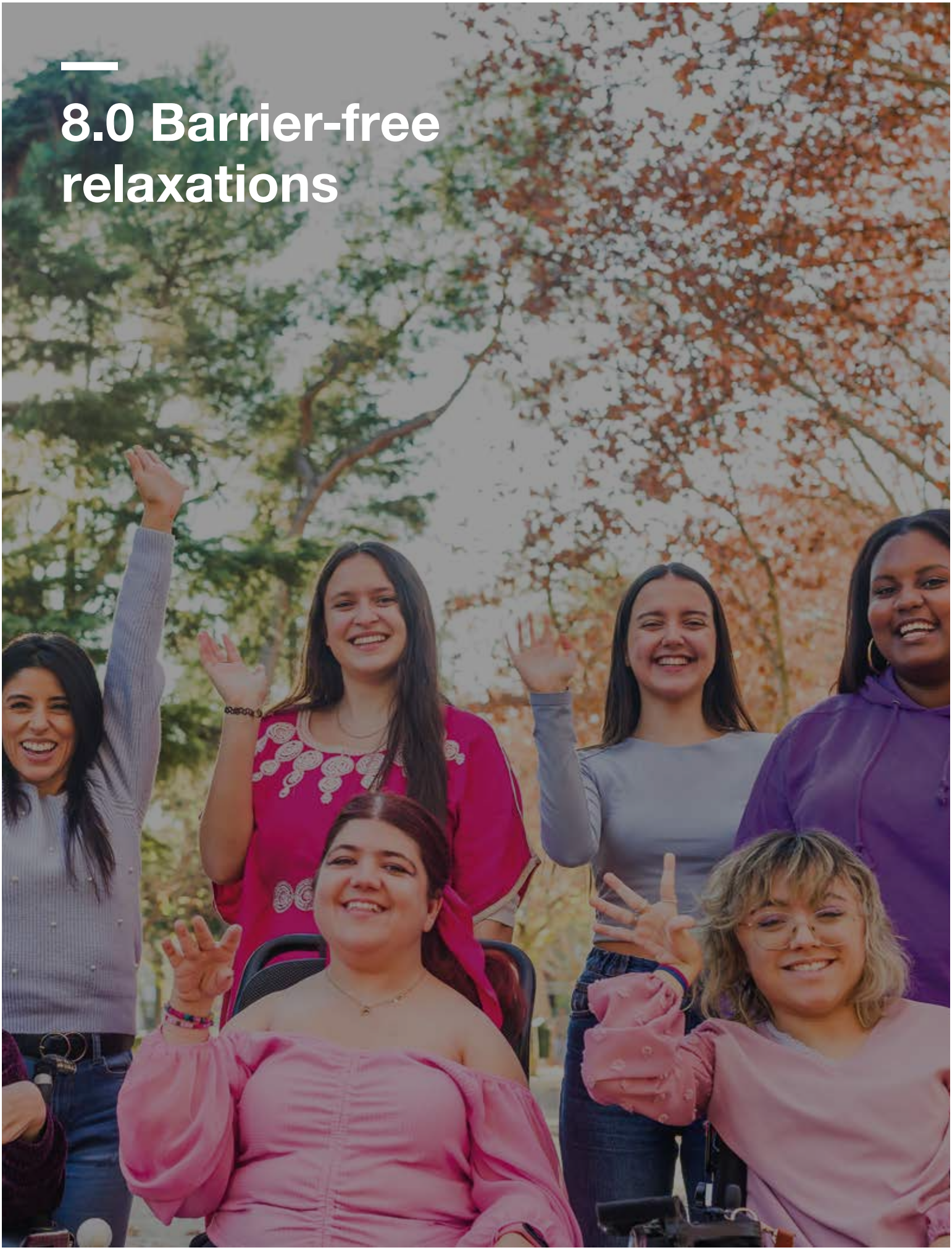
Visitable Housing promotes inclusion and social integration of those with disabilities into their communities when homes are designed with these accessibility features on the main floor:

- No-step/zero threshold entrance at the front (preferred), back or side doorways.
- Wider doorways (min 900 mm) and hallways (1 000 – 1 200 mm) on a barrier-free path of travel.
- Wheelchair accessible bathroom (with or without a shower) that includes grab bars, transfer space of 900 mm adjacent to the toilet, and a min 1 500 mm turning diameter.

