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B651-18
National Standard of
Canada



Accessible design for the built environment

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Preface

This is the fifth edition of CSA B651, Accessible design for the built environment. It supersedes the previous editions published in 2012 and 2004 under the same title, and the 1995 and 1990 editions published under the title, Barrier-free design. This edition of the Standard has been reformatted without the informative Commentary. The Commentary is now available in CSA B651HB-18, Accessible design for the built environment – Implementation Handbook.

The technical requirements in this Standard are minimum levels. They represent a consensus of the Technical Committee members, who represent a broad spectrum of interests. The members are helped and encouraged by the public comments received as a result of the wide distribution of a draft at the public review stage.

The Technical Committee on Accessibility has also produced two related Standards, CSA B651.1, Accessible design for automated banking machines, and CAN/CSA-B651.2, Accessible design for self-service interactive devices.

The Technical Committee has also developed other Standards, including

- a) CSA B480, Customer service standard for people with disabilities;
- b) CSA B659, Inclusive design for an aging population; and
- c) the adoption, CAN/CSA-ISO IWA 18, Framework for integrated community-based life-long health and care services in aged societies.

Significant changes to this edition include the following:

- a) expansion of requirements to accommodate the full range of wheeled mobility devices, including manual and powered wheelchairs, and scooters;
- b) updates to dimensions based on current data from anthropometric research;
- c) alignment of design requirements with the accessible design section of the National Building Code of Canada;

- d) updated requirements for exterior environments; and
- e) a new informative annex on trails and beach access routes.

This Standard was prepared by the Technical Committee on Accessibility, under the jurisdiction of the Strategic Steering Committee on Community Safety and Well-Being, and has been approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

B651-18

Accessible design for the built environment

0 Introduction

This Standard contains requirements for making buildings and other facilities accessible to persons with a range of physical, sensory, or cognitive disabilities including but not limited to mobility impairments, reaching or manipulation disabilities, hearing impairments, visual impairments, etc. It was developed to fulfill an expressed need for a national technical standard that covers accessibility issues in many different types of buildings and environmental facilities, and can be referenced in whole or in part by a variety of adopting agencies or jurisdictions.

The technical requirements in this Standard cover design aspects of physical spaces and the elements within them to help ensure that they are accessible to people having different abilities and disabilities. The Standard does not specify the extent to which these requirements have to be applied, as this is the responsibility of the authorities having jurisdiction, whether federal, provincial/territorial, or municipal. The 2015 edition of the National Building Code of Canada (NBC) has referenced certain clauses of CSA B651 as providing an acceptable alternative to the accessible design requirements in the NBC. The Standard is also referenced in other regulations and guidelines. The user is advised to contact the local authority having jurisdiction in this field to determine to what extent this edition of the Standard is referenced.

The CSA Technical Committee that developed this Standard recognizes that it operates within a broader context of social and regulatory initiatives. The UN Convention on the Rights of Persons with Disabilities was adopted by the UN General Assembly in 2006 and ratified by Canada on March 11, 2010. This ground-breaking, legally binding UN Convention promotes, protects, and ensures that persons with disabilities have the full and equal enjoyment of all human rights — a

major step towards equalizing their opportunities and participation in society.

This Standard also supports the principles of universal design (UD) as it applies to the built environment, i.e., designing environments so that they can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability.

1 Scope

1.1 Purpose

This Standard specifies technical requirements on how to make buildings and the exterior built environment accessible and safely usable by persons with physical, sensory, or cognitive disabilities.

1.2 Application

This Standard describes technical requirements that can be used in the design and construction of new facilities or exterior environments, or in modifications to existing facilities. This Standard does not address the application of the technical requirements. The extent to which these requirements have to be applied is the responsibility of other authorities having jurisdiction.

1.3 Dimensions

This Standard contains minimum requirements based on adult dimensions. Dimensions are given in SI (metric) units (typically in millimetres) and, where converted from foot/pound (imperial) units, have been rounded off with respect to critical dimensions. All dimensions in figures are given in millimetres and are measured to the centreline, unless otherwise specified.

1.4 Figures

Figures are included for explanatory or illustrative purposes only and are not a mandatory part of the Standard. Figures are

not to scale. If there is any difference between the text and figure (where provided), the text shall take precedence.

1.5 Annexes

Annexes [A](#) to [C](#) provide additional information on topics considered in the Standard. Annex [D](#) provides guidance for the design of outdoor trails and beach access routes. Annex [E](#) contains references for accessible outdoor recreational environments, to supplement the information and guidance provided in Annex [D](#).

1.6 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Text accompanying tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.7 Large print

Consistent with the recommendations of the CSA B651 series of standards, and for ease of reading the information and universal accessibility, this Standard has been printed in a 14 point font size.

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below. See Annexes [A](#), [C](#), and [D](#) for additional reference publications.

CSA Group

ASME A17.1-2016/CSA B44-16
Safety Code for Elevators and escalators

ASSE 1016-2017/ASME A112.1016-2017/CSA B125.16-17
Performance requirements for automatic compensating valves
for individual showers and tub/shower combinations

B355-15

Lifts for persons with physical disabilities

CAN/CSA-B613-00 (R2012)

Private residence lifts for persons with physical disabilities

B651.1-09 (R2015)

Accessible design for automated banking machines

CAN/CSA-B651.2-07 (R2017)

Accessible design for self-service interactive devices

CAN/CSA-T515 (withdrawn)

Telecommunications — Telephone terminal equipment —
Acoustic and magnetic field requirements for handset
telephones intended for use by the hard of hearing

T516 (withdrawn)

Telecommunications — Telephone terminal equipment —
Requirements for pay telephone keypads and function keys
with particular regard to use by persons with disabilities

CAN/CSA-Z10535.1:15

Hoists for the transfer of disabled persons — Requirements and
test methods (Adopted ISO 10535:2006, second edition, 2006-
12-15, with Canadian deviations)

Z10535.2-17

Lifts for the transfer of persons - Installation, use, and
maintenance

Center for Inclusive Design and Environmental Access

Final Report of the Anthropometry of Wheeled Mobility Project,
December 31, 2010

http://www.udeworld.com/documents/anthropometry/pdfs/AnthropometryofWheeledMobilityProject_FinalReport.pdf

BSI (British Standards Institute)

BS5395 Part 1:2000

Stairs, ladders and walkways. Code of practice for the design, construction and maintenance of straight stairs and winders

ISO (International Organization for Standardization)

23599:12

Assistive products for blind and vision impaired persons —
Tactile walking surface indicators

Transportation Association of Canada

Manual of Uniform Traffic Control Devices for Canada (2014)

Guidelines for Understanding, Use and Implementation of
Accessible Pedestrian Signals (2008)

3 Definitions

The following definitions shall apply in this Standard:

Accessible — as applied to a site, building, or other facility, possessing the necessary characteristics for it to be entered, exited, and used by people, including those with physical, sensory, or cognitive disabilities.

Accessible route — a pedestrian path of travel within the interior or exterior environment that is without barriers, as defined in this Standard, and usable by all persons, including those with physical, sensory, or cognitive disabilities.

Adaptable seating — a fixed seat or seats designed to facilitate a side transfer from a wheeled mobility device.

Alternative format — information presented in braille, in large print, electronically (e.g., on removable or portable media), or online in an accessible format.

Amenity — anything that adds to a person's comfort or convenience.

Amenity zone — a designated area, adjacent or connected to an accessible route, that provides amenities and services (e.g., street furniture, mailboxes, telephones) and can include utilities such as light posts, hydrants, etc.

Blended transition — a connection with a slope of 1:20 (5%) or less between the level of a pedestrian walkway and the level of a vehicular path of travel.

Braille — a system where raised dots are used to represent letters and words. Unified English Braille (UEB) is the braille standard for Canada.

Note: In this Standard, unless stated otherwise, "braille" indicates uncontracted braille.

Cane-detectable — any object or a change in surface texture that falls within the detection range of a long white cane.

Change bench — a fixed height bench with the necessary clearances and design elements to support its use by persons with disabilities.

Note: Change benches are intended for use by persons with disabilities with or without the assistance of another person.

Colour contrast — a significant contrast in colour between the foreground and the background of an element, e.g., light on a dark background or dark on a light background.

Note: The effectiveness of colour contrast depends on there being sufficient light for users to be able to perceive the difference in colour, and the term "luminance contrast" is increasingly being used in international standards for accessibility. This edition of CSA B651 will continue to use "colour contrast"; however "luminance contrast" will be used in the section on TWSIs, to be compatible with

the international standard for these surfaces, ISO 23599 (70% contrast between characters and the background is considered an appropriate contrast for people with low vision).

Crosswalk — that portion of a pedestrian crossing that is within the vehicular right-of-way.

Curb ramp — a sloped surface built into a curb.

Glare — an excessive reflection of light from a surface.

Gutter — the sloped drainage area directly in front of a curb or curb ramp.

Illumination — the intensity of light, as measured in lux (lx).

Intersection — a junction where two or more routes of travel (vehicular or pedestrian) meet or cross.

Luminance — the intensity of light emitted or reflected in a given direction from the surface element divided by the area of the element in the same direction.

Passenger pick-up area — an area where pedestrians board and disembark road vehicles.

Pedestrian area — an area where pedestrian traffic is permitted.

Pedestrian clearance interval — The maximum time required for a pedestrian who has started their crossing at a crosswalk to arrive at a point clear of intersecting traffic.

Notes:

- 1) The pedestrian clearance interval is indicated by a flashing signal, and follows the brief (4-7 second) "Walk" signal that alerts pedestrians to begin their crossing.
- 2) Pedestrian clearance time is computed as the crossing distance divided by the walking speed, usually calculated as 3.5 feet per second.
- 3) When the pedestrian clearance interval begins, pedestrians should either complete their crossing if already in the

intersection or refrain from entering the intersection until the next pedestrian walk interval is displayed.

Pedestrian crossing — the combination of crosswalk segments, curb ramps, or blended transitions, medians, and refuge islands that connect departure and arrival walkways across a vehicular right-of-way.

Pedestrian right-of-way — that portion of the public right-of-way that is dedicated to the unrestricted movement of persons.

Pedestrian route — a continuous and unobstructed path of travel within a pedestrian circulation area that provides accessibility.

Platform lift — an elevating device that is installed at a permanent location in a building structure and is used to transport persons with disabilities on a platform that moves between permanent levels.

Enclosed stair lift — an inclined lift where the platform runway is separate from the stair circulation space.

Enclosed vertical lift — a vertical lift with an enclosed platform runway.

Unenclosed stair lift — an inclined lift where the platform or chair runway is within the stair circulation space.

Unenclosed vertical lift — a vertical lift with a partially enclosed or unenclosed platform runway.

Public right-of-way — private property or public land, usually in interconnected corridors, that is acquired for or devoted to pedestrian and vehicular purposes.

Ramp — a sloping walkway leading from one level to another, which has a running slope with a ratio steeper than or equal to 1:20 (5%).

Notes:

- 1) Walkways with a running slope shallower than 1:20 are not considered to be ramps in the context of this Standard. See Clause 5.5.1.
- 2) See also **Curb ramp**.

Raised crossing — a crossing where the crosswalk is elevated between 80 and 150 mm above the adjacent road surface, with ramps on the approaches. It is designed to reduce speeds and draw attention to the crosswalk and the pedestrians, so that pedestrians can traverse the road safely.

Raised intersection — a flat raised area that covers an entire intersection, with sloped surfaces installed on all vehicular approaches.

Note: The intersection is usually raised to the level of the sidewalk, or slightly below to provide a “lip” that is detectable by persons with a vision impairment.

Shared-use walkway — a path of travel, separate from a vehicular route, where pedestrians on foot and those using various types of mobility aids (e.g., manual or powered wheelchairs, scooters, canes, long white canes, walkers, or crutches) share space with persons who use non-motorized items (e.g., skate boards, inline skates, bicycles).

Signal-controlled intersection — an intersection where movement of pedestrians and vehicles is regulated by signals and designated signage installed by authorities having jurisdiction.

Signage — information provided in the form of visual and tactile communication that incorporates one or more of the following elements:

- a) alphanumeric symbols;
- b) pictograms;

- c) illustrations (plans, etc.); or
- d) braille.

Sign controlled intersections — an intersection where movement of pedestrians and vehicles is regulated by designated signage installed by authorities having jurisdiction.

Slip lane/uncontrolled access ramp — a channelized vehicular route without stop controls that connects two vehicular rights-of-way.

Slope — the ratio of rise to run on an inclined surface.

Counter slope — the combined sum of the running slope of a curb ramp and of the gutter slope, in percentages.

Cross slope — the slope that is perpendicular to the direction of travel.

Gutter slope — the cross fall of the drainage area at the edge of the street directly in front of a curb ramp.

Running slope — the slope that is parallel to the direction of travel.

Splitter island — a flush or raised island that separates entering and exiting traffic (e.g., at a roundabout intersection).

Tactile markings — lettering or graphics that are slightly raised above the surface.

Tactile walking surface indicator (TWSI) — a standardized surface, detectable underfoot or by a long white cane, to assist persons with low vision or blindness by alerting or guiding them.

Tactile attention indicator — a TWSI comprising truncated domes that signals a need for caution at a change in elevation, a vehicular route, train tracks, or other potential hazard.

Tactile direction indicator — a TWSI that uses flat-topped elongated bars to facilitate wayfinding in open areas.

Transfer space — an unobstructed area allowing the positioning of a wheeled mobility device to enable a person to transfer to another adjacent seated position.

Vehicular right-of-way — that portion of the public right-of-way dedicated to the movement of motorized (mechanically propelled) vehicles for the transport of persons or goods. This includes roadways, transit ways, and rail lines.

Visual contrast — visual perception between one element of a building and another.

Note: Visual contrast can be achieved through a difference in luminance (also referred to as luminance contrast). It can also be achieved through colour contrast if there is adequate lighting for users to perceive the difference in colour.

Walk signal interval — that phase of a traffic signal cycle during which a pedestrian is to begin crossing, typically indicated by a WALK message or the walking person symbol and its audible equivalent.

Wayfinding — a spatial problem-solving process based upon consistent use and organization of definite sensory cues in the environment that individuals use to understand where they are, know where their desired location is, and know how to get to that destination from their present location.

Wheeled mobility device — a collective term to describe a range of wheeled personal transportation devices, including manual wheelchairs, powered wheelchairs, and scooters.

Note: Where a clause in this Standard applies to a single type of mobility device, the specific term will be used, i.e., manual wheelchair, powered wheelchair, scooter.

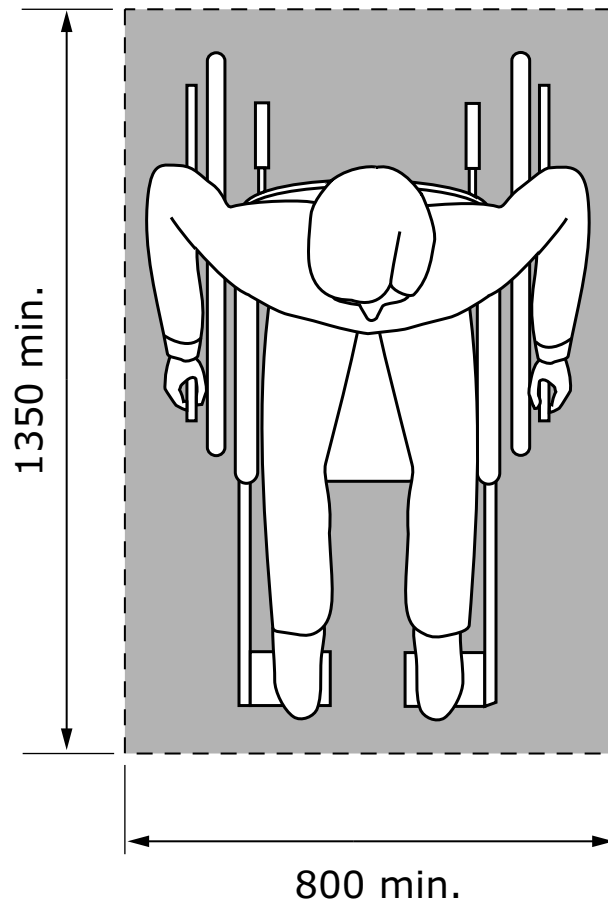
4 General requirements

4.1 Area allowances

To accommodate a single-wheeled mobility device user, a clear floor or ground area shall be

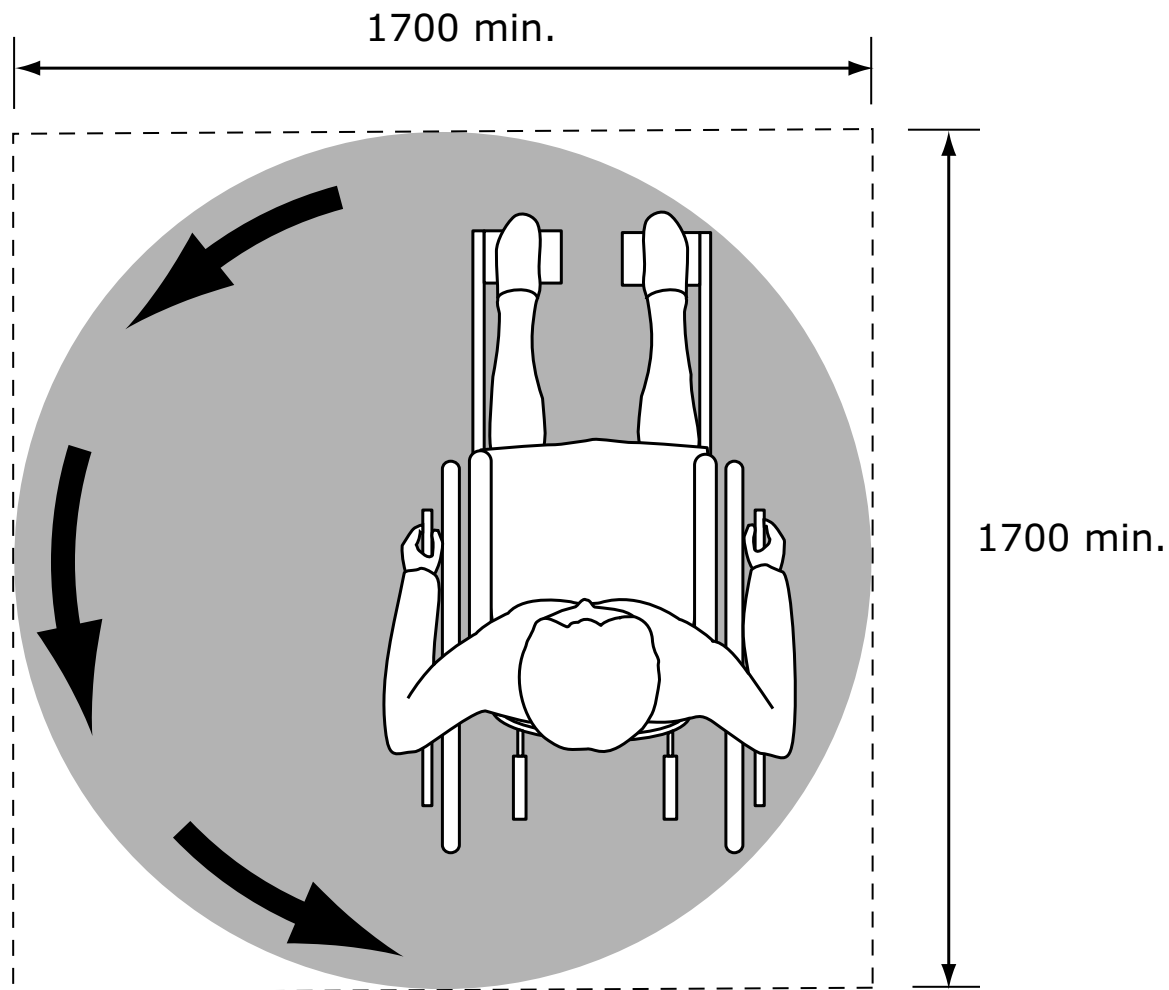
- a) at least 800 × 1350 mm for a stationary position (see Figure 1); and
- b) at least 1700 × 1700 mm for an unobstructed U-turn (see Figure 2).

Figure 1
Minimum floor area for a person using a wheeled mobility device (manual wheelchair, powered wheelchair, or scooter)
(See Clause 4.1.)



Note: All dimensions are in mm.

Figure 2
Minimum area at the toe level for a person using a
wheeled mobility device (manual wheelchair,
powered wheelchair, or scooter) to make a U-turn
 (See Clause 4.1.)



Note: All dimensions are in mm.

4.2 Operating controls

4.2.1 Scope

Operating controls include, but are not limited to,

- a) door handles and locks;
- b) window operators and locks;

- c) faucets and adjustable shower heads;
- d) electrical outlets and switches;
- e) thermostats;
- f) elevator call stations;
- g) fire alarm pull stations; and
- h) activation devices.

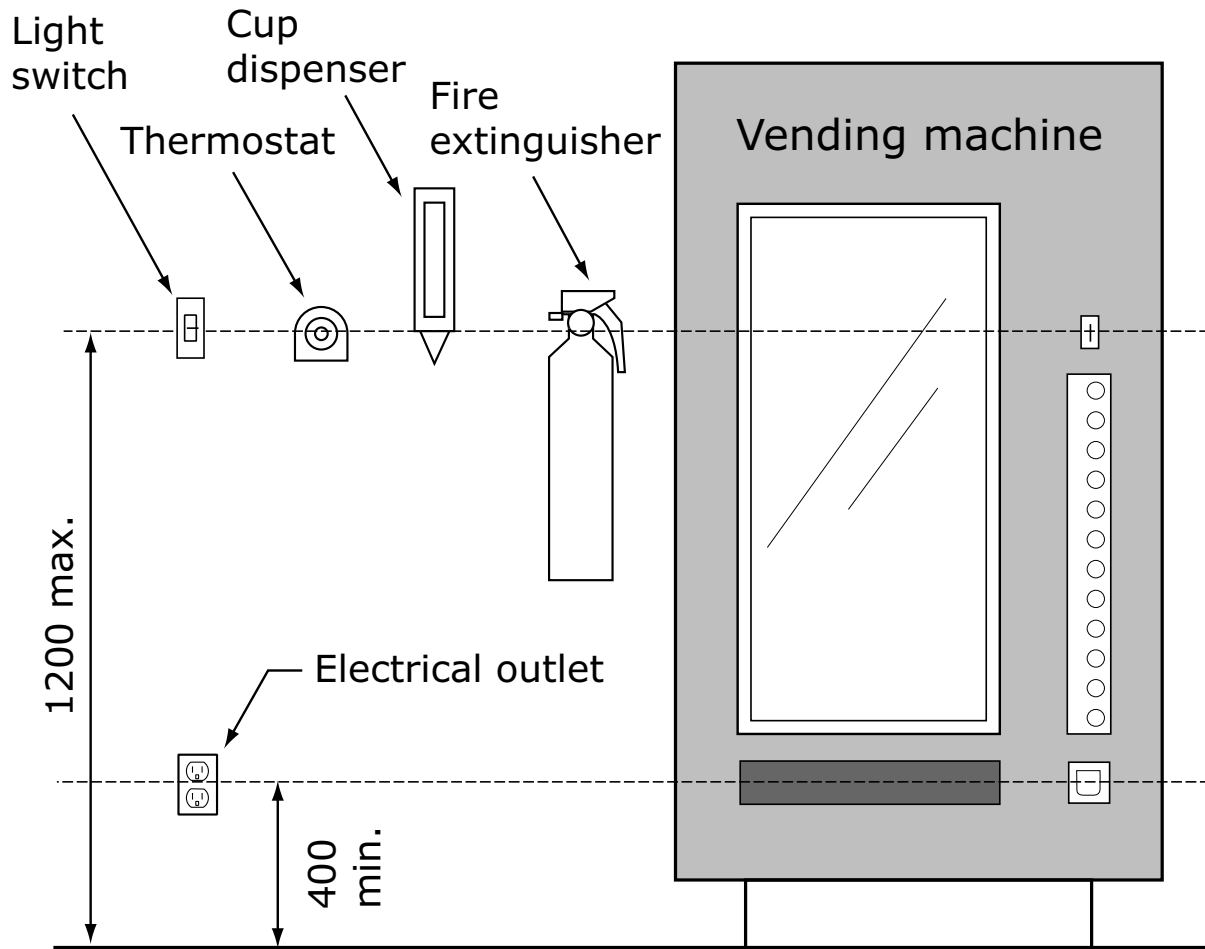
4.2.2 Floor area

Controls shall be adjacent to, and centred on, either the length or the width of a clear floor space of 800 x 1350 mm.

4.2.3 Height

The centreline of the operating controls shall be located in a range between 400 and 1200 mm from the floor (see Figure 3).

Figure 3
Height of operating controls
 (See Clause 4.2.3.)



Note: All dimensions are in mm.

4.2.4 Operation

Controls shall be operable

- a) with one hand, using
 - i) a closed fist position; or
 - ii) another method of operation that does not require tight grasping, pinching, or twisting of the wrist; and
- b) with a force not to exceed 22 N.

4.2.5 Control devices

Control devices shall provide tactile and/or auditory information to indicate function, position, and confirmation of activation.

4.2.6 Visual displays

Information on visual displays shall be

- a) supplemented by tactile and/or auditory information;
- b) colour-contrasted; and
- c) located on a surface that minimizes glare.

4.2.7 Illumination

4.2.7.1

Operating controls shall be illuminated

- a) to a level of at least 100 lx; and
- b) where reading is necessary, to a level of at least 200 lx.

4.2.7.2

If an operating control has its own illumination or is backlit, and reading of the surface is not required for operation, an internal or background illumination level of 50 to 100 lx may be used.

4.2.8 Colour contrast

The operating controls shall be colour-contrasted with their background.

4.3 Floor or ground surfaces

4.3.1 General

A floor or ground surface shall

- a) be stable and firm;
- b) be slip-resistant;
- c) produce minimal glare; and
- d) not have strong visual patterning.

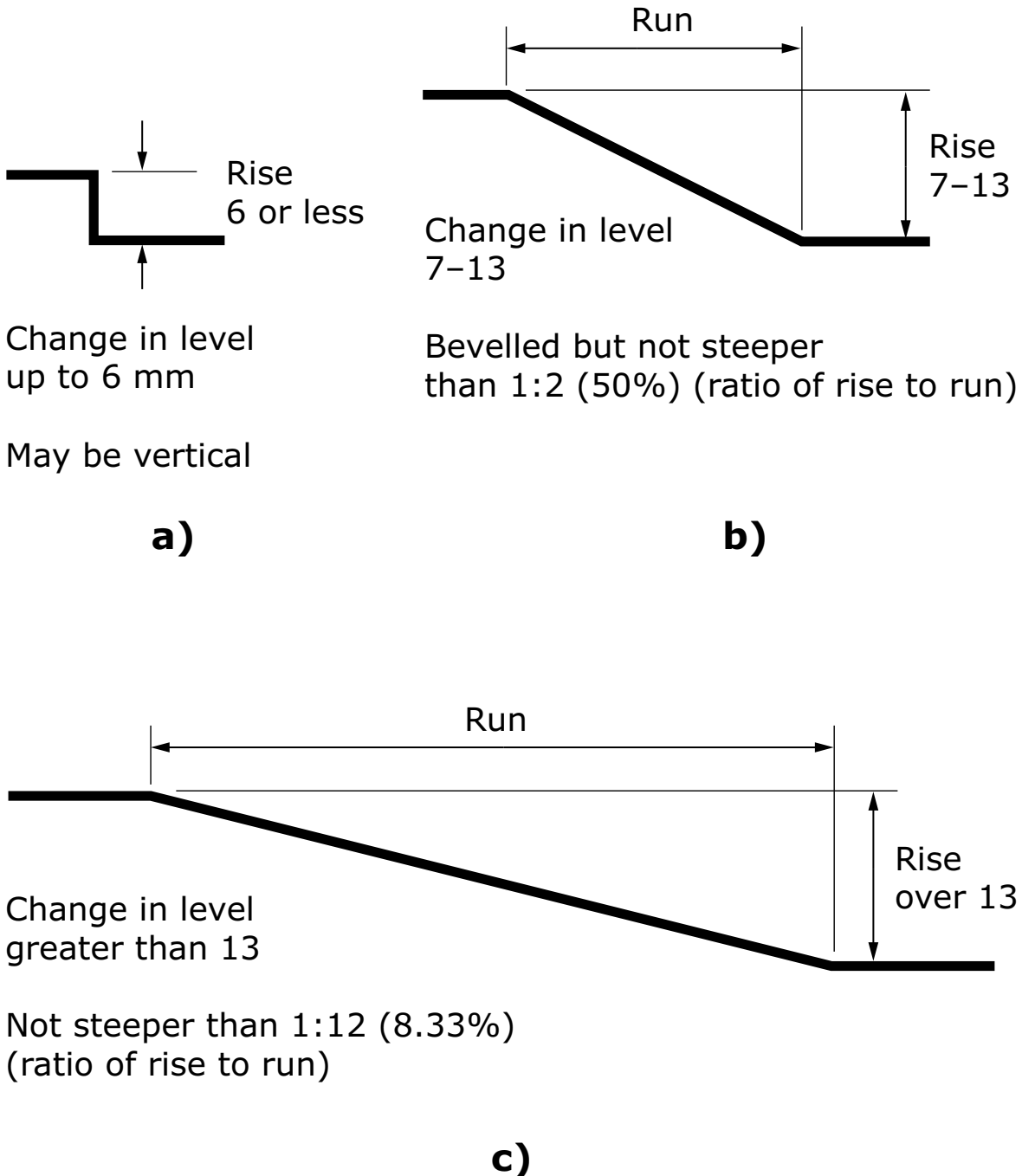
4.3.2 Changes in level

Changes in level, except for elevators, elevating devices, and curb ramps, shall comply with Table 1 (see Figure 4).

Table 1
Changes in level
(See Clauses 4.3.2 and 4.3.3.)

Vertical rise, mm	Profile
0–6	May be vertical [Figure 4 a)]
7–13	Bevelled, but not steeper than the ratio of 1:2 (50%) [Figure 4 b)]
Over 13	Not steeper than the ratio of 1:12 (8.33%) [Figure 4 c)]

Figure 4
Changes in level
 (See Clauses 4.3.2 and 5.2.6 and Table 1.)



Note: All dimensions are in mm.

4.3.3 Carpets

Carpets or carpet tile shall

- a) have a low, firm, and level pile or loop;
- b) have a combined carpet and pad height of not more than 13 mm;
- c) be securely fastened;
- d) comply with Table 1 with respect to level changes in edge trim; and
- e) be backed or underlaid with firm materials only, if installed with a cushion, underpadding, or backing.

4.3.4 Gratings

Gratings located in pedestrian areas shall

- a) have openings not greater than 13 mm wide in one direction; and
- b) be placed so that the long dimension of the opening is perpendicular to the primary direction of travel.

4.3.5 Tactile walking indicator surfaces

4.3.5.1 General

Tactile walking indicator surfaces are used to inform persons both visually and by contact under foot or cane, of two possible situations:

- a) an attention indicator (truncated domes) signals a need for caution at a change in elevation, a vehicular route, train tracks, etc. [see Figure 5 a)]; and
- b) a direction indicator (elongated flat top bar surface) facilitates wayfinding in open areas and indicates a possible route that may be taken.

4.3.5.2 Surface

A tactile walking surface shall

- a) have the base surface level with the surrounding surface, or with its edges beveled and not more than 3 mm above the surface to which it is applied [see Figure 5 b)];
- b) be slip-resistant; and

- c) have any smooth adjacent walking surface smooth for at least 600 mm wide.

4.3.5.3 Tactile attention indicator surfaces

4.3.5.3.1 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 15 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 2 [see Figure 5 b)].

Table 2
Dome diameter and spacing combinations
(See Clause 4.3.5.4.1.)

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

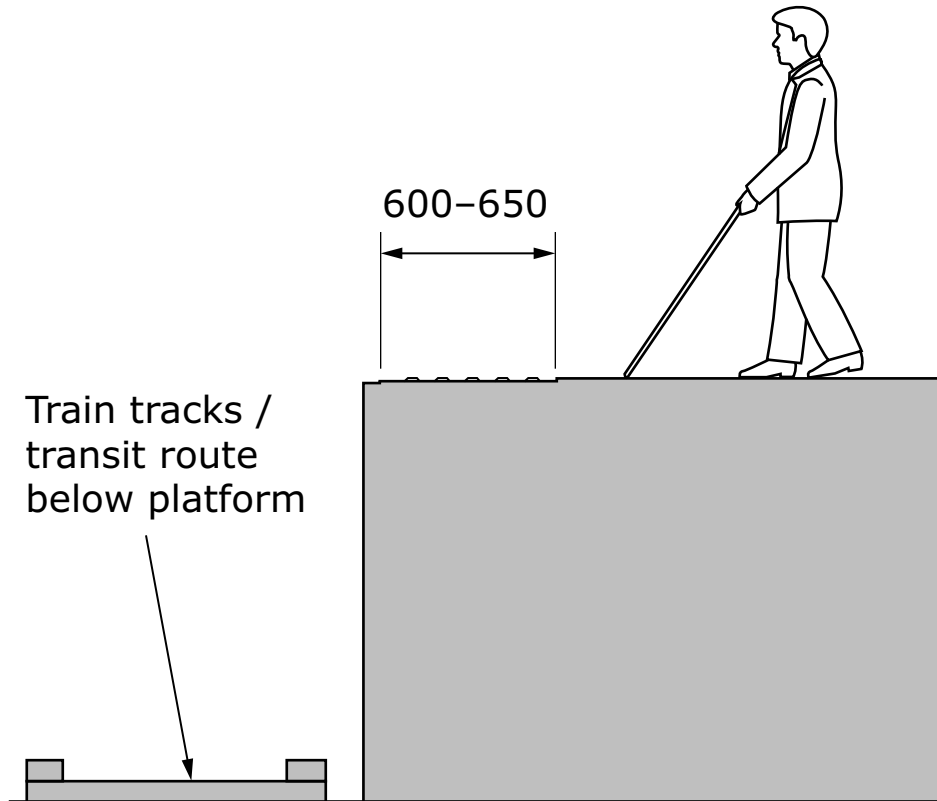
4.3.5.3.2 Location

A tactile attention indicator surface shall be located at

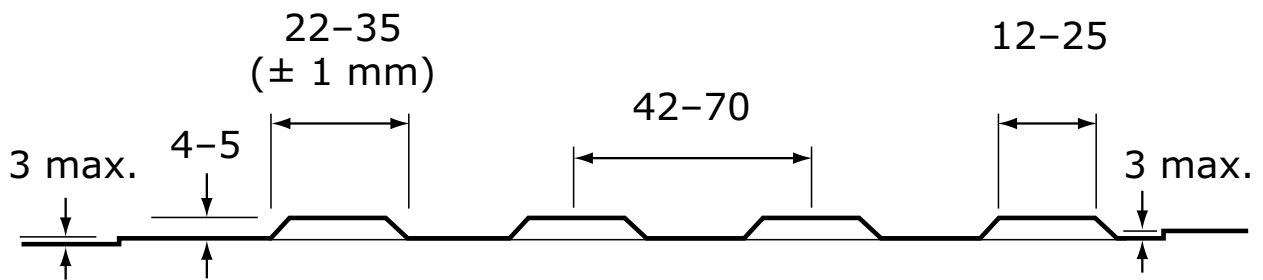
- a) stairs, to comply with Clause 5.4.3;
- b) an unprotected drop-off edge, such as a transit platform, where
 - i) the change in elevation is greater than 250 mm; or

- ii) the slope is steeper than in a ratio of 1:3 (33%);
- c) the unprotected edges of a reflecting pool, to comply with Clause 8.6.13;
- d) curb ramps and blended transitions, to comply with Clause 8.3.3; and
- e) an entry into a vehicular route or area where no curbs or other elements separate the vehicular route from a pedestrian route [see Figure 5 a)].

Figure 5
Tactile attention indicator surface
 (See Clauses 4.3.5.1, 4.3.5.2, 4.3.5.3.1, 4.3.5.3.2, and 5.4.3.1.)



a)



Note: Truncated domes are organized in a regular pattern.

b)

Note: All dimensions are in mm.

4.3.5.3.3 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.

4.3.5.3.4 Luminance contrast

When a tactile attention indicator surface is used to indicate a hazard, it shall

- a) have a luminance contrast of at least 50% with the adjacent surface using the Michelson Contrast formula (see Clause 4.3.5.3.5); or
- b) if yellow, have a contrast of at least 40% with the surrounding surface. If this level is not achievable, the necessary contrast may be provided by means of an adjoining continuous luminance contrasted band at least 100 mm wide installed adjacent to the indicator surface.

4.3.5.3.5 Calculation of the luminance contrast value

The luminance contrast value (%) shall be calculated using the following formula, known as Michelson Contrast, C_M :

$$C_M = (L_1 - L_2) / (L_1 + L_2) \times 100$$

where

L_1 = the value of luminance on a lighter surface, expressed in cd/m^2 ;

L_2 = the value of luminance on a darker surface, expressed in cd/m^2

When luminance values are not available, but CIE Y values are available, the values Y_1 and Y_2 may be substituted for L_1 and L_2 . Note that the CIE Y value is identical to the LRV.

When the CIE Y values or the LRVs of the two surfaces to be compared are known, these values may be used to determine the luminance contrast. Otherwise, a measurement of

luminance or reflectance shall be used to determine the luminance contrast. For measurement methods, see IESNA HB-9-00 (referenced in Clause A.4 of this Standard).

4.3.5.4 Tactile direction indicator surfaces

4.3.5.4.1 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 3;
- 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)].

Table 3
Bar width and spacing combinations
(See Clause 4.3.5.4.1.)

Top width of elongated bars, mm	Base width, mm (± 1 mm)	Centre-to-centre distance between elongated bars, mm
17	27	57–78
20	30	60–80
25	35	65–83
30	40	70–85

4.3.5.4.2 Location

Tactile direction indicators should be located in large open floor areas, such as shopping malls or transportation terminals, to facilitate wayfinding by indicating the primary route of travel.

The indicated route should lead from the entrance to major destinations, such as an information kiosk, registration desk, stairway, elevator, or to store or service doors [see Figure 6 a)].

4.3.5.4.3 Installation

A tactile direction indicator shall

- a) where installed to define a route,
 - i) be between 250 and 300 mm wide;
 - ii) have a clear space at least 600 mm on each side;
 - iii) have the elongated bars running in the direction of the route of travel; and
 - iv) have a 600 to 650 mm square tactile attention indicator surface installed at turns and decision points;
- b) where installed across an accessible path of travel as an indicator of a facility or diverging route,
 - i) be between 600 and 650 mm wide; and
 - ii) have the elongated bars running in the direction toward the facility or diverging route [see Figure 7 d) and e)];
- c) where there is a risk of water ponding, have the elongated bars interrupted by a drainage gap between 20 and 30 mm wide; and
- d) have a luminance contrast in accordance with Clause 4.3.5.4.4 with the following:
 - i) a luminance contrast of at least 50% with the surrounding surface;
 - ii) where the required contrast is not achievable, have an adjoining continuous luminance contrasted band at least 100 mm wide installed adjacent to the indicator surface; and
 - iii) not be yellow.

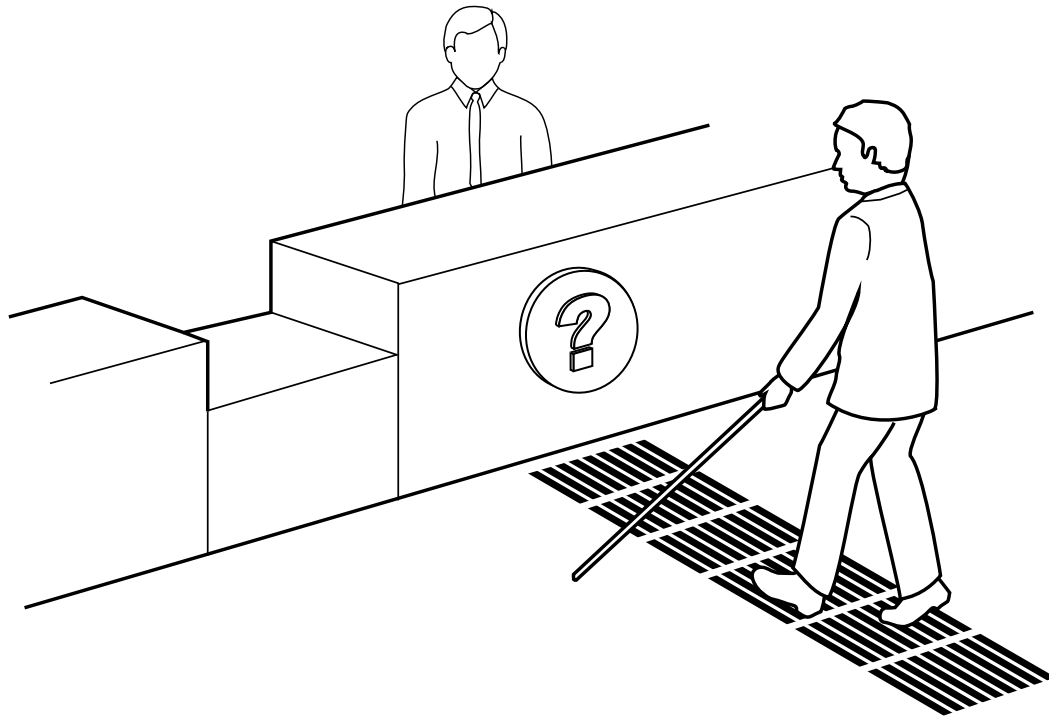
4.3.5.4.4 Luminance contrast

A tactile direction indicator shall have a luminance-contrast of at least 50% with the surrounding surface. Where the required contrast is not achievable, the tactile direction indicator shall have an adjoining continuous luminance contrasted band at

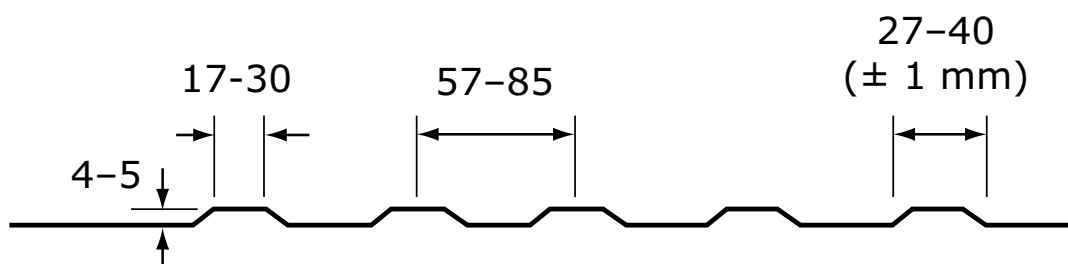
least 100 mm wide installed adjacent to the indicator surface.
The tactile direction indicator shall not be yellow.

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Figure 6
Tactile direction indicator surface
 (See Clauses 4.3.5.4.1 and 4.3.5.4.2.)



a)



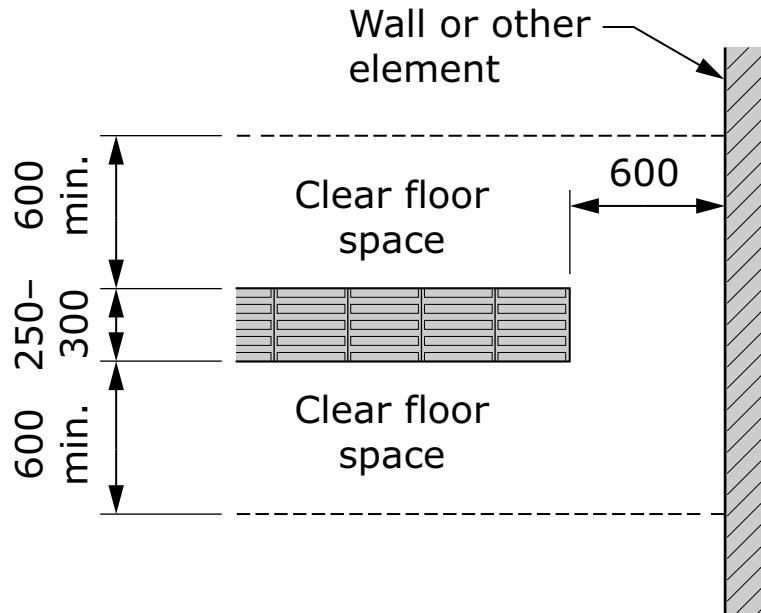
Note: Raised flat-topped elongated bars are parallel to the direction of travel.

b)

Note: All dimensions are in mm.