Access to the dwelling is more comfortable when Visitable Housing is designed from the outset and such design will reduce the cost of renovations when changes may occur over the lifespan of the occupant(s) and their family members or friends.

For more information, see the Accessible Housing by Design publication from the Canada Mortgage and Housing Corporation. You can also reference the National Educational Association of Disabled Students (NEADS) for a project on VisitAble Housing in Canada.

8.0 Barrier-free relaxations



8.0 Barrier-free relaxations

The requirements for barrier-free relaxations are under Division C, Part 2, Administrative Provisions.

2.2.2.3. Dimensional tolerances

1. If life safety will not be reduced, the *authority having jurisdiction* may accept a minor variation, not more than 2%, of a dimension given in this Code.

All additions and new buildings will automatically be denied relaxation for any of the barrier-free design requirements.

2.2.1.4. Barrier-free relaxations

1. The *Provincial Barrier-Free* Administrator and *Provincial Building Administrator* may grant relaxation of one or more of the requirements of Section 3.8. of Division B if an owner can demonstrate to the satisfaction of the *Provincial Barrier-Free Administrator* and *Provincial Building Administrator* that
   a. the specific requirements are unnecessary, or
   b. extraordinary circumstances prevent conformance.

INTERPRETATION

An owner must be able to demonstrate that compliance with the barrier-free design requirements is unnecessary or unachievable when the applicant applies for special consideration or an exemption from compliance from the province. The Provincial Barrier-Free Administrator or (not and) the Provincial Building Administrator will review the application, and relaxation will only be granted if one of the previous two conditions is satisfied.