Figure 7 Examples of tactile directional indicator configurations

(See Clauses 4.3.5.4.3 and 8.5.2.)

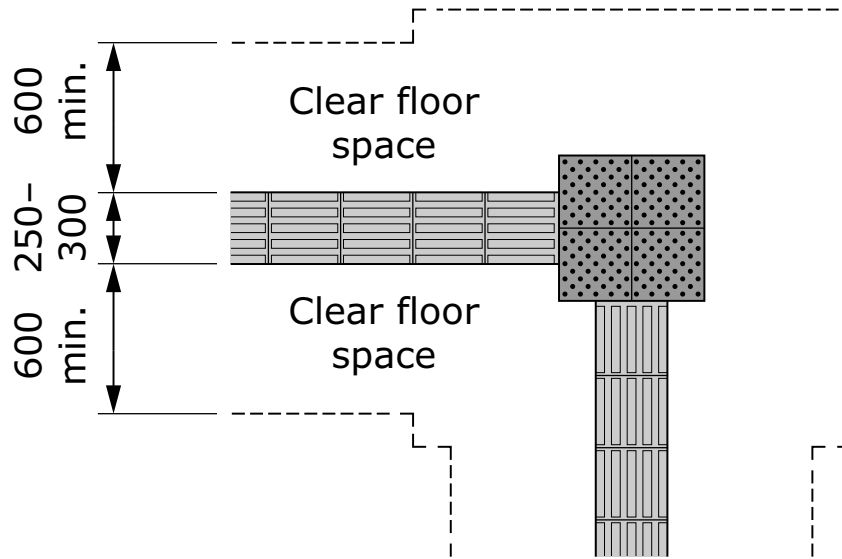


**a) Start and termination
(see Clause 4.3.5.4.3)**

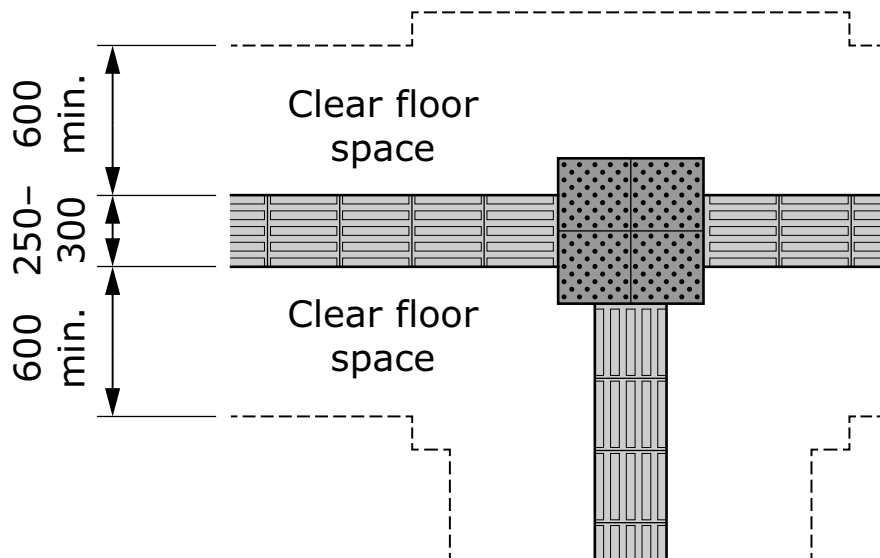
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Figure 7 (Continued)



b) Turns

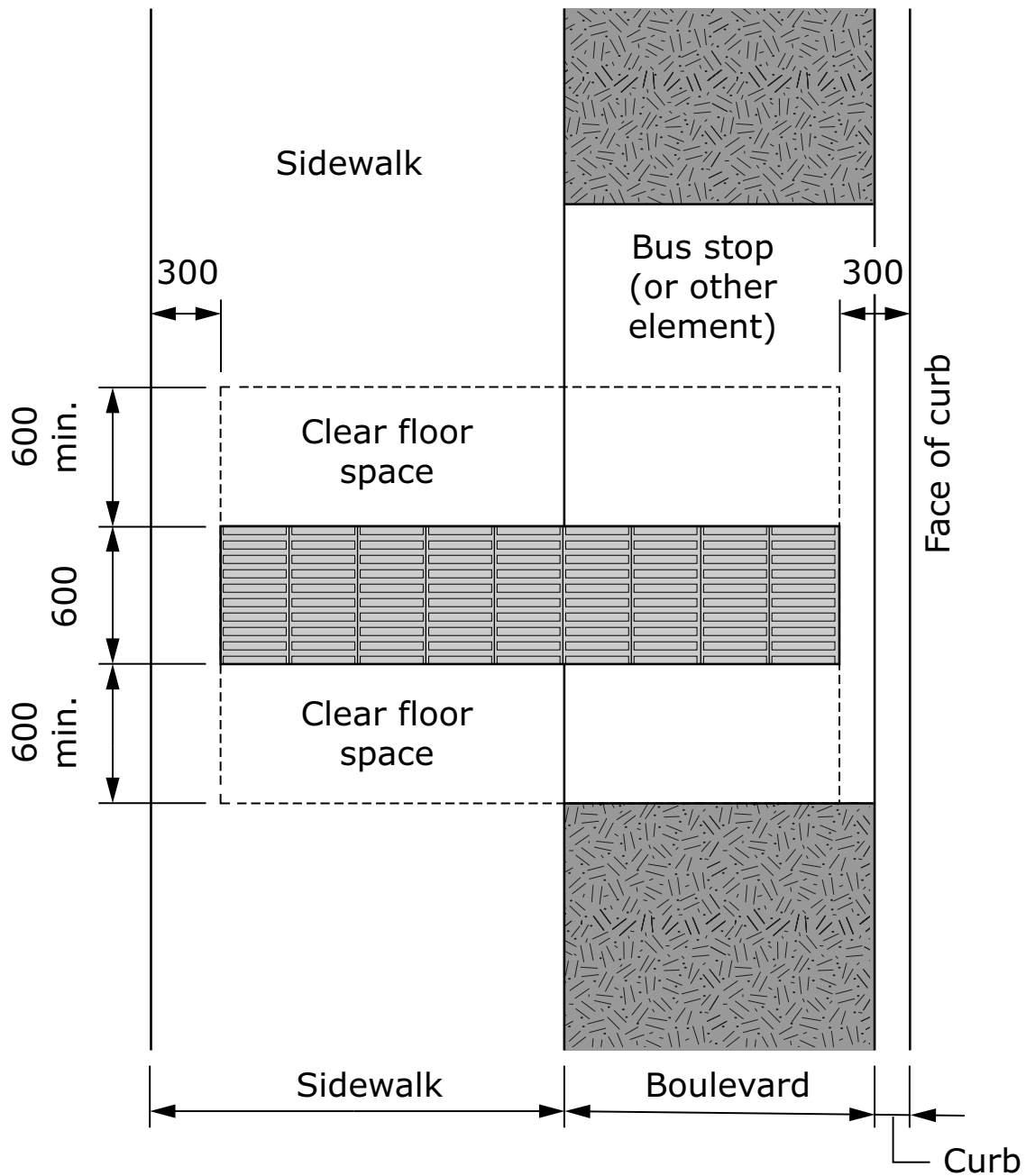


c) Decision points

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Figure 7 (Continued)

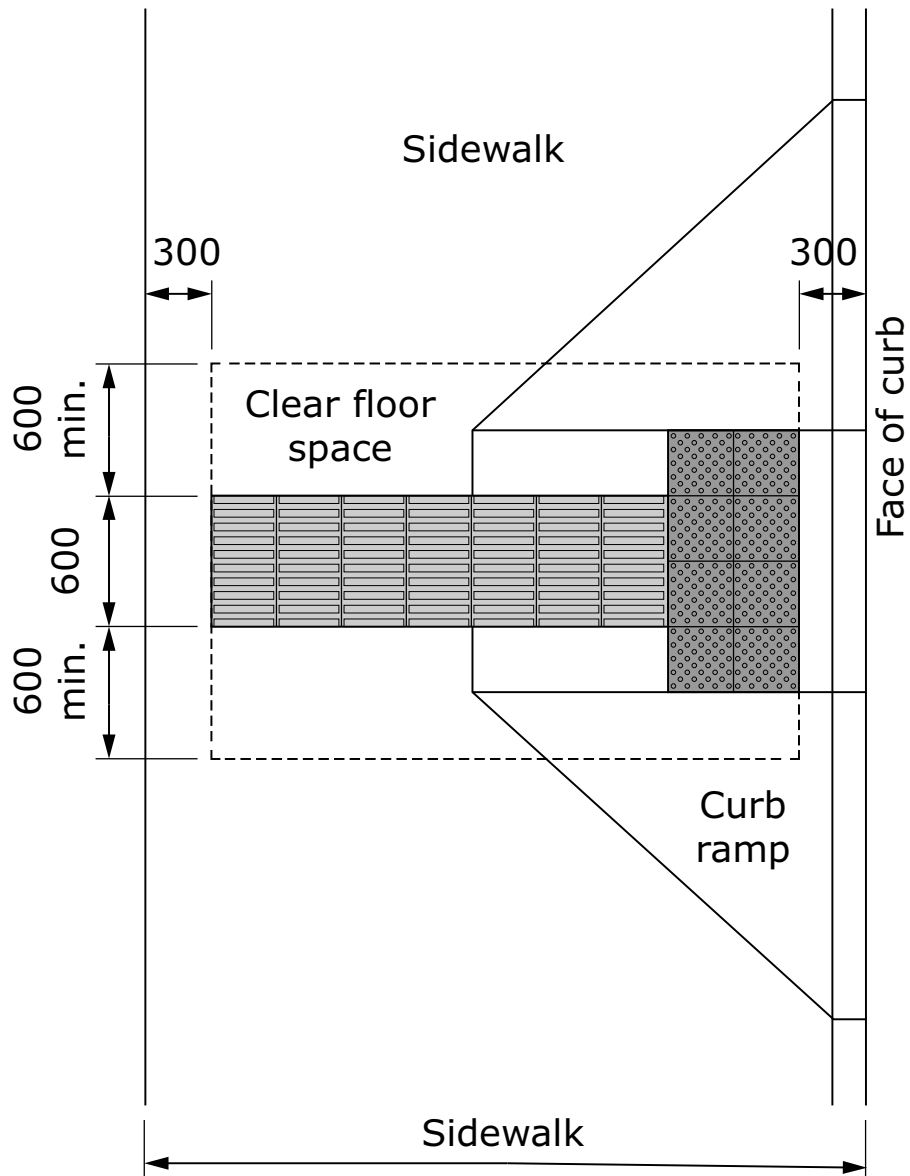


d) Adjacent element – general

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Figure 7 (Continued)

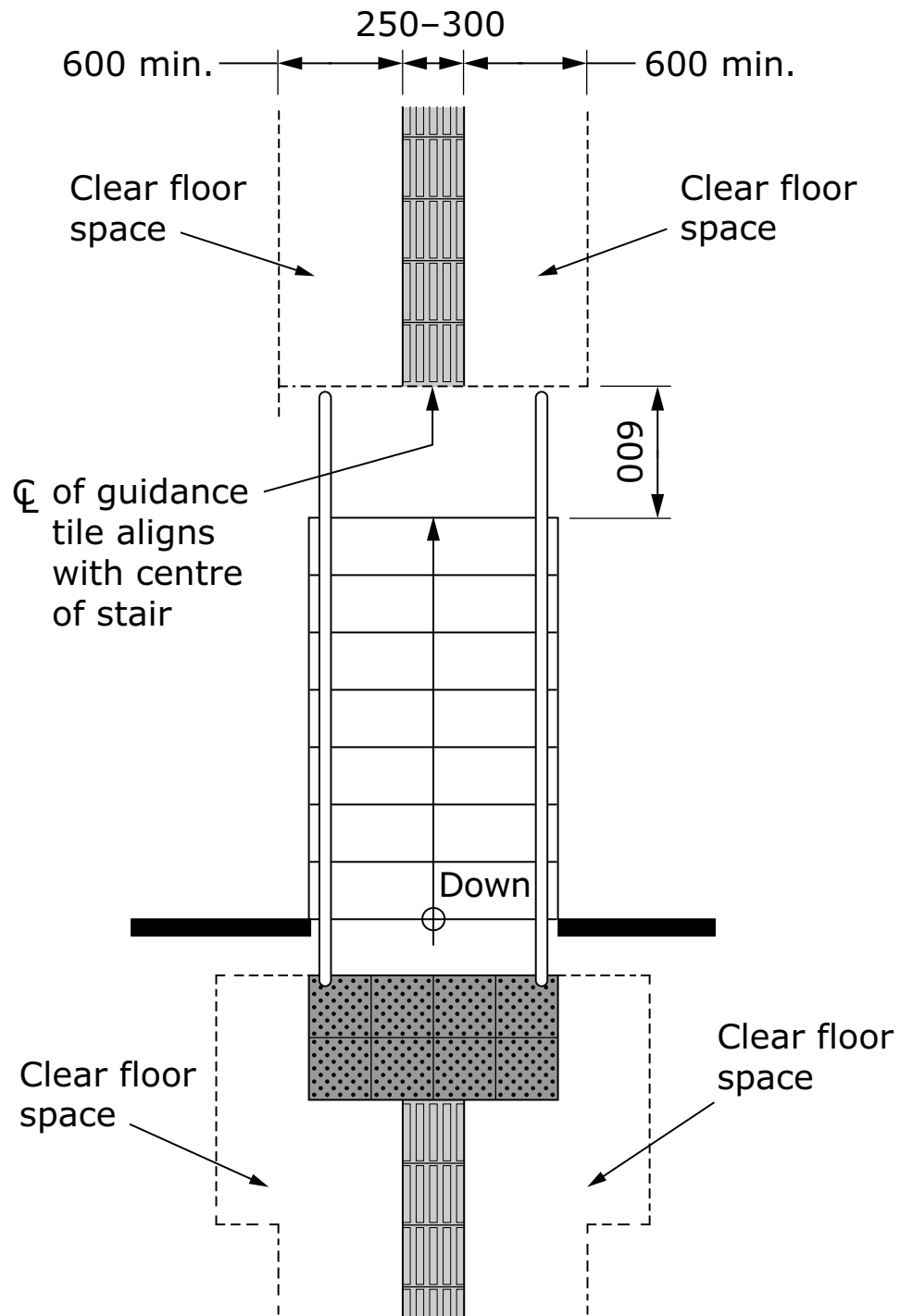


e) Adjacent element – curb ramp (see Clause 8.3.3.4.1)

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Figure 7 (Continued)

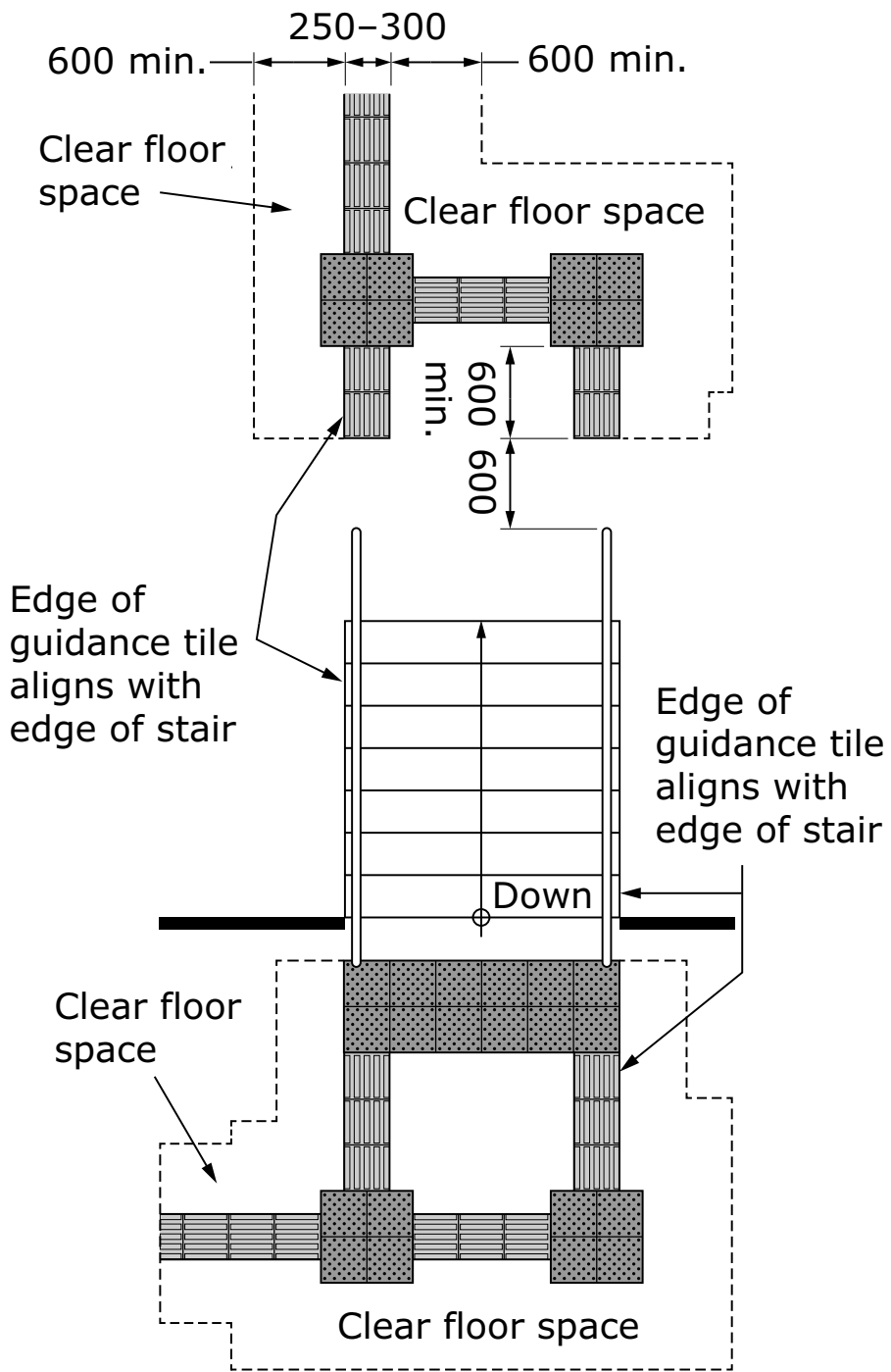


f) Stairs up to 1500 mm wide (see Clause 5.4.3.1)

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Figure 7 (Continued)

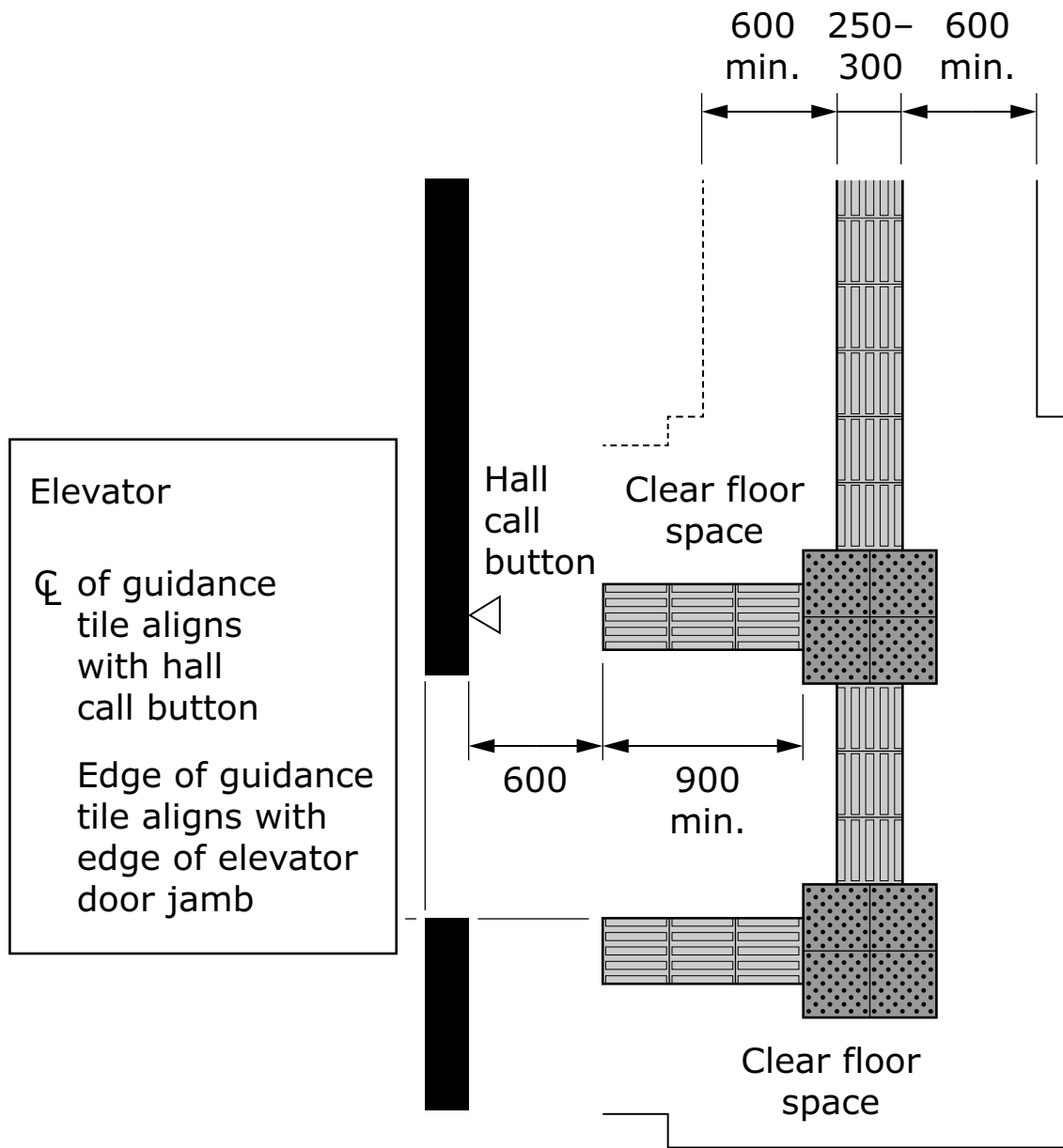


g) Stairs wider than 1500 mm (see Clause 5.4.3.1)

(Continued)

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Figure 7 (Concluded)



h) Elevators

Note: All dimensions are in mm.

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4.4 Headroom and protruding objects

4.4.1 Headroom

4.4.1.1 Height

Except at doorways and in storage garages, in pedestrian areas the clear headroom shall be at least 2050 mm from the floor [see Figure 8 a) and c)]. In storage garages, the clear headroom shall be not less than 2000 mm.

4.4.1.2 Headroom reductions

Where the headroom in a pedestrian area is reduced to less than 2050 mm from the floor, a guardrail or other barrier shall be provided with its leading edge at or below 685 mm from the floor (see Figure 9).

4.4.2 Protruding objects

4.4.2.1 General

Protruding objects shall not create a hazard or reduce accessibility in the pedestrian area.

4.4.2.2 Headroom maintenance

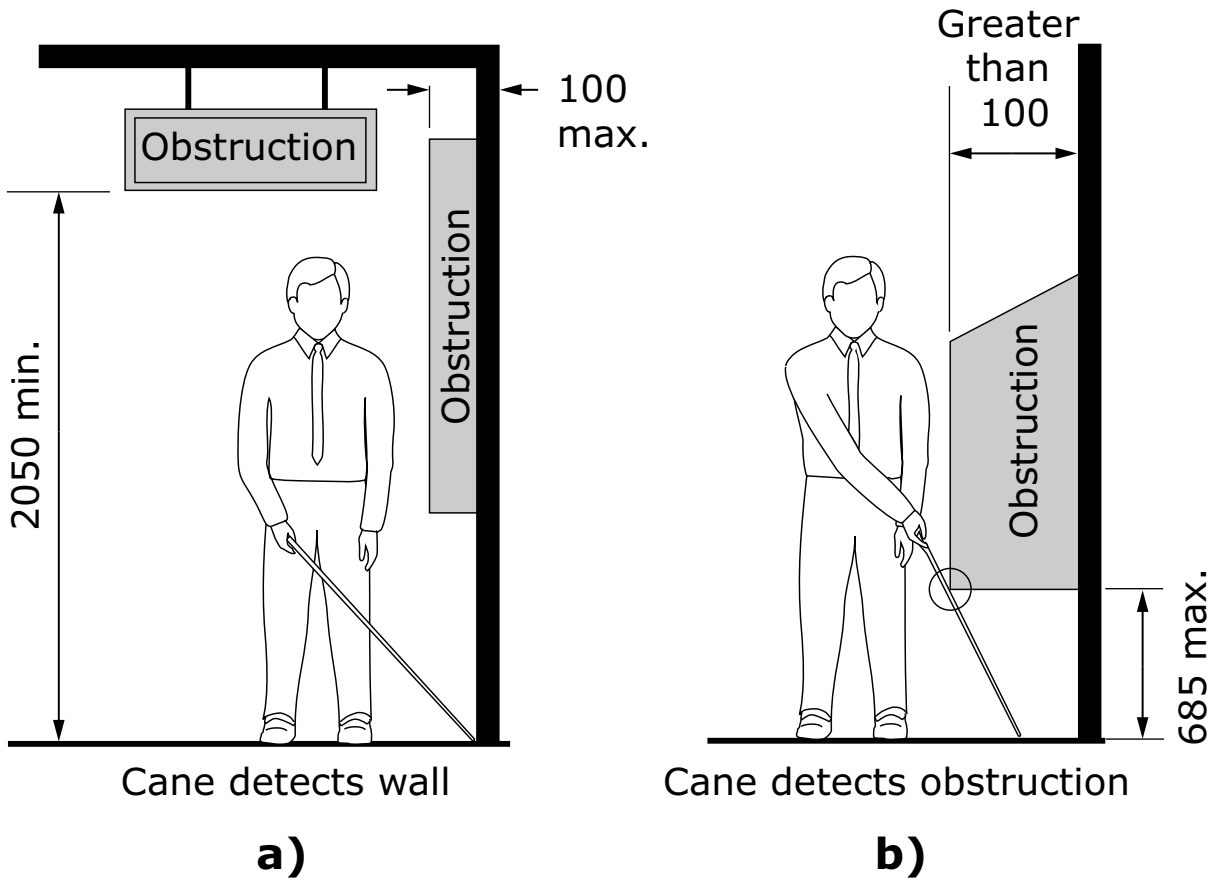
In pedestrian areas,

- a) objects attached to or suspended from a ceiling shall have their undersides at a height of at least 2050 mm from the floor; and
- b) objects protruding more than 100 mm from walls, columns, or free-standing supports shall either
 - i) be cane-detectable at or below 685 mm from the floor; or
 - ii) have their undersides at a height of at least 2050 mm from the floor [see Figure 8 a), b), c), and d)].

4.4.2.3 Width maintenance

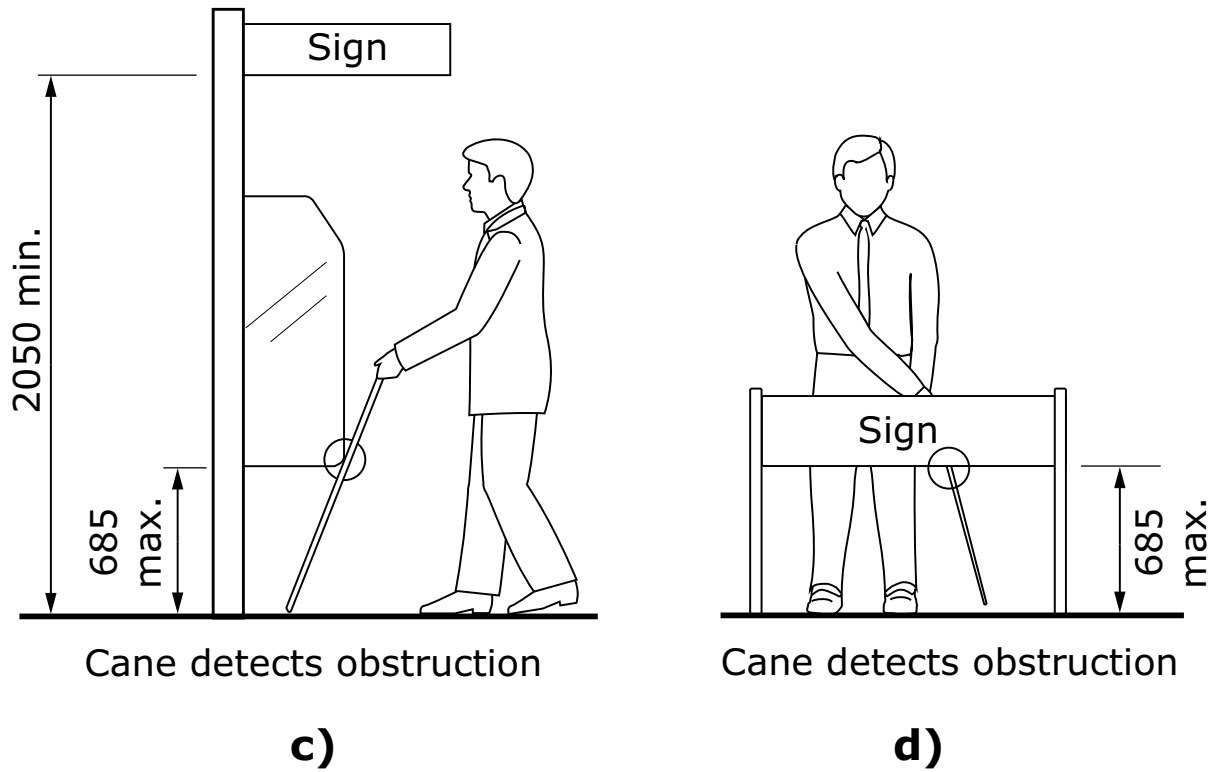
Protruding objects shall not reduce the clear width required for an accessible route or maneuvering space [see Figure 8 b)].

Figure 8
Limits of protruding objects
 (See Clauses 4.4.1.1, 4.4.2.2, and 4.4.2.3.)



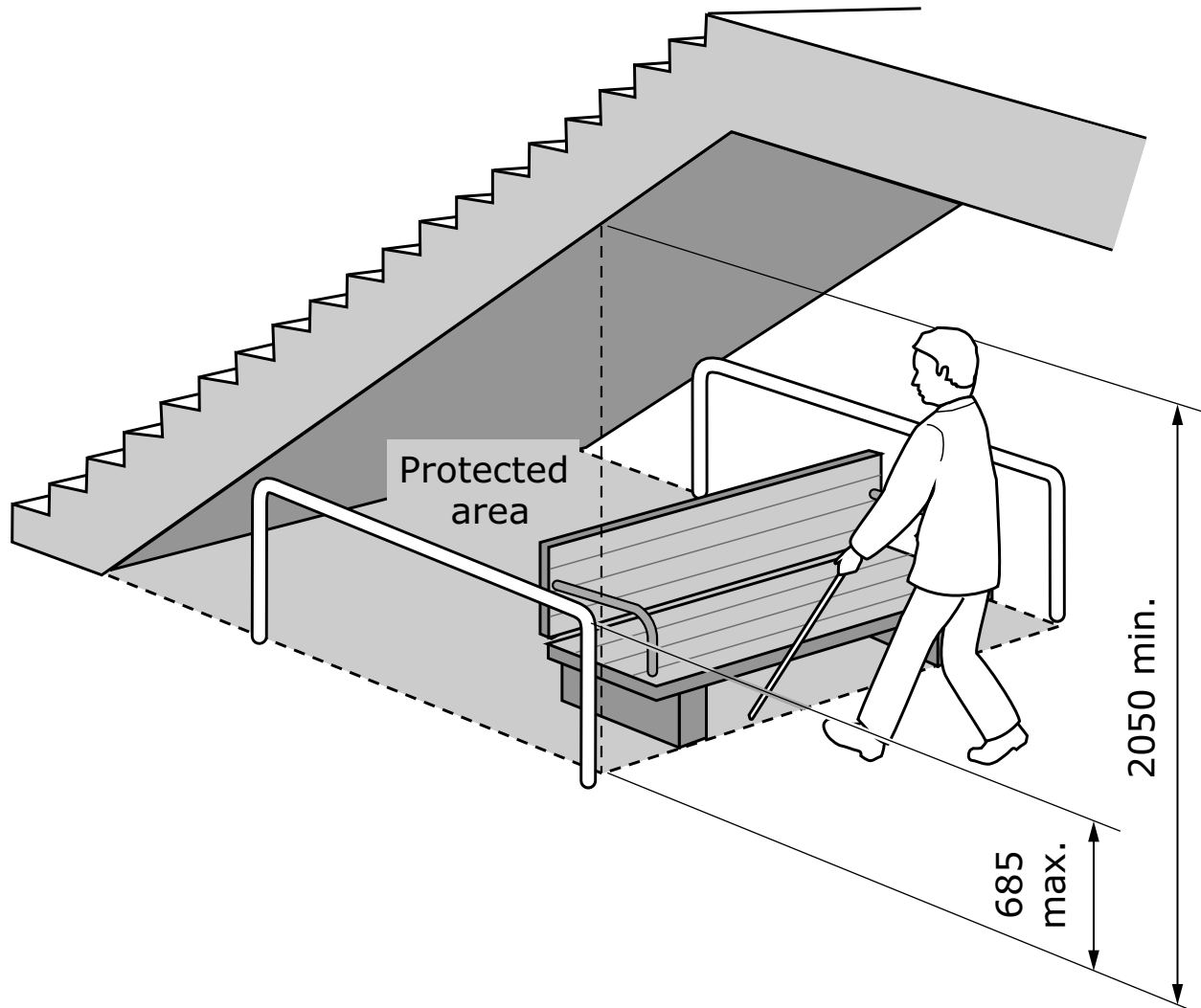
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Figure 8 (Concluded)

Note: All dimensions are in mm.

Figure 9
Overhead hazards
 (See Clauses 4.4.1.2 and 4.4.2.1.)



Note: All dimensions are in mm.

4.5 Signage

4.5.1 Location

Where signage, including electronic displays, is provided, it shall be

- consistently located; and
- positioned to avoid shadow areas and glare.

4.5.2 Configuration of signs

Where signage, including electronic displays, is provided, it shall

- a) have a glare-free surface;
- b) be of uniform design;
- c) when used to give the same type of information within the same facility, be consistently shaped, coloured, and positioned; and
- d) be colour-contrasted with its background.

4.5.3 Characters

On signs, letters and numerals shall

- a) be sans serif;
- b) have Arabic numbers;
- c) have a width-to-height ratio between 3:5 and 1:1;
- d) have a stroke-width-to-height ratio between 1:5 and 1:10;
- e) be colour-contrasted by at least 70% with its background (see Figure 10);
- f) have the character height sized relative to the intended viewing distance; and
- g) use an upper case "X" for character measurement.

Table 4
Character height relative to viewing distance
(See Clause 4.5.3.)

Minimum character height, mm	Maximum viewing distance, mm
25	750
50	1500
75	2250
100	3000
150	4500
200	6000

(Continued)

Table 4 (Concluded)

Minimum character height, mm	Maximum viewing distance, mm
250	7500
300	9000

4.5.4 Pictograms and symbols

Pictograms and symbols shall be colour-contrasted by at least 70% with their background.

4.5.5 Illumination

The level of illumination on signs shall be at least 200 lx.

4.5.6 Tactile signs

4.5.6.1 General

Tactile markings shall supplement the text of

- a) regulatory signs, such as prohibition and mandatory signs;
- b) warning signs, such as caution and danger signs; and
- c) identification signs, such as rooms, titles, names, or numbers.

4.5.6.2 Tactile characters

On tactile signs, letters and numerals shall be

- a) raised between 0.8 and 1.5 mm above the surface (see Figure 11);
- b) sans serif;
- c) 16 to 50 mm in height;
- d) accompanied by braille near the bottom edge of the sign; and
- e) colour-contrasted with their background by at least 70%.

4.5.6.3 Pictograms and symbols

On tactile signs, pictograms and symbols shall be

- a) raised between 0.8 and 1.5 mm above the surface;

- b) at least 150 mm in height;
- c) accompanied by the equivalent description in uncontracted braille, placed directly below the pictogram or symbol; and
- d) colour-contrasted with their background by at least 70%.

4.5.6.4 Location of tactile signs

A tactile sign shall

- a) if used to identify a door, be mounted on the wall beside the latch edge of the door;
- b) where applicable, have the leading vertical edge 150 ± 10 mm from the door jamb (see Figure 11);
- c) where double-leaf doors are used or no wall space adjoins the door's latch edge, be mounted on the nearest adjacent wall;
- d) allow a person to approach the sign to within 100 mm without encountering protruding objects or standing within a door swing;
- e) be mounted with the horizontal centreline 1500 ± 25 mm from the floor; and
- f) have a clear wall area around the sign at least 75 mm wide.

4.5.7 Symbol of accessibility

Where a facility or its elements are required to be identified as accessible, the International Symbol of Access shall be used (see Figures 12 and 13).

4.6 Additional considerations

4.6.1 General

This Clause deals with additional factors in the built environment that can affect the usability of that environment for certain populations. This Clause is written in recommendatory language because in many cases the proposed remedies to improve usability (e.g., more intuitive architecture to accommodate people with cognitive impairments) are not easily measured.

4.6.2 Functional and cognitive barriers

Functional or cognitive barriers can arise where

- a) the overall architectural space is confusing or illogical;
- b) the architectural features are overly repetitive;
- c) excessive noise interferes with the enjoyment and use of the facility;
- d) inadequate lighting hinders the safe use of the space;
- e) the air quality is poor; or
- f) the information provided is conflicting, or difficult to read or understand.

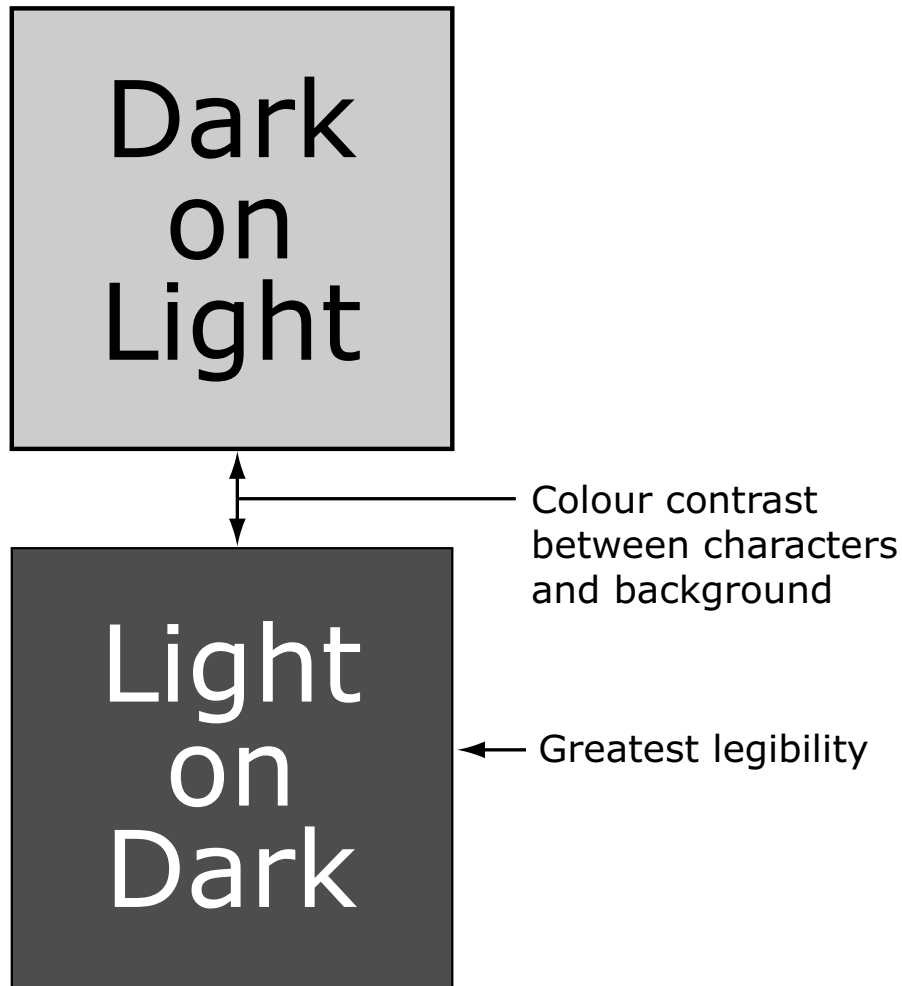
4.6.3 Environmental sensitivities

Construction, furnishing, or decorative materials should not give off gases that affect the quality of indoor air. Contaminants such as gases, dust, and volatile organic compounds should be minimized. Adequate ventilation (natural and mechanical) should be provided at the level needed to dilute any contaminants and to provide fresh air to the occupants.

4.6.4 Acoustics

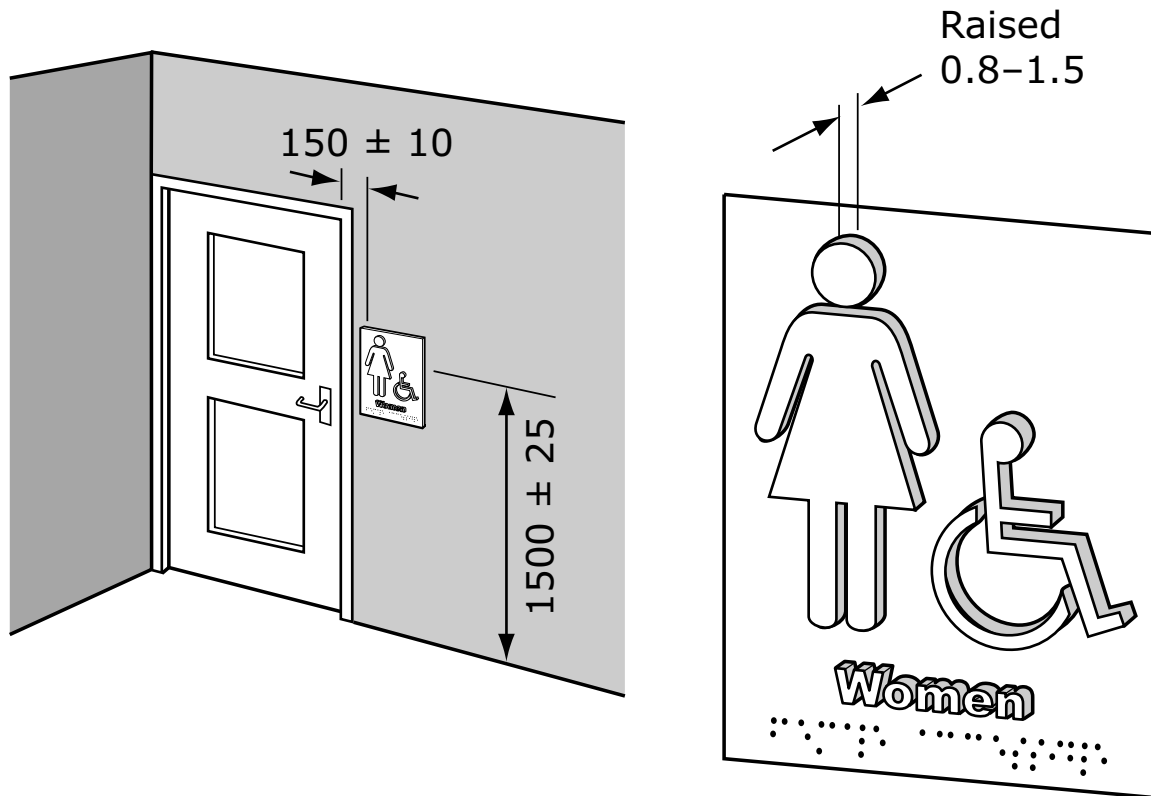
Accessible environments should be designed for sound control, both to provide auditory cues where needed, and to minimize distracting or disorienting sounds such as echoes.

Figure 10
Legibility of printed characters
(See Clause 4.5.3.)



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Figure 11
Location and size of tactile signs
 (See Clauses 4.5.6.2 and 4.5.6.4.)

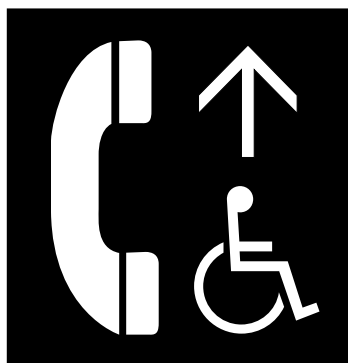


Note: All dimensions are in mm.