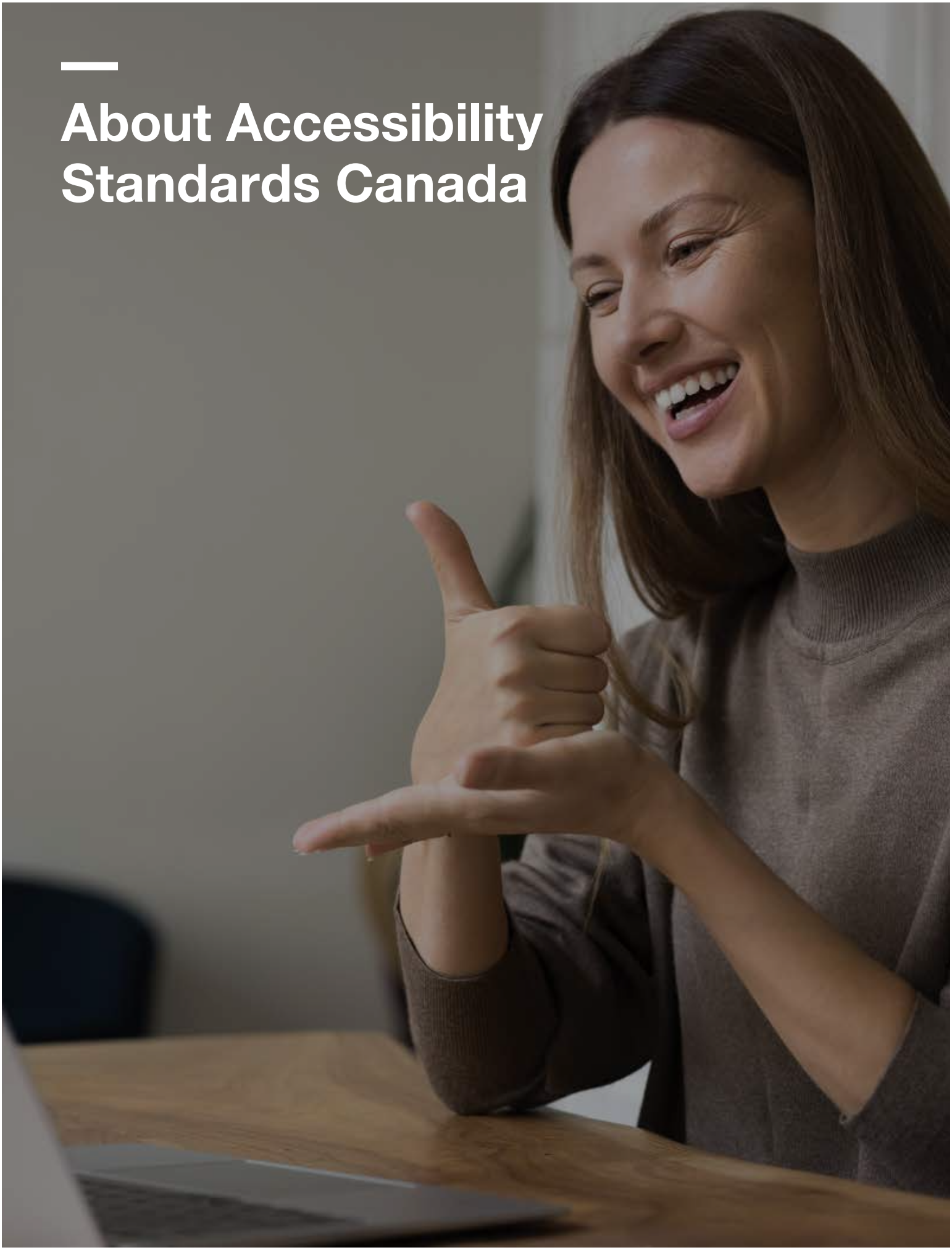
Note: The submission of an Application for the Relaxation of Requirements for the Disabled does not guarantee a relaxation of barrier-free requirements will be granted. Financial constraints are not a consideration for a relaxation to be granted.

The permission to waive a barrier-free path of travel for access by persons using wheelchairs to certain specified areas of a building is not intended to waive all accessibility requirements for persons with other disabilities. For example, persons with visual or hearing disabilities who do not require the use of a wheelchair can be expected to be able to move throughout a building.

Please see Application for Barrier-Free Relaxation for more information.

You can also access STANDATA interpretation 19-BCI-002(Rev2) Barrier-free design requirements: relaxations or contact Alberta Municipal Affairs at 1-866-421-6929 or by email at safety.services@gov.ab.ca.

About Accessibility Standards Canada



About Accessibility Standards Canada

Accessibility Standards Canada, under whose auspices this standard has been produced, is a Government of Canada departmental corporation mandated through the *Accessible Canada Act*. Accessibility Standards Canada's Standards contribute to the purpose of the *Accessible Canada Act*, which is to benefit all persons, especially persons with disabilities, through the realization of a Canada without barriers through the identification, removal, and prevention of accessibility barriers.

Disability, as defined by the *Accessible Canada Act*, means any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment — or a functional limitation — whether permanent, temporary, or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person's full and equal participation in society.

All of Accessibility Standards Canada's standards development work, including the work of our technical committees, is carried out in recognition of, and in accordance with, the following principles in the *Accessible Canada Act*:

- all persons must be treated with dignity regardless of their disabilities;
- all persons must have the same opportunity to make for themselves the lives that they are able and wish to have regardless of their disabilities;
- all persons must have barrier-free access to full and equal participation in society, regardless of their disabilities;
- all persons must have meaningful options and be free to make their own choices, with support if they desire, regardless of their disabilities;
- laws, policies, programs, services, and structures must take into account the disabilities of persons, the different ways that persons interact with their environments and the multiple and intersecting forms of marginalization and discrimination faced by persons;
- persons with disabilities must be involved in the development and design of laws, policies, programs, services, and structures; and
- the development and revision of accessibility standards and the making of regulations must be done with the objective of achieving the highest level of accessibility for persons with disabilities.