Figure 12
International Symbol of Access
(See Clauses 4.5.7, 5.2.3, 6.3.1.1, and 9.4.4.1 – 9.4.4.3.)



Figure 13
Examples of service identification signs
incorporating the International Symbol of Access
(See Clauses 4.5.7 and 6.3.1.1.)



5 Interior circulation

5.1 Accessible routes

5.1.1 Width

The clear width of accessible routes shall be at least 1000 mm with the following exceptions:

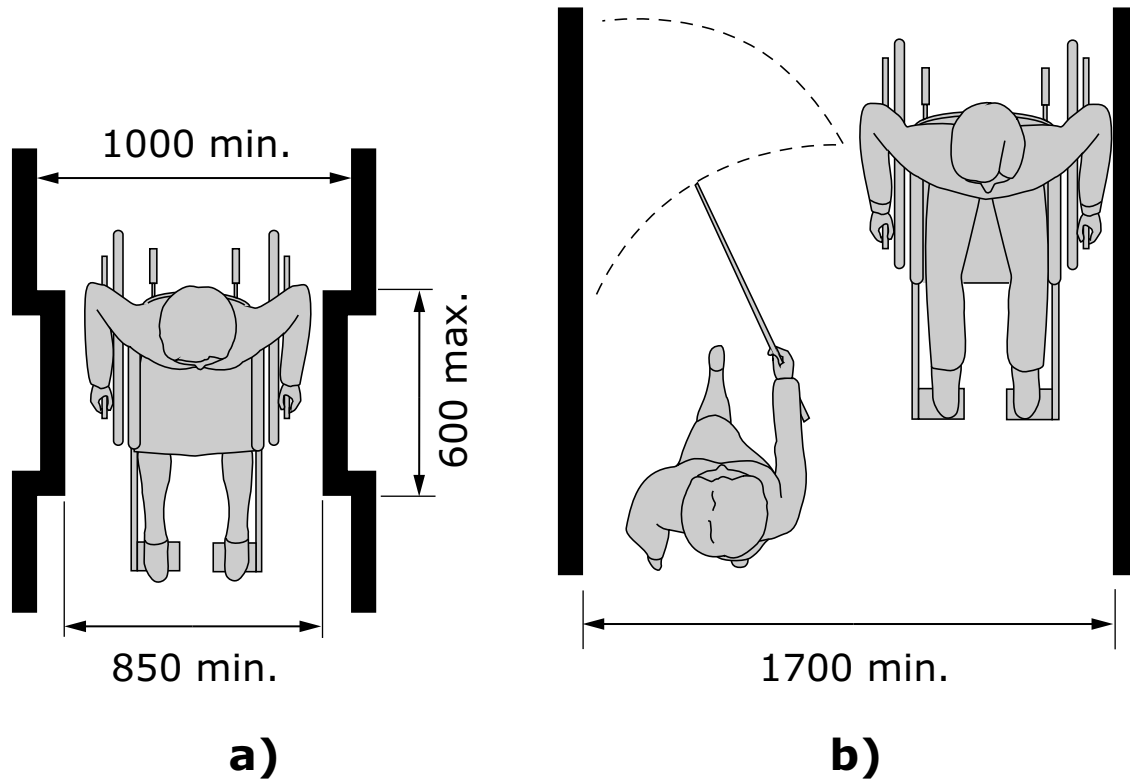
- a) for short indentations up to 600 mm in length, it shall be at least 850 mm [see Figure 14 a)];
- b) for doorways, it shall be at least 850 mm, though additional manoeuvring space is sometimes required (see Clause 5.2);
- c) for U-turns around an obstacle less than 1200 mm wide, it shall be at least 1100 mm [see Figure 16 a)];
- d) for U-turns around an obstacle greater than 1200 mm wide, it shall be at least 1000 mm [see Figure 16 b)];
- e) an accessible path of travel that is more than 30 m long shall have a maneuvering zone at least 1700 mm wide for a length of 1700 mm at intervals not exceeding 30 m; and
- f) for checkout lanes, the minimum width should be 1000 mm (see Figure 15).

5.1.2 Slope

Accessible routes shall

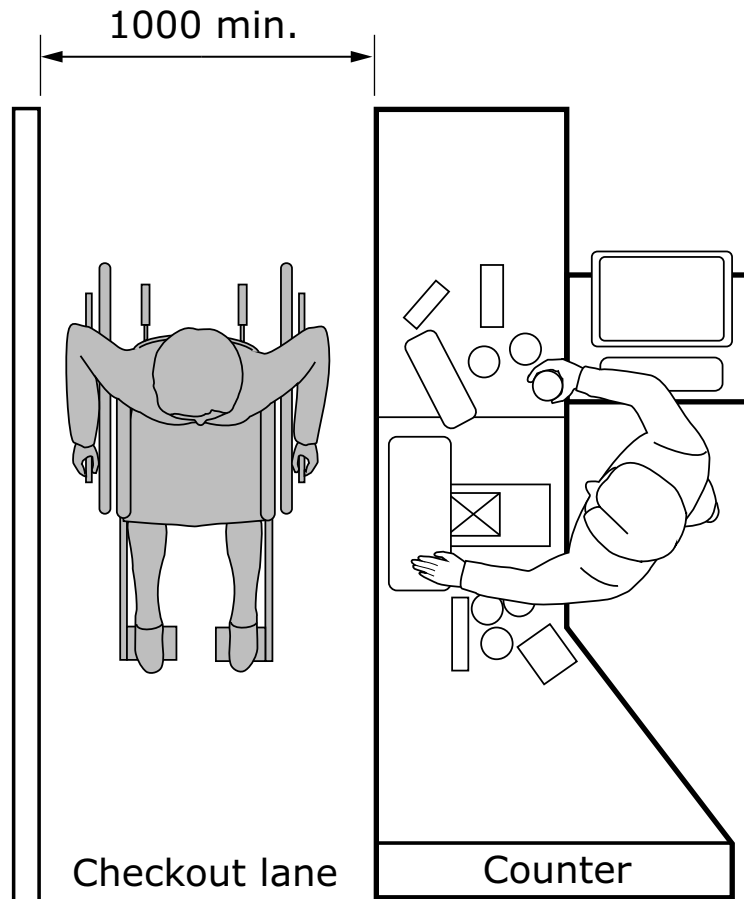
- a) have a running slope not exceeding the ratio of 1:20 (5%);
- b) where necessary for a slope to exceed the ratio of 1:20 (5%), be designed as
 - i) a ramp complying with Clause 5.5; or
 - ii) a curb ramp, where accessing a vehicular path of travel, complying with Clause 8.3.3; and
- c) have a cross slope not exceeding the ratio of 1:50 (2%).

Figure 14
Width of interior accessible routes
 (See Clause 5.1.1.)



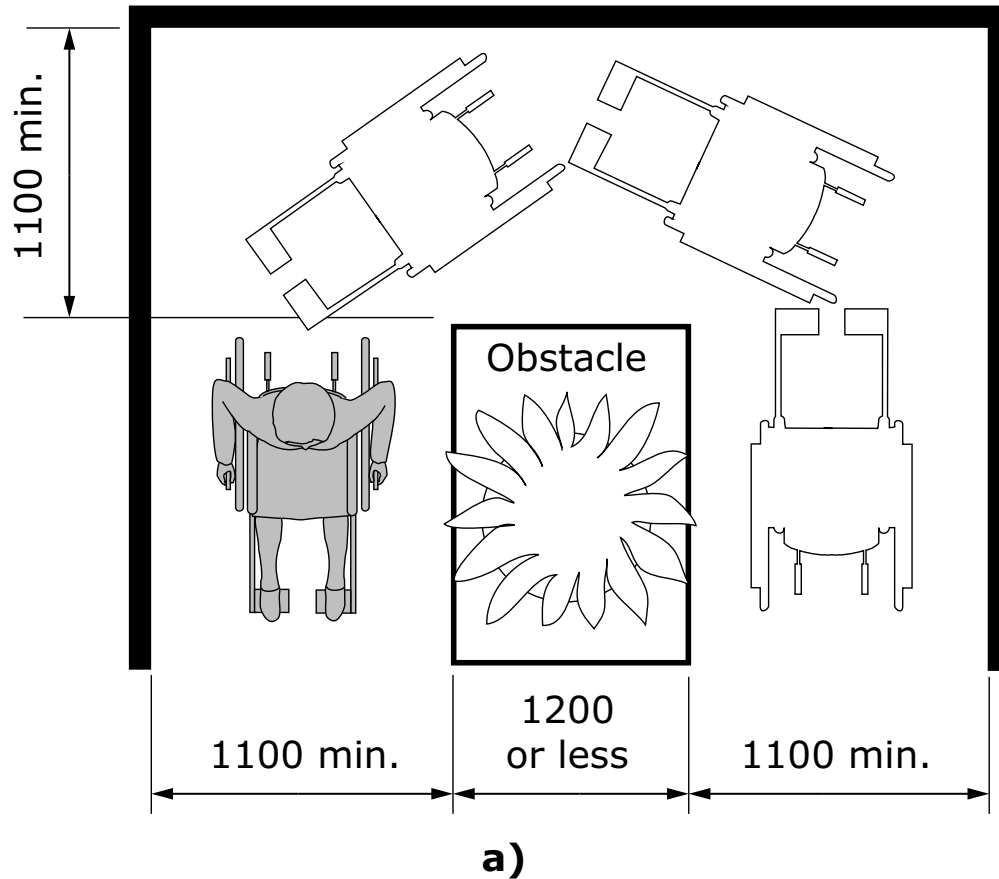
Note: All dimensions are in mm.

Figure 15
Width of accessible checkout lanes
(See Clause 5.1.1.)



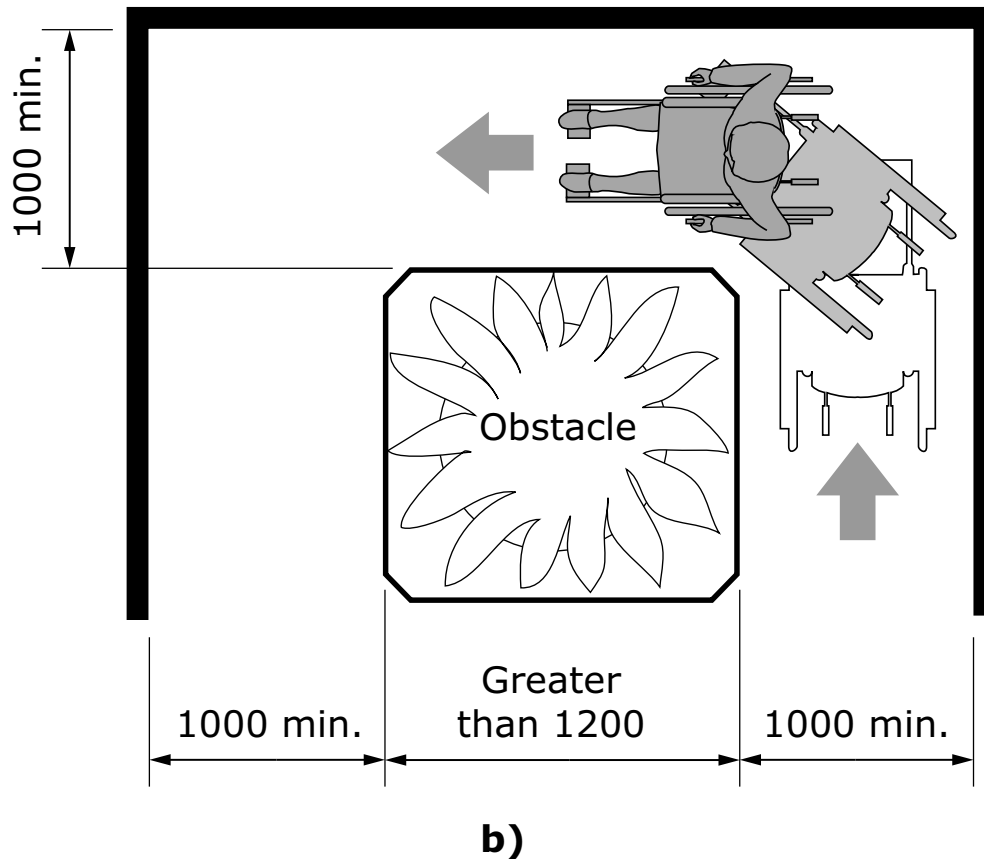
Note: All dimensions are in mm.

Figure 16
Width of accessible route around an obstacle
(See Clause 5.1.1.)



(Continued)

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Figure 16 (Concluded)

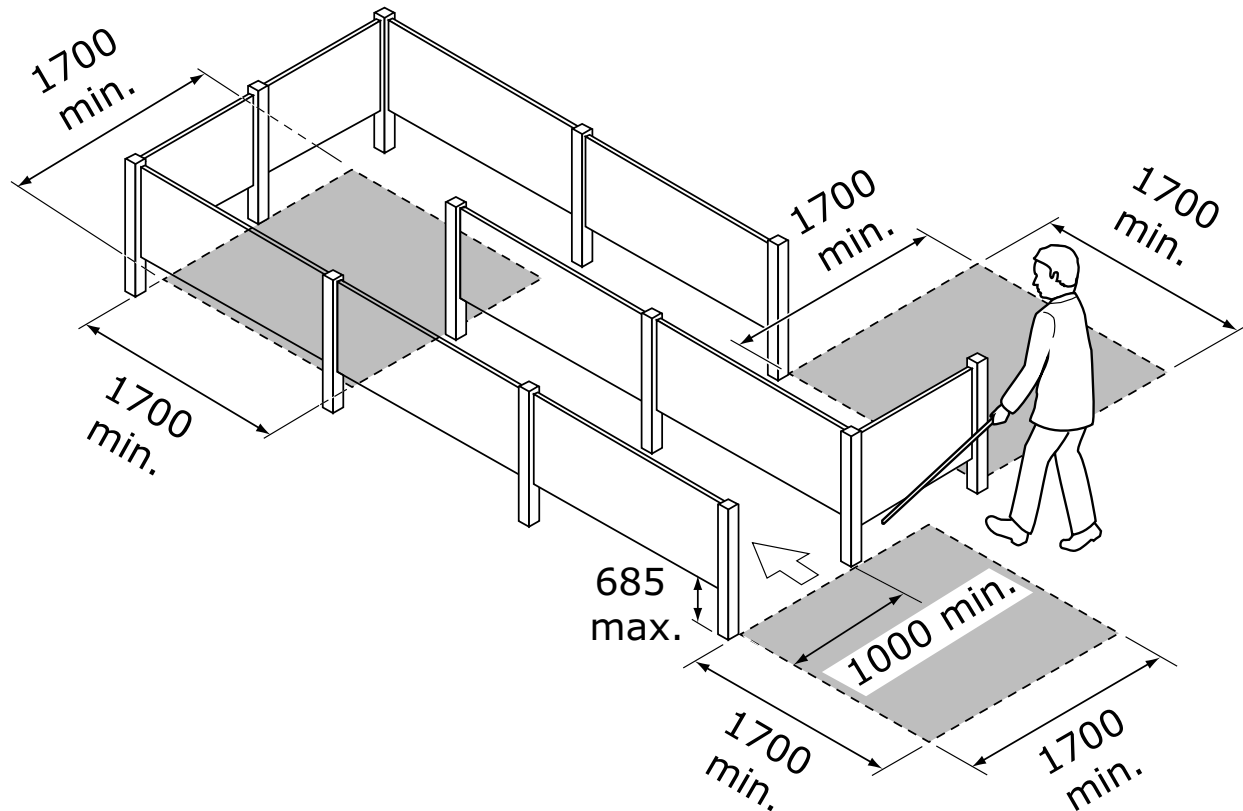
Note: All dimensions are in mm.

5.1.3 Lineup guides

Lineup guides shall

- be separated by a clear width of at least 1000 mm (see Figure 17);
- have a clear floor area of at least 1700 × 1700 mm where lineups change direction and where they begin and end;
- be cane-detectable at or below 685 mm from the floor;
- be stable and not move easily;
- be colour-contrasted with their surroundings; and
- have a glare-free finish.

Figure 17
Lineup area
 (See Clause 5.1.3.)



Note: All dimensions are in mm.

5.1.4 Safety

Accessible routes including accessible egress routes shall

- have walking surfaces that comply with Clause 4.3;
- comply with Clause 4.4 for headroom where protrusions exist;
- comply with Clause 5.3 where handrails are provided; and
- be kept unobstructed and comply with Clause 4.4.2.3.

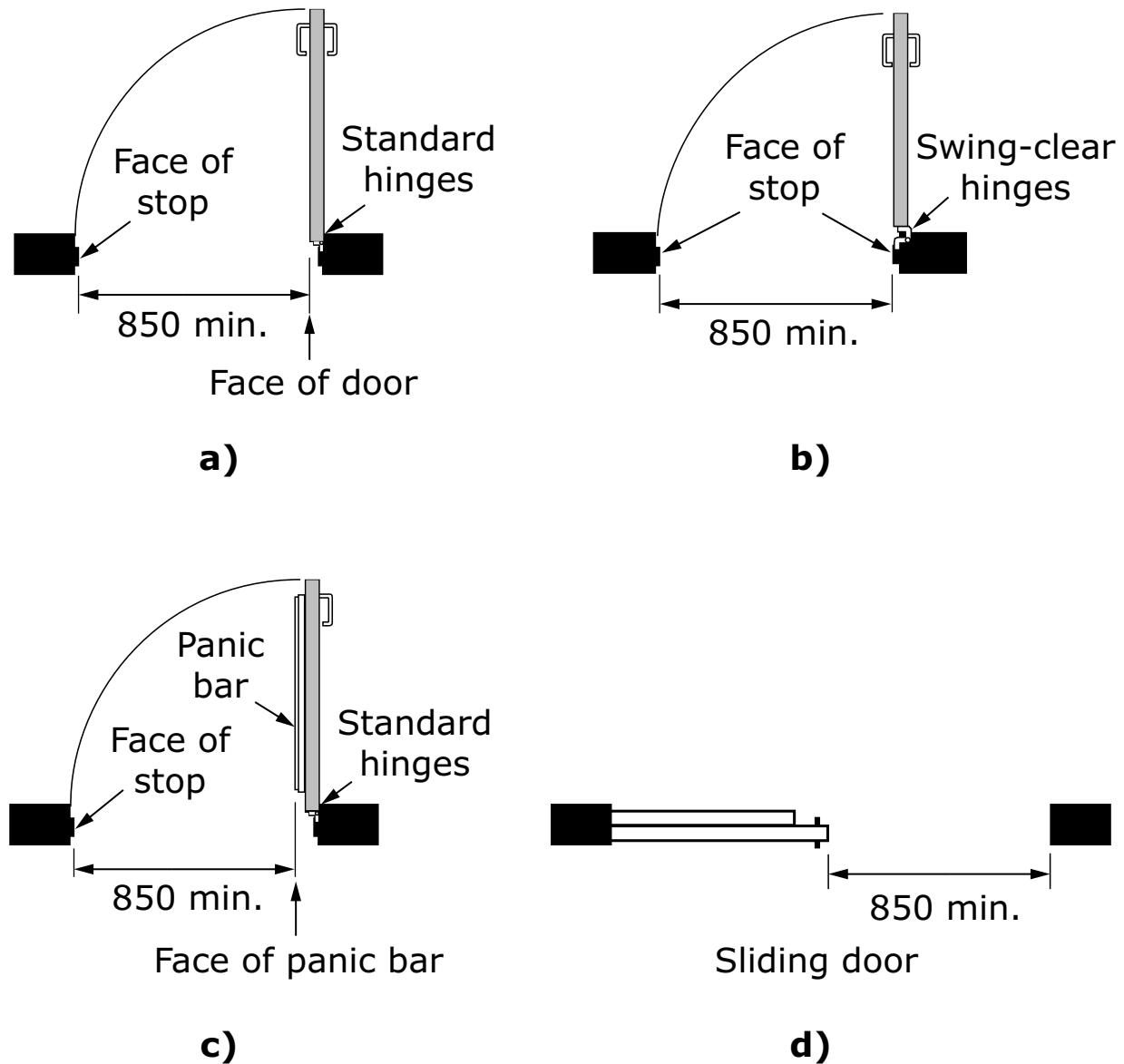
5.2 Doors and doorways

5.2.1 Opening width

The clear opening width of a doorway shall be at least 850 mm

- a) for swinging doors, when measured between the face of the door or the panic hardware and the face of the stop with the door open 90° [see Figure 18 a), b), and c)]; and
- b) for sliding doors, when measured between the edge of the open door and the door frame [see Figure 18 d)].

Figure 18
Clear opening width of doorway
 (See Clause 5.2.1.)



Note: All dimensions are in mm.

5.2.2 Manoeuvring area at doors

Doorways shall have

- a level manoeuvring area on the push and pull sides of a door;

- b) except on the inside of a closet, a clear floor area beside the latch edge (that extends the full height of the door) complying with Table 5 (see Figure 19); and
- c) the width of the clear floor area (as specified in Table 5), measured from the inside of the door frame.

Table 5
Manoeuvring area at doors
 (See Clause 5.2.2.)