These principles align with the principles of the United Nations' *Convention on the Rights of Persons with Disabilities*, ratified by the Government of Canada in 2010 to recognize the importance of promoting, protecting, and upholding the human rights of persons with disabilities to participate fully in their communities.

Accessibility Standards Canada seeks to create standards that are aligned with its vision. This includes commitments to break down barriers to accessibility and abide by the principle of “nothing without us” in our standards development process, where everyone, including persons with disabilities, can expect a Canada without barriers.

The standards development process used by Accessibility Standards Canada is the most accessible in Canada, if not the world. Accessibility Standards Canada provides accommodations to meet the needs of Technical Committee members with disabilities. Accessibility Standards Canada provides compensation for people with disabilities to encourage their active participation. Accessibility Standards Canada ensures an accessible public review process, including accessible permission forms and multiple formats of the standard, to encourage Canadians with disabilities to comment.

Standards developed by Accessibility Standards Canada are designed to achieve the highest levels of accessibility. This means that Accessibility Standards Canada standards create equity-based technical requirements while taking into consideration national and international best practices, as opposed to focusing on minimum technical requirements.

Accessibility Standards Canada applies an intersectional framework to capture the experiences of people with disabilities who also identify as LGBTQ2+, Indigenous Peoples, women, and visible minorities. Its standards development process requires that technical committees apply a cross-disability perspective to ensure that no new barriers to accessibility are unintentionally created. In addition, standards developed by Accessibility Standards Canada align with 14 of the 17 United Nations Sustainable Development Goals, which were adopted by Canada in 2015 to promote partnership, peace and prosperity for all people and the planet by 2030.

Accessibility Standards Canada is engaged in the production of voluntary accessibility standards, which are developed by technical committees using a consensus-based approach. Each technical committee is composed of a balanced group of experts who develop the technical content of a standard. At least 30 % of these technical experts are people with disabilities and lived experience and 30% are from equity seeking groups including LGBTQ2+, indigenous peoples, women and visible minorities. These technical experts also include consumers and other users, government and authorities, labour and unions, other standards development organizations, businesses and industry, academic and research bodies, and non-governmental organizations.

All Accessibility Standards Canada standards also incorporate related findings from research reports conducted through Accessibility Standards Canada's Advancing Accessibility Grants and Contributions program. This program involves persons with disabilities, experts, and organizations to advance accessibility standards research and supports research projects that help with the identification, removal, and prevention of new barriers to accessibility.

Accessibility Standards Canada standards are subject to review and revision to ensure that they reflect current trends and best practices. Accessibility Standards Canada will follow the international maintenance review cycle for this standard. Suggestions for improvement, which are always welcome, should be brought to the notice of the respective technical committee. Changes to standards are issued either as separate amendments or in new editions of standards.

As a Standards Council of Canada Accredited Standards Development Organization, all Accessibility Standards Canada standards are developed through an accredited standards development process and follow Standard Council of Canda's Requirements and Guidance for Standards Development Organizations. These voluntary standards apply to federally regulated entities and can be recommended to the Minister responsible for the *Accessible Canada Act* (i.e., the Minister of Employment, Workforce Development and Disability Inclusion).

In addition to its focus on developing accessibility standards, Accessibility Standards Canada has been a leader amongst Canadian federal organizations for promoting and adopting accessibility internal to government. Accessibility Standards Canada is the first organization in the federal government to have a Board of Directors majority-led by persons with disabilities. Accessibility Standards Canada has a state-of-the-art accessible office space for its employees, Board of Directors, and Technical Committee Members. The carefully designed accessible workspace aligns with the organization's belief in the importance of universal accessibility.

To obtain additional information on Accessibility Standards Canada, its standards or publications, you can reach them by visiting the Contact Us page on their website.