Building element	Clear floor area required, mm		Distance from door opening measured at the latch edge, mm
	Depth	Width	
	(from approach direction)		
Swinging door			
Front approach [Figure 19 a)]			
Pull side	1500	1700	600
Push side	1350	1200	300
Latch edge approach [Figure 19 b)]			
Pull side	1500	1200	600
Push side	1500	1050	600
Hinge edge approach [Figure 19 c)]			
Pull side	1500	1700	600
Push side	1500	1050	600

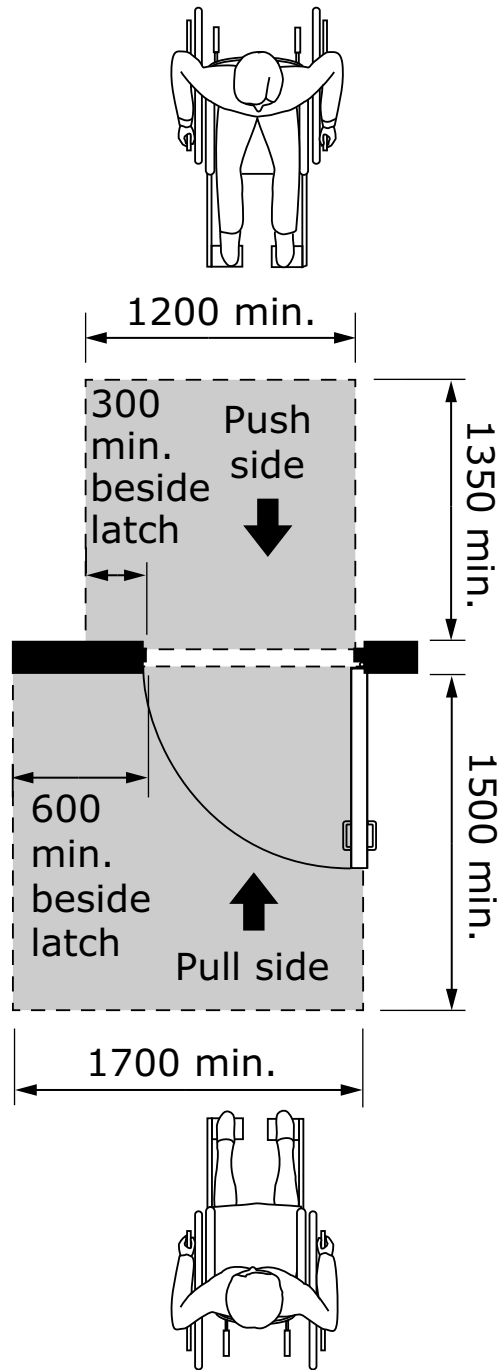
(Continued)

Table 5 (Concluded)

Building element	Clear floor area required, mm		Distance from door opening measured at the latch edge, mm
	Depth	Width	
	(from approach direction)		
Sliding door [Figure 19 d)]			
Pull side	1350	1200	300
Push side	1100	1350	600

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Figure 19
Manoeuvring area at doors
 (See Clause 5.2.2 and Table 5.)

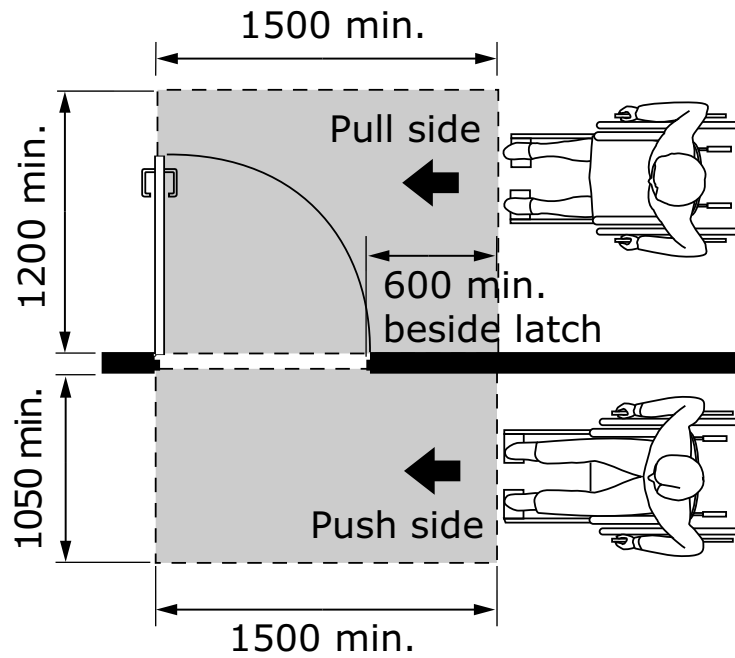


a) Front approach at swinging door

(Continued)

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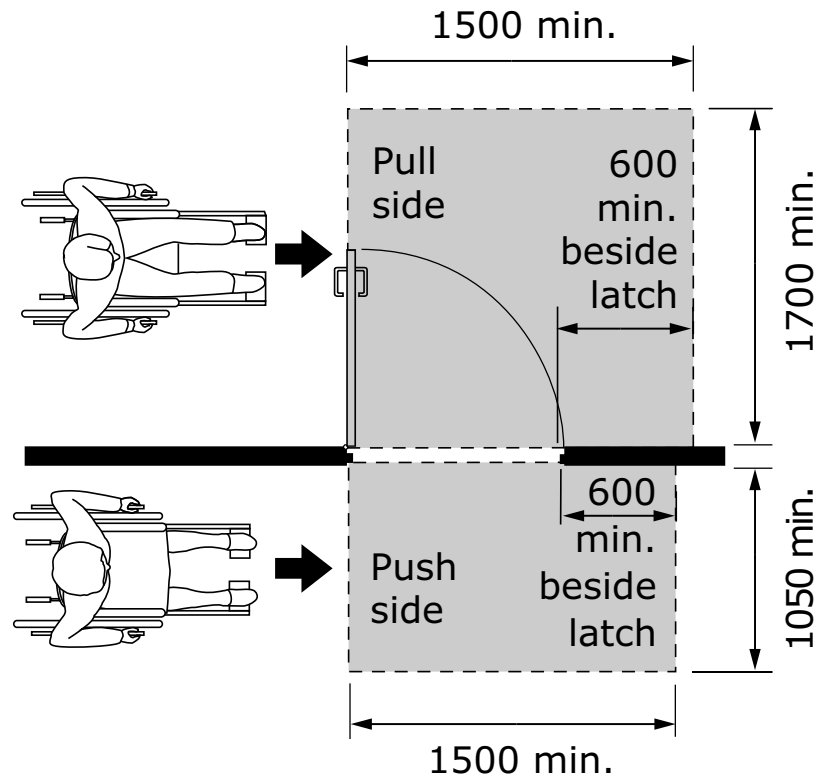
Figure 19 (Continued)



b) Latch edge approach at swinging door

(Continued)

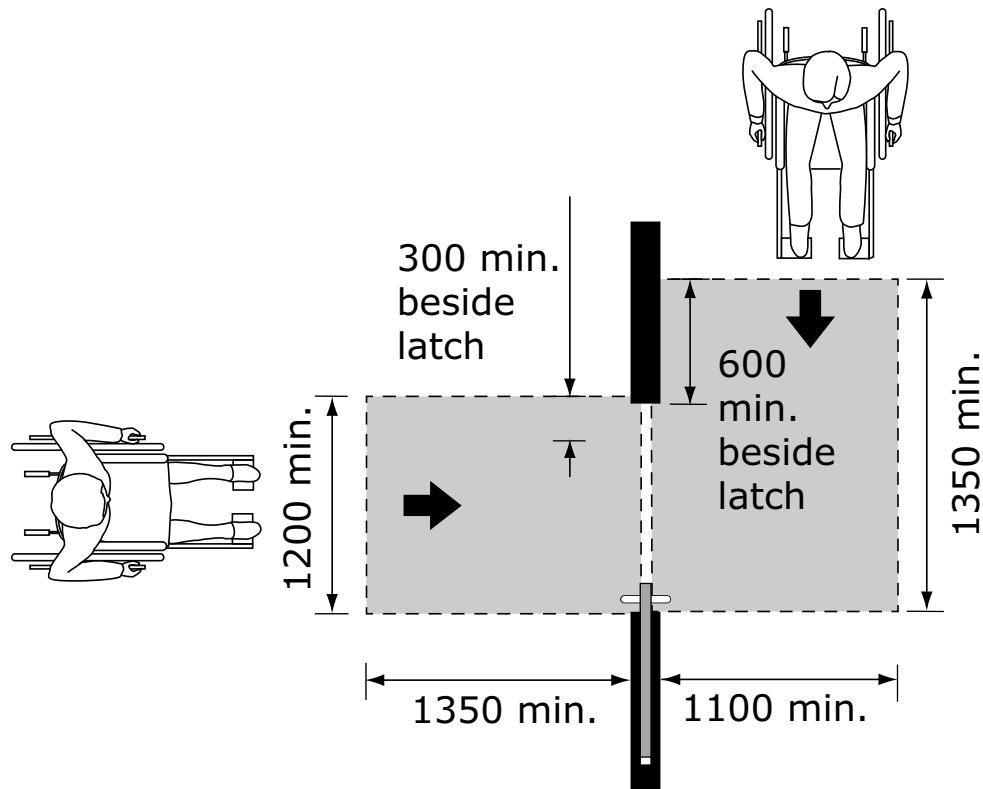
Figure 19 (Continued)



c) Hinge edge approach at swinging door

(Continued)

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Figure 19 (Concluded)**d) Approach at sliding door**

Note: All dimensions are in mm.

5.2.3 Multiple-leaf doorways

If a doorway has more than one independently operated leaf, at least one active leaf shall

- comply with Clauses 5.2.1 and 5.2.2; and
- where only one door is accessible in a bank of doors, be identified by the International Symbol of Access (see Figure 12).

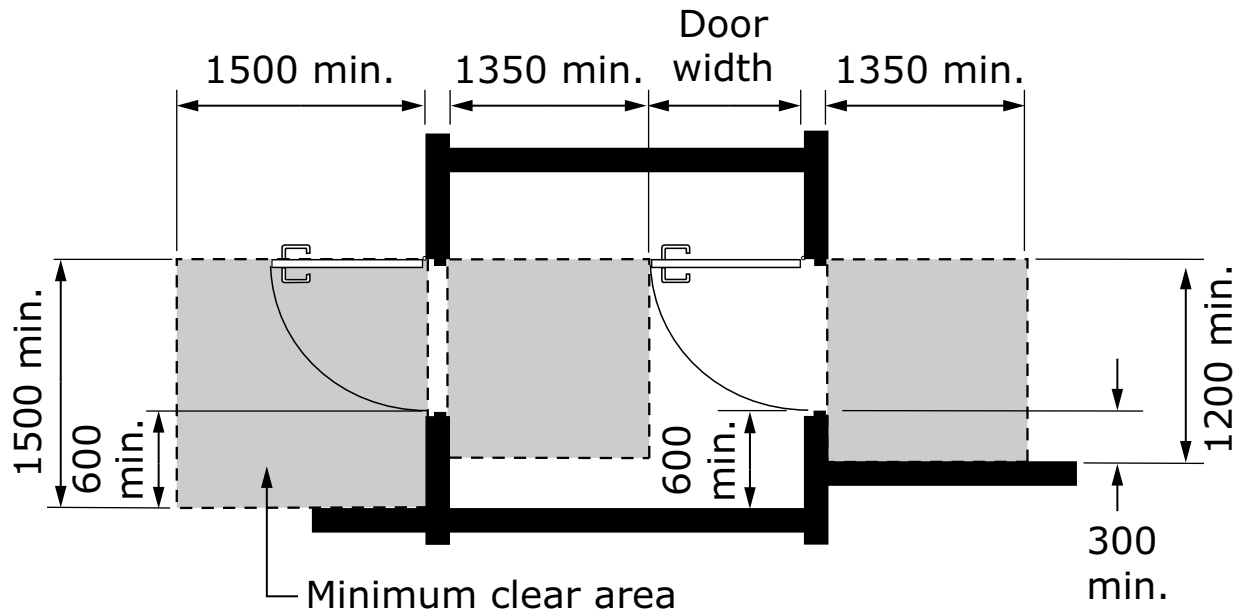
5.2.4 Revolving doors

Where a revolving door is used, an adjacent door shall be provided that complies with Clauses 5.2.1 and 5.2.2.

5.2.5 Two doors in series

The distance between two swinging doors in series shall be at least 1350 mm plus the width of any door swinging into the space [see Figure 20 a) and b)].

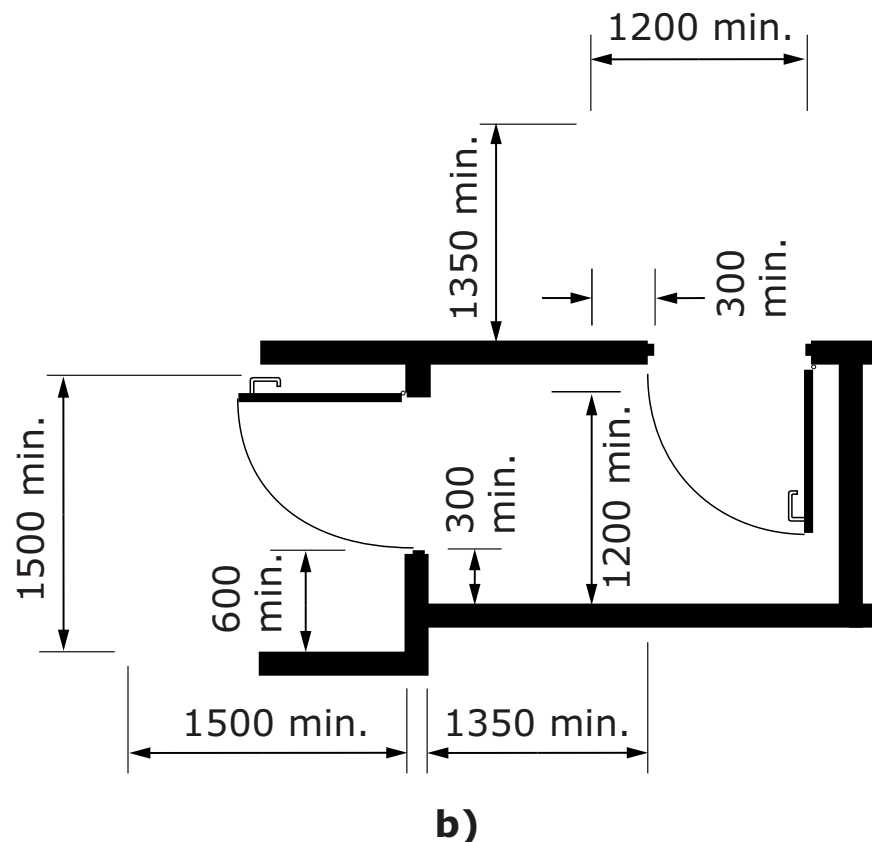
Figure 20
Manoeuvring area at doors in series
 (See Clause 5.2.5.)



a)

(Continued)

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Figure 20 (Concluded)

Note: All dimensions are in mm.

5.2.6 Thresholds

Thresholds shall

- a) be not more than 13 mm high; and
- b) where over 6 mm high, be bevelled at a slope not steeper than a ratio of 1:2 (50%) (see Figure 4).

5.2.7 Door hardware

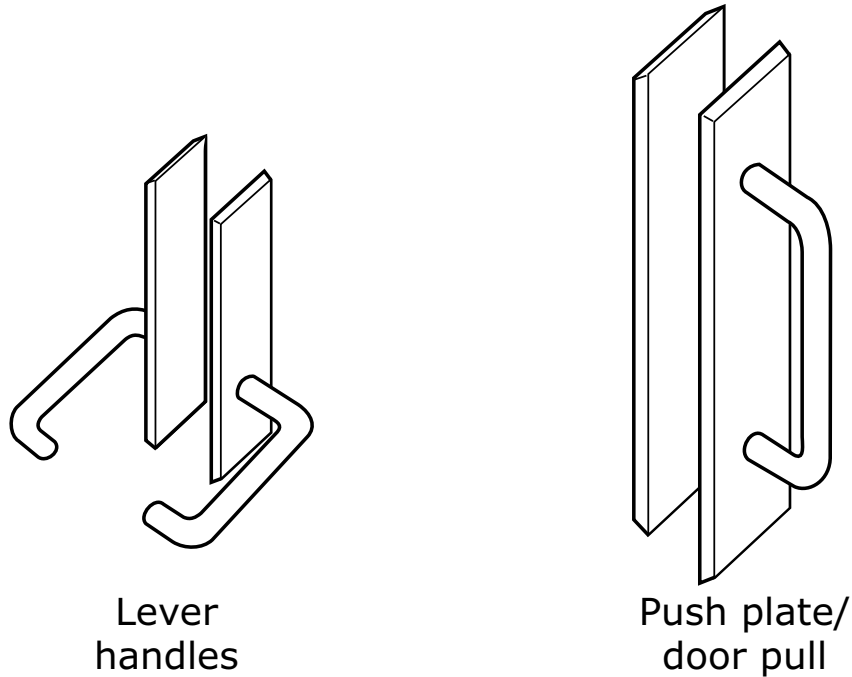
5.2.7.1 Operating devices

Operating devices such as handles, pulls, latches, or locks shall

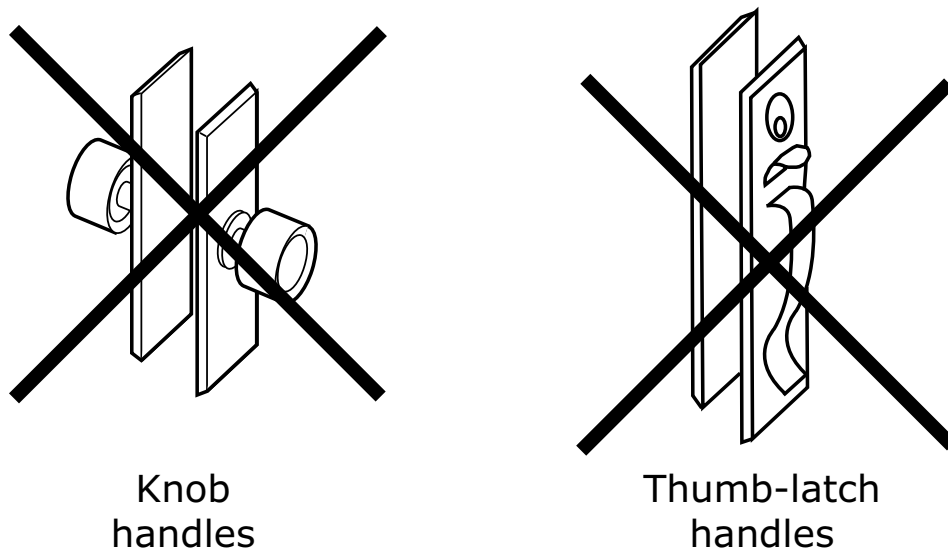
- a) comply with Clause 4.2;
- b) be mounted between 900 and 1100 mm from the floor; and

c) on a sliding door, be exposed and usable from both sides.

Figure 21
Handles
 (See Clause 5.2.7.1)



a) Acceptable



b) Not acceptable

5.2.7.2 Door closers

The sweep period of door closers shall be adjusted so that the door will take 3 s or more to move from an open position of 90° to a semi-closed position of approximately 12°.

5.2.8 Door-opening force

A force for pushing or pulling a door shall not be more than

- a) 38 N for exterior swinging doors;
- b) 22 N for interior swinging doors; and
- c) 22 N for sliding or folding doors.

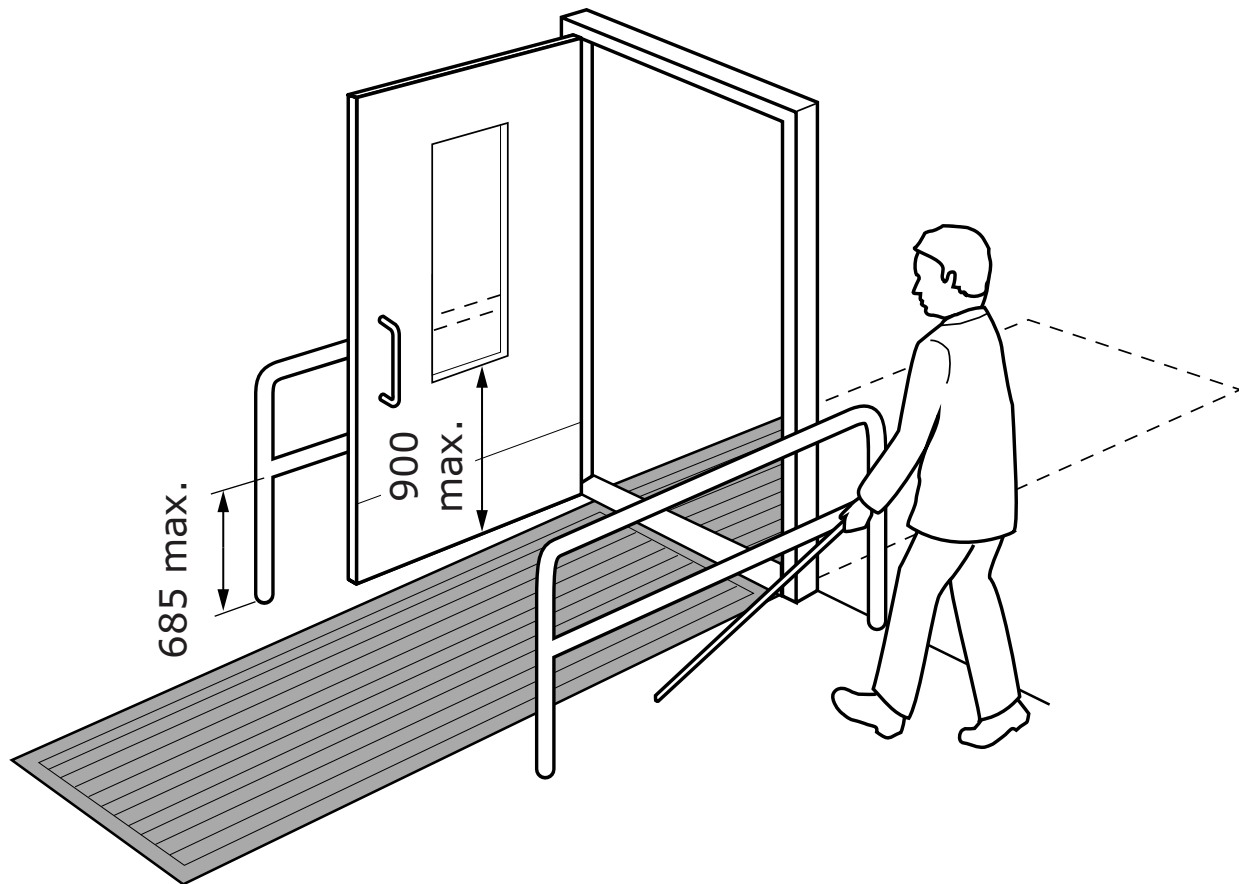
5.2.9 Power-assisted doors

5.2.9.1 General

A power-assisted swinging door shall

- a) take 3 s or more to move from a closed to a fully open position, except when a safety sensor is installed;
- b) remain fully open for a minimum of 5 s;
- c) require a force of not more than 66 N to stop door movement, except when the door is equipped with a safety sensor that automatically stops the door if there is an obstruction in the path of movement; and
- d) where it opens into a route of travel, have cane-detectable guardrails or other barriers at right angles to the wall containing the door (see Figure 22).

Figure 22
Guards at out-swinging power-assisted door
 (See Clauses 5.2.9.1 and 5.2.10.)



Note: All dimensions are in mm.

5.2.9.2 Location of controls

For doors that are not automatically activated, controls to open power-assisted doors shall

- be located along the route of travel;
- be clearly visible before reaching the door; and
- be adjacent to a clear floor area, 800 x 1350 mm, that is clear of the door swing but is no further than 1500 mm from it.

5.2.9.3 Controls

Controls for power-assisted doors shall be activation pads that

- a) comply with Clause 4.2;
- b) have a shape either
 - i) rectangular of at least 25 × 75 mm; or
 - ii) circular with a diameter of at least 100 mm;
- c) are operable by touching or approaching in close proximity any part of the surface with a fist, arm, or foot;
- d) are operable from a height between 150 and 300 mm as well as between 900 and 1100 mm above the floor; and
- e) are identified with the International Symbol of Access.

5.2.9.4 Security access systems

Where both activation pads and security access systems are used for the same door, they shall

- a) be located together with a horizontal separation of not more than 300 mm;
- b) be located so that the security access device is the first device encountered when approaching the door; and
- c) have the security access system comply with Clause 5.7.4.

5.2.10 Glazed panels

A glazed panel in a door shall

- a) be transparent;
- b) have its lower edge not higher than 900 mm from the floor (see Figure 22); or
- c) where the door or sidelight is fully glazed, be marked with a continuous opaque strip that
 - i) is visually contrasting to the background of the door;
 - ii) is at least 50 mm high; and
 - iii) extends the full width of the door and/or sidelight at a height between 1350 and 1500 mm from the floor.

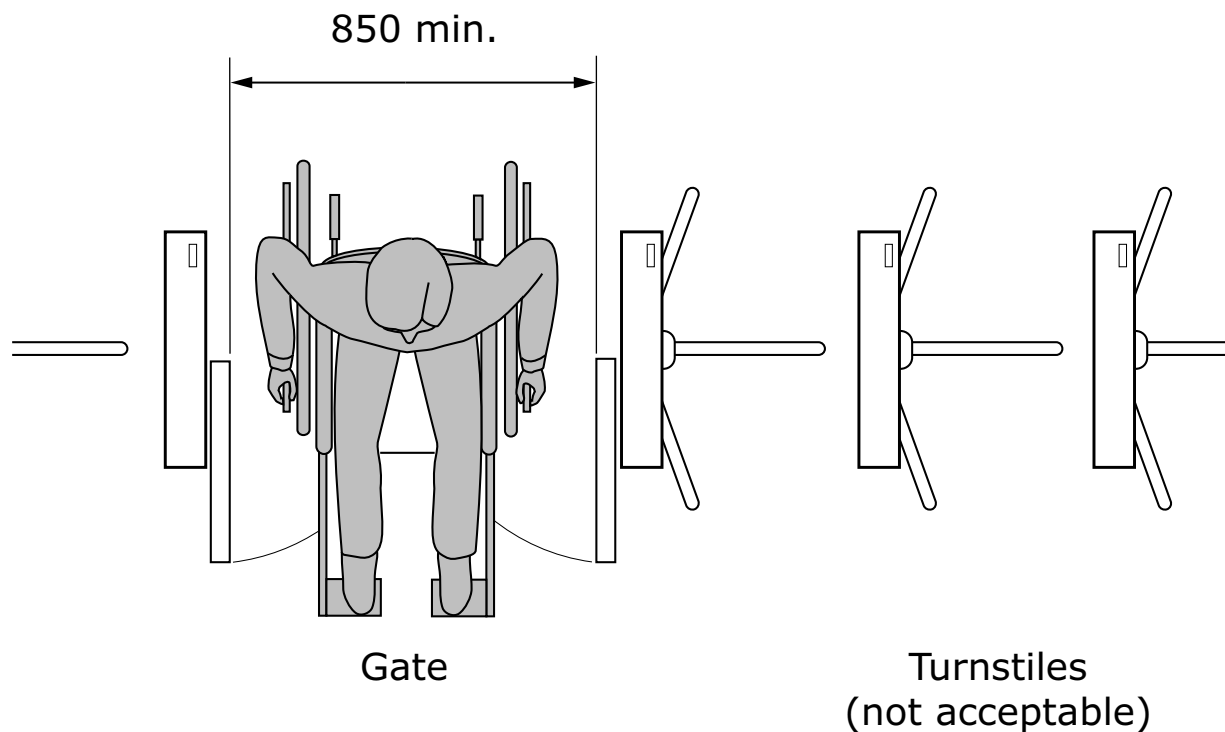
5.2.11 Doors in primary horizontal circulation routes

Where fire regulations permit, a door connecting two primary horizontal circulation routes shall have a transparent glazed panel that complies with Clause 5.2.10.

5.2.12 Turnstiles and access gates

Where entry/exit metering devices are used, at least one shall have a clear opening width of at least 850 mm. If the device does not accommodate this dimension (e.g., at turnstiles) there shall be an adjacent alternative entry with a clear width of at least 850 mm (see Figure 23). Security systems, if used, shall comply with Clause 5.7.4.

Figure 23
Alternative entry beside turnstiles
 (See Clause 5.2.12.)



Note: All dimensions are in mm.

5.3 Handrails

5.3.1 Handrail grip

Handrails shall

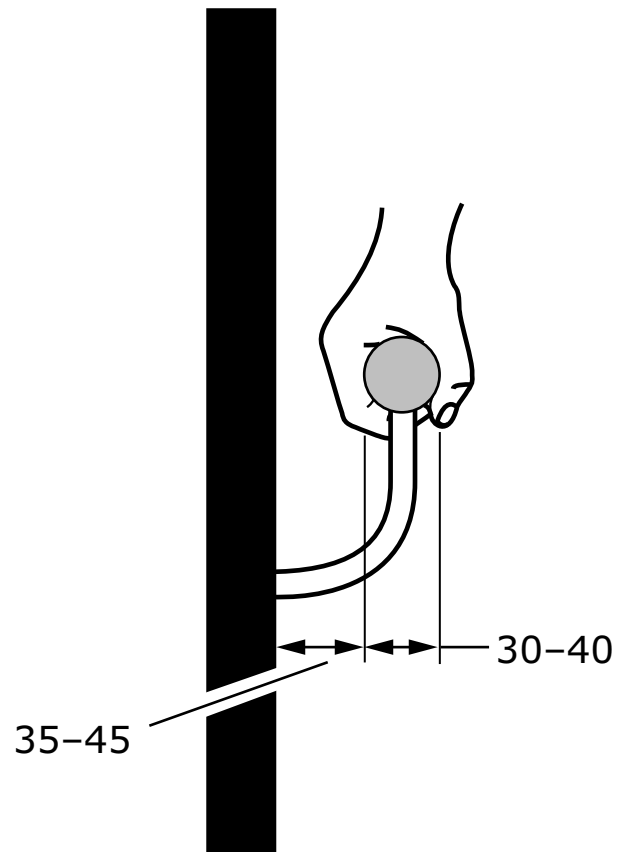
- resist a force of at least 1.3 kN applied in any direction;

- b) have a graspable cross-section that is either
 - i) circular with an outside diameter of 30 to 40 mm (see Figure 24); or
 - ii) elliptical with an outside perimeter between 100 and 125 mm, with the largest cross-sectional dimension not more than 45 mm (see Figure 24);
- c) be free of any sharp or abrasive elements;
- d) have a continuous gripping surface, without interruption by newel posts or other construction elements or obstructions that interrupt a hand hold;
- e) have a clear space between the handrail and the wall, and underneath the handrail, as follows:
 - i) between 35 and 45 mm wide for a smooth wall surface; and
 - ii) between 45 and 60 mm wide for a rough wall surface; and
- f) be colour-contrasted with the surrounding wall surface.

5.3.2 Recessed handrail

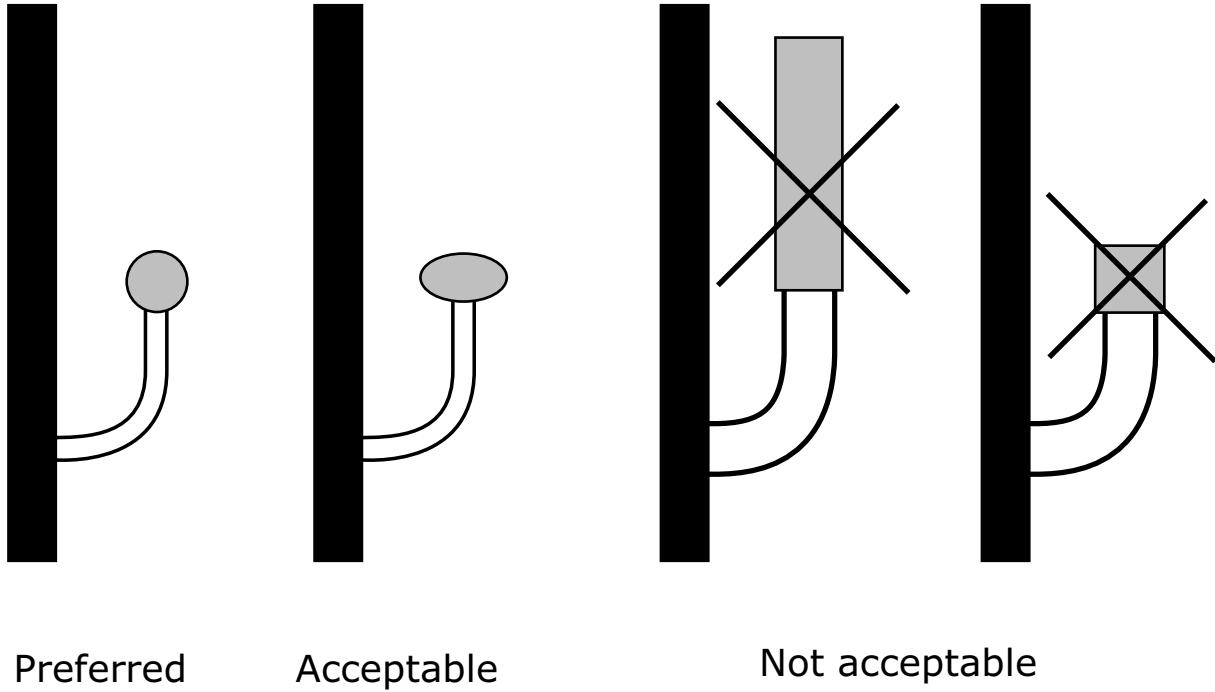
A recess containing a handrail shall extend at least 450 mm above the top of the rail (see Figure 26).

Figure 24
Handrails
(See Clause 5.3.1.)



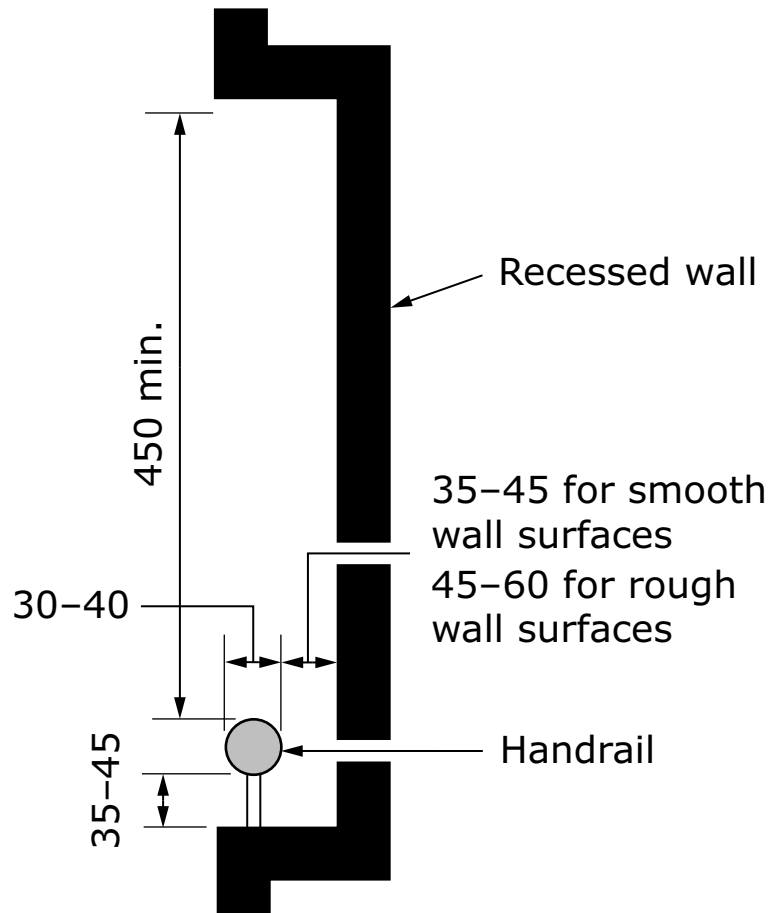
Note: All dimensions are in mm.

Figure 25
Handrail shapes
(See Clause 5.3.1.)



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Figure 26
Handrail in a recess
 (See Clause 5.3.2.)



Note: All dimensions are in mm.

5.4 Stairs

5.4.1 Treads and risers

A flight of stairs shall

- have uniform riser heights and tread depths;
- have risers not more than 180 mm high;
- have treads that are slip resistant;
- have treads not less than 280 mm deep, measured from riser to riser;
- have no open risers [see Figure 27 c)];

- f) be illuminated to at least 50 lx at the tread; and
- g) have a horizontal strip at the edge of the tread that
 - i) is 50 ± 10 mm deep;
 - ii) is colour-contrasted with the tread and riser; and
 - iii) extends the full width of the tread.

5.4.2 Nosing

The nosing shall

- a) project not more than 38 mm;
- b) have no abrupt undersides [see Figure 27 d)];
- c) have a radius of curvature at the leading edge of the tread not more than 13 mm;
- d) where projecting, be sloped to the riser at an angle greater than 60° to the horizontal [see Figure 27 a)]; and
- e) have a horizontal strip 50 ± 10 mm deep that
 - i) is colour-contrasted with the tread and riser; and
 - ii) extends the full width of the tread.

5.4.3 Tactile attention indicator surfaces at stairs

5.4.3.1 General

A tactile attention indicator surface shall

- a) comply with Clauses 4.3.5.2 and 4.3.5.3;
- b) be located at the top of stairs;
- c) be continuous across the width of the stair with a maximum gap of 75 mm to the stringer or end of tread; and
- d) have a length between 600 and 650 mm, commencing one tread depth from the edge of the stair [see Figures 5 b) and 27 b)].

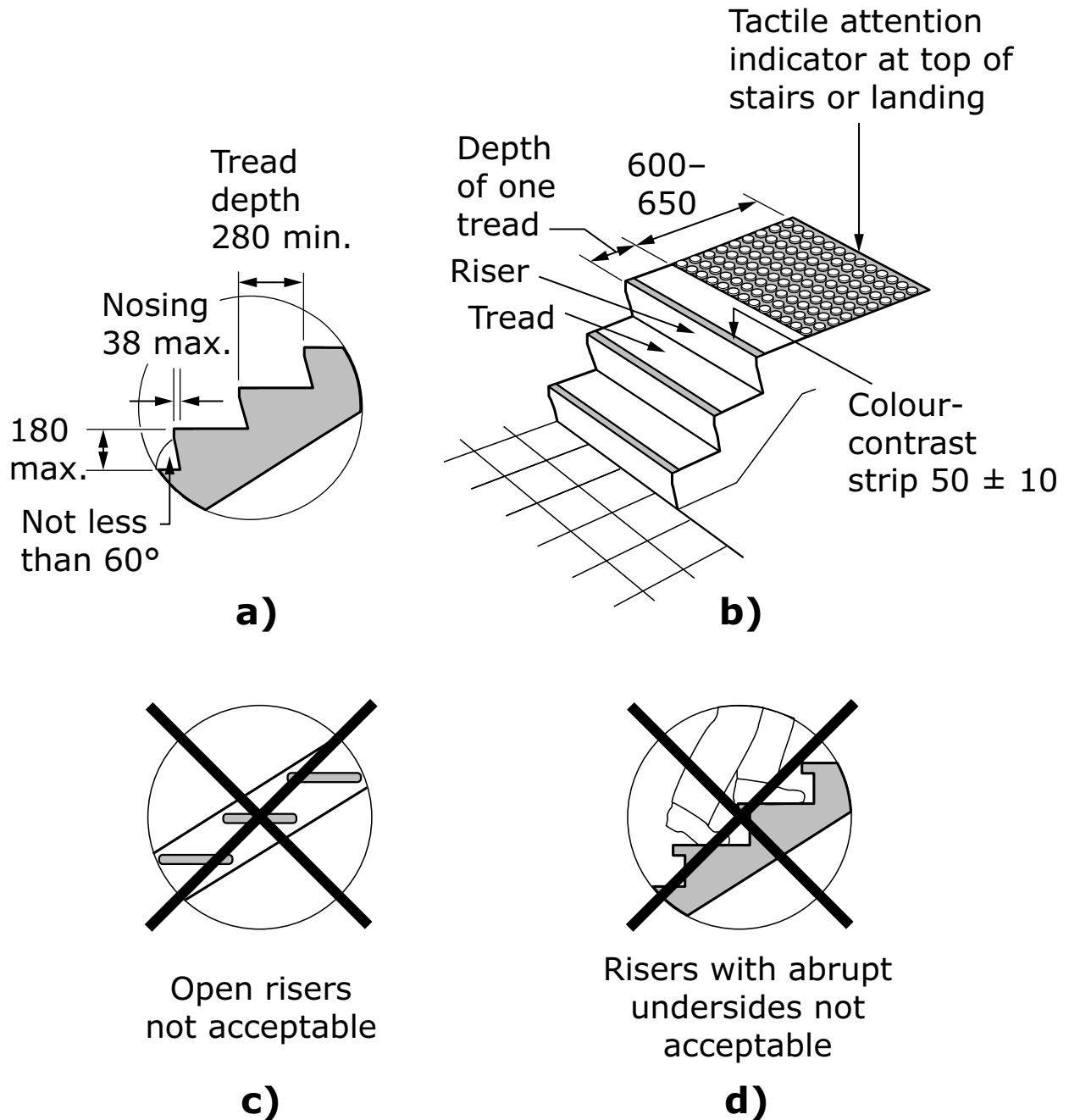
5.4.3.2 Location

A tactile attention indicator surface shall be provided

- a) at stairs that are not enclosed;
- b) at each landing incorporating an entrance into a stair system;
- c) where the regular stairway pattern is broken; and

- d) where the run of a landing with no continuous handrail is greater than 2100 mm.

Figure 27
Stair detail
 (See Clauses 5.4.1 – 5.4.3.)



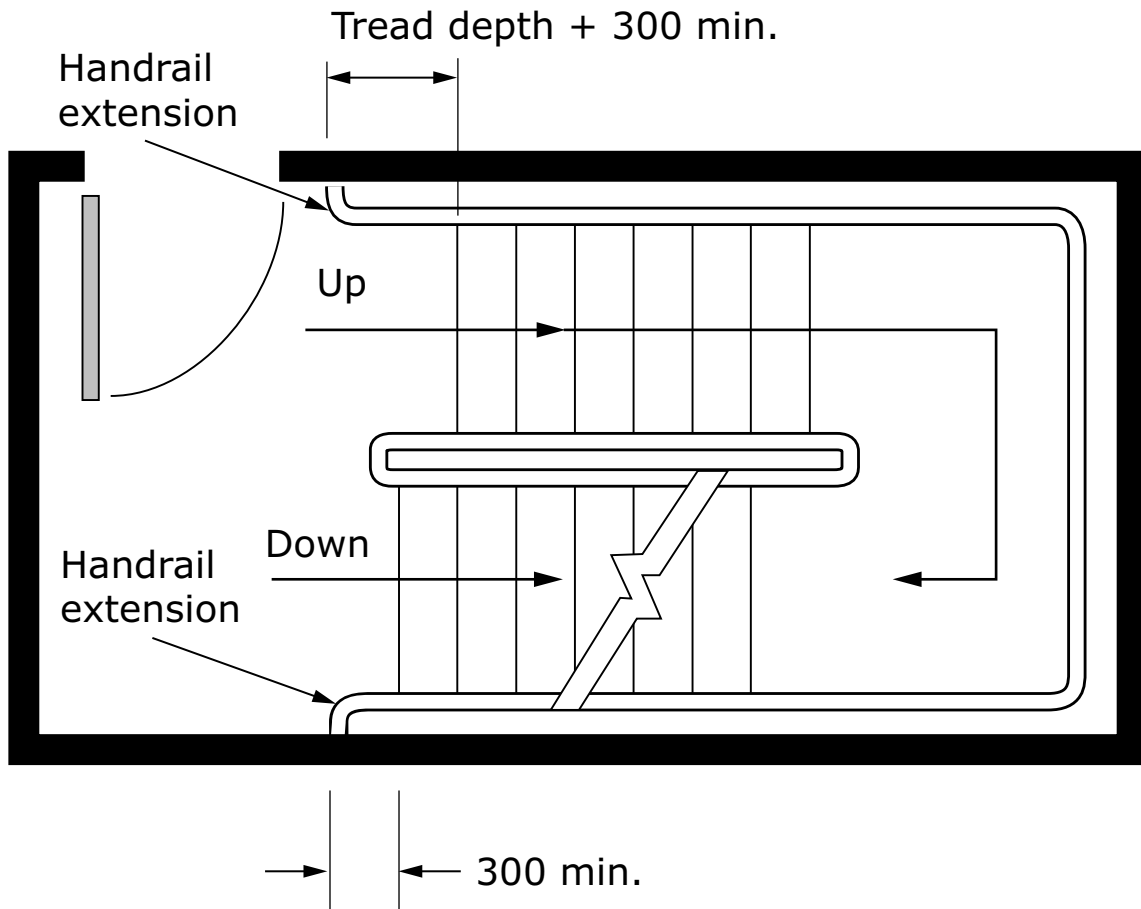
Note: All dimensions are in mm.

5.4.4 Stair handrails

Handrails shall be provided for stairs and shall

- a) comply with Clause 5.3;
- b) be installed on both sides of the stairs (see Figure 28);
- c) be of uniform height, from 860 to 920 mm, measured vertically from the leading edge of the tread;
- d) be continuous around landings less than 2100 mm in length, except where the landing
 - i) is intersected by an alternative path of travel; or
 - ii) has an entry door leading onto it;
- e) be continuous where located on the inside edge of the stairs (see Figure 29);
- f) at the top of the stairs, extend at least 300 mm parallel to the floor surface (see Figure 31);
- g) at the bottom of the stairs, continue to slope for a distance equal to the depth of one tread and then extend at least 300 mm parallel to the floor surface (see Figure 30); and
- h) have the rail extension return to the post, floor, or wall (see Figures 28, 30, and 31).

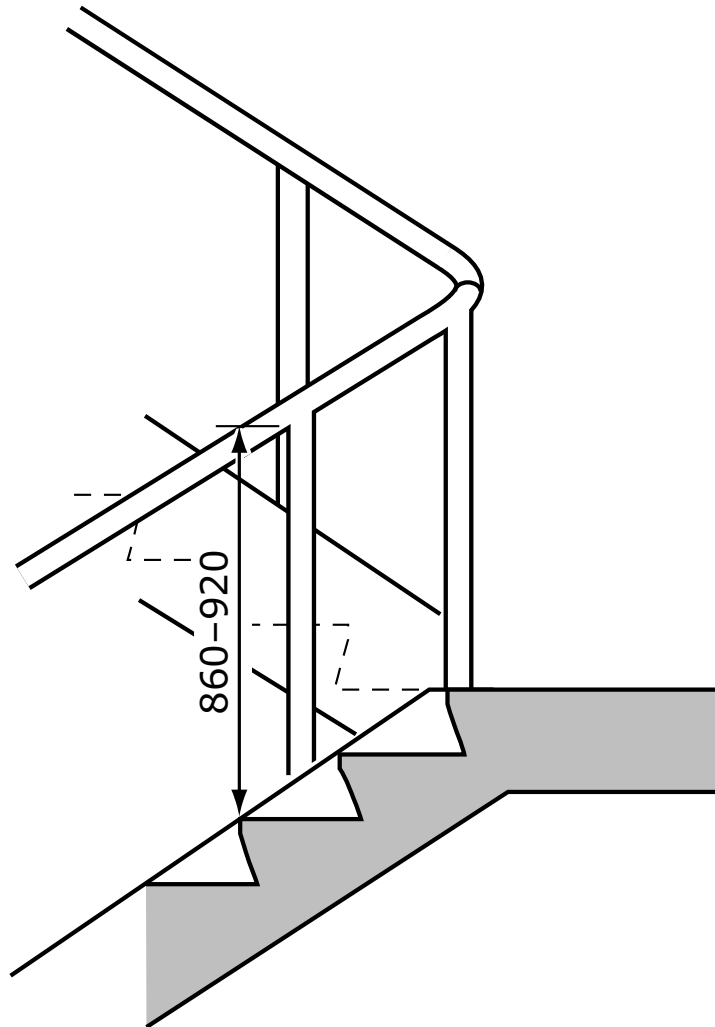
Figure 28
Stair handrails
 (See Clause 5.4.4.)



Note: All dimensions are in mm.

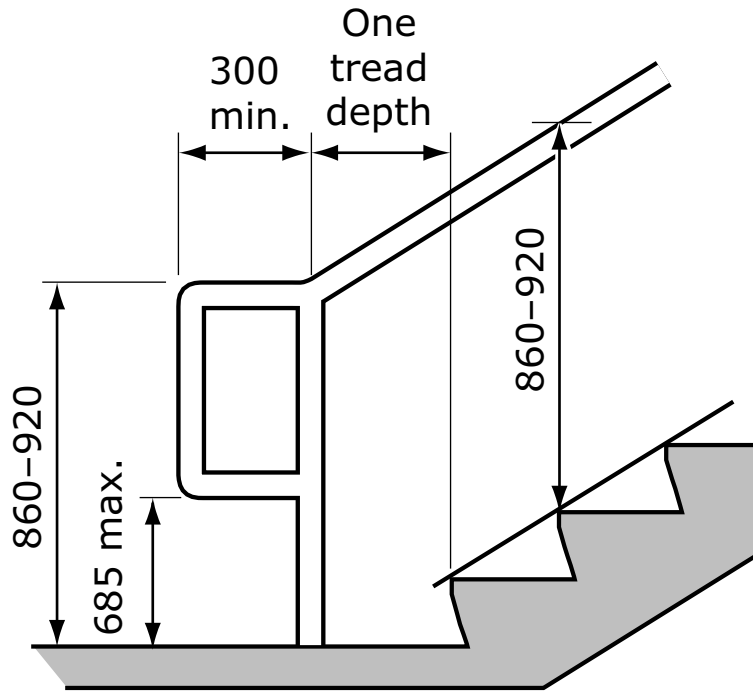
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Figure 29
Continuous inside handrail at stairs
(See Clause 5.4.4.)



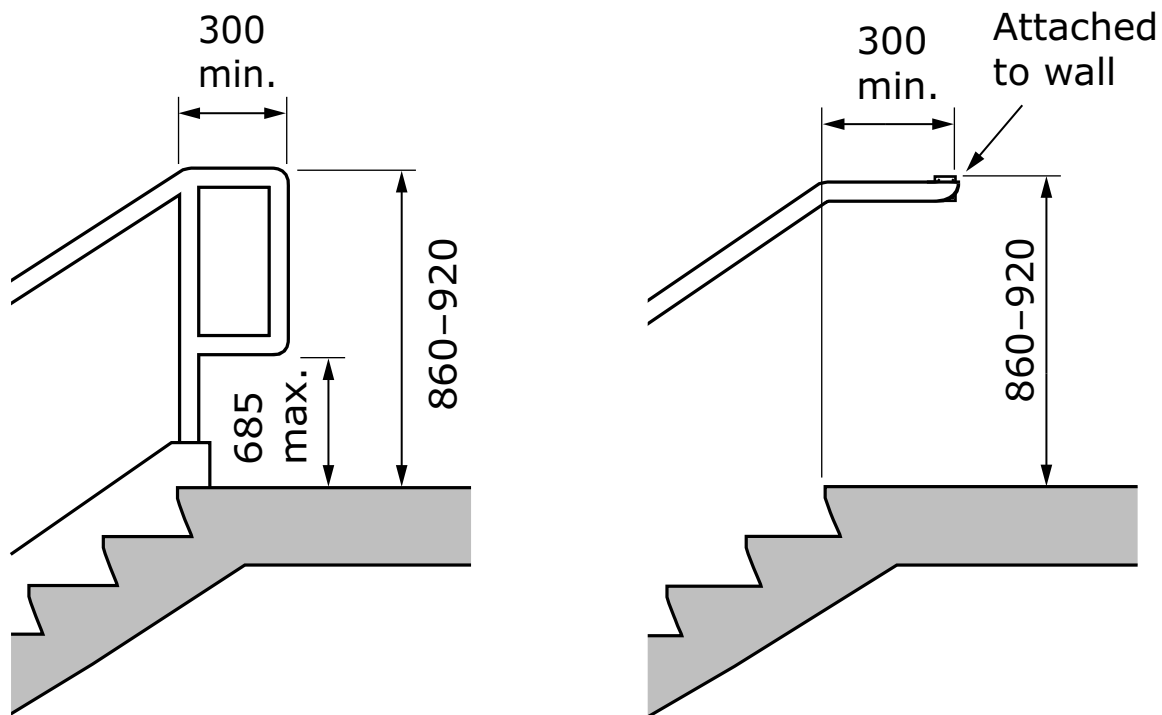
Note: All dimensions are in mm.

Figure 30
Handrail extension at bottom of stairs
(See Clause 5.4.4.)



Note: All dimensions are in mm.

Figure 31
Handrail extension at top of stairs
 (See Clause 5.4.4.)



Note: All dimensions are in mm.

5.5 Ramps

5.5.1 Running slope and length

A ramp shall have

- a running slope with the ratio between 1:12 (8.33%) and 1:20 (5%); and
- a horizontal distance between level landings not greater than 9000 mm.

5.5.2 Cross slope

The cross slope of the ramp surface shall not be steeper than the ratio of 1:50 (2%).

5.5.3 Width

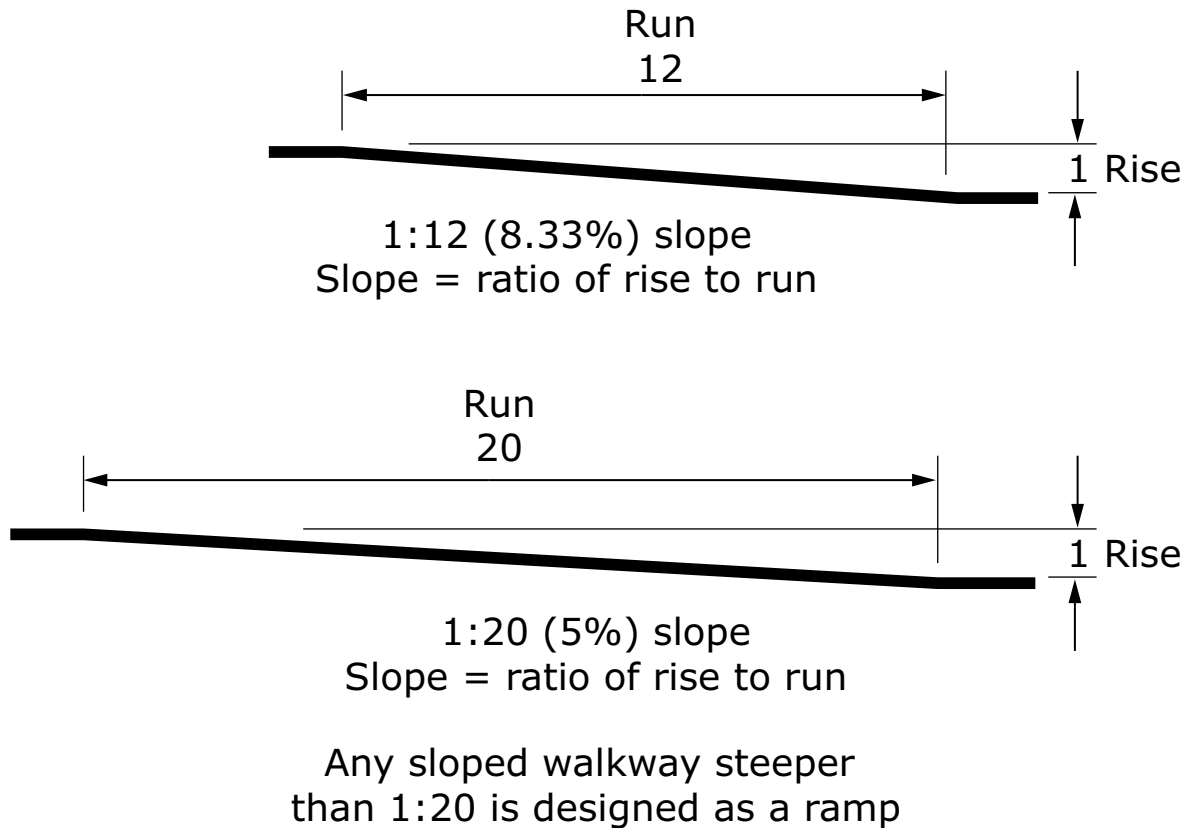
The clear width on a ramp shall be at least 1000 mm.

5.5.4 Landings

A level landing shall

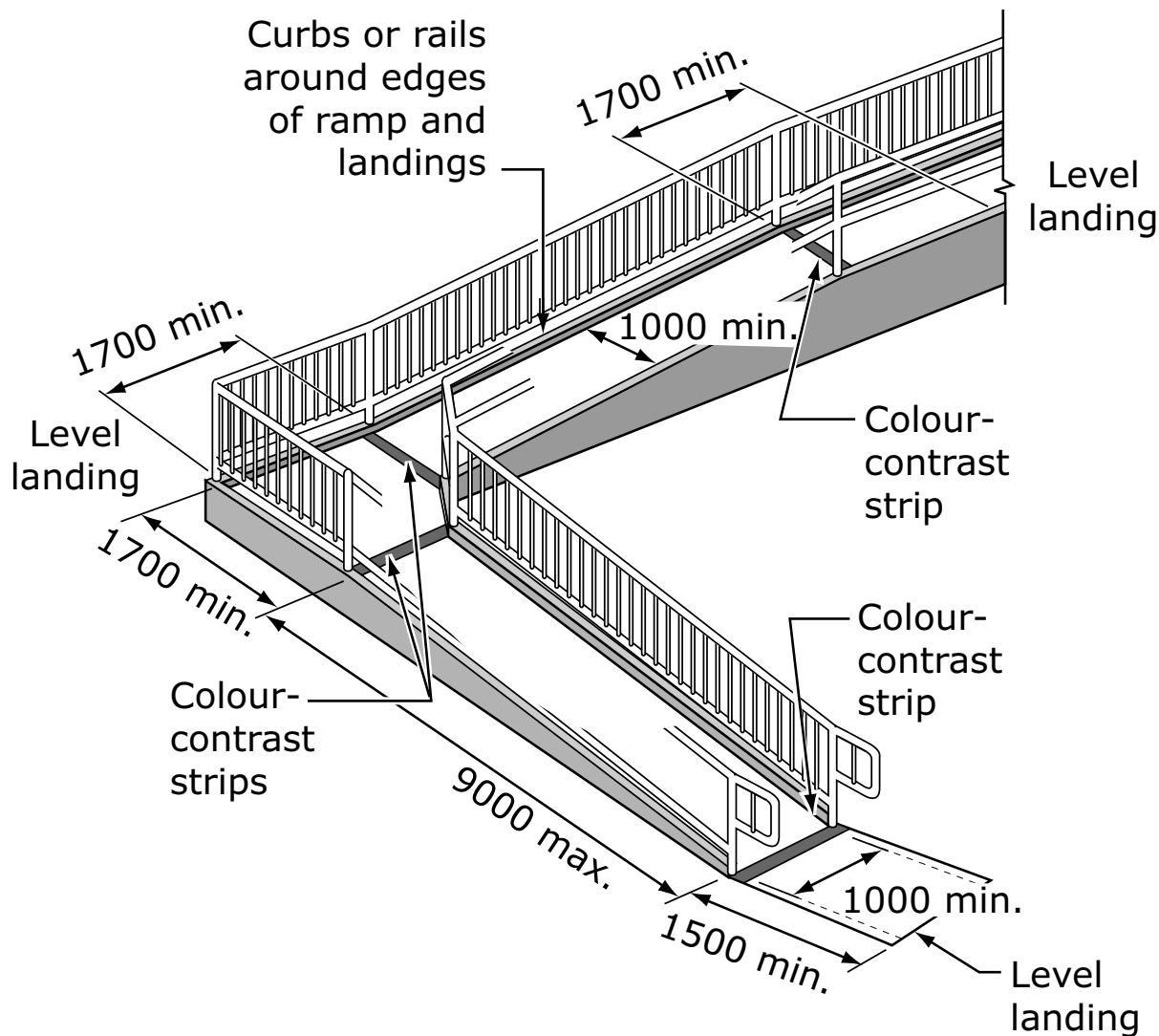
- a) be provided at the top and bottom of each ramp;
- b) be provided at all changes of ramp direction;
- c) be at least as wide as the widest ramp leading to it;
- d) have a length not less than 1500 mm;
- e) at doorways serving an accessible route, have an area of at least 1700 × 1700 mm;
- f) include passing spaces with an area of at least 1700 × 1700 mm
 - i) at the connection points when more than two ramp segments are used to surmount a level change; and
 - ii) at the turning point when a turn separates two ramp segments; and
- g) where it meets a slope change, have a 50 ± 10 mm wide colour-contrasted and slip-resistant strip equal to the width of the ramp.

Figure 32
Ramp slope
(See Clauses 5.5.1 and 8.2.7.)



Note: All dimensions are in mm.

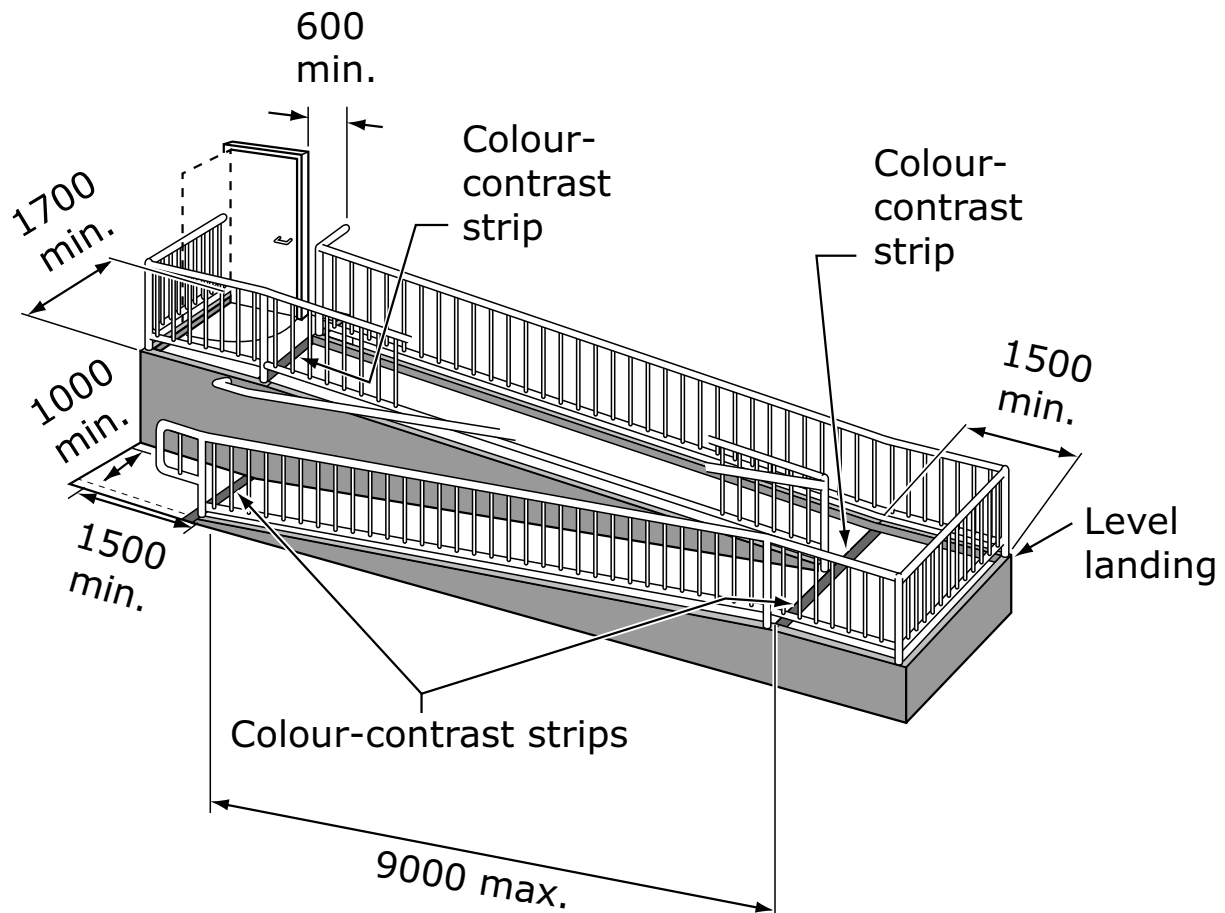
Figure 33
Ramps and landings
 (See Clauses 5.5.4 and 8.2.7.)



a) Intermediate landings with a sharp turn

(Continued)

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Figure 33 (Concluded)**b) Doorways at landings****Notes:**

- 1) Handrails have been partially omitted for clarity.
- 2) All dimensions are in mm.

5.5.5 Surfaces

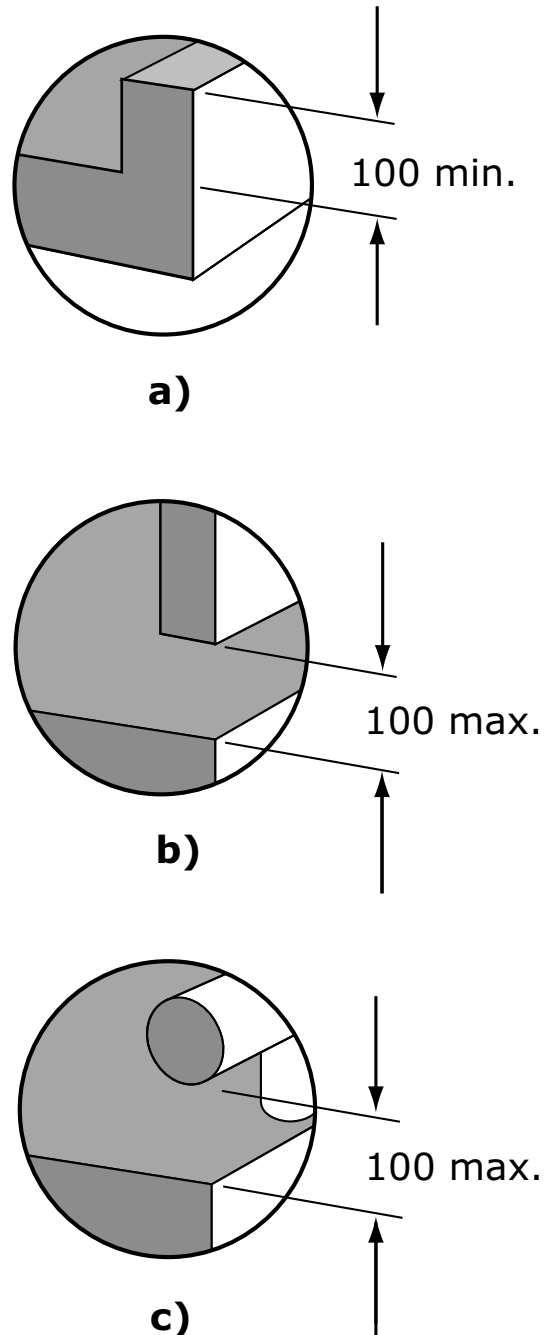
A ramp and landing surface shall comply with Clause [4.3.1](#).

5.5.6 Edge protection

On ramps and landings that are not at grade or adjacent to a wall, protection shall be provided on all edges in the form of either

- a) a curb with a minimum height of 100 mm [see Figure 34 a)];
or
- b) a raised barrier or rail with its lower edge not more than 100 mm from the ramp or landing surface [see Figure 34 b) and c)].

Figure 34
Ramp edge protection
(See Clauses 5.5.6 and 8.2.7.)



Note: All dimensions are in mm.

5.5.7 Illumination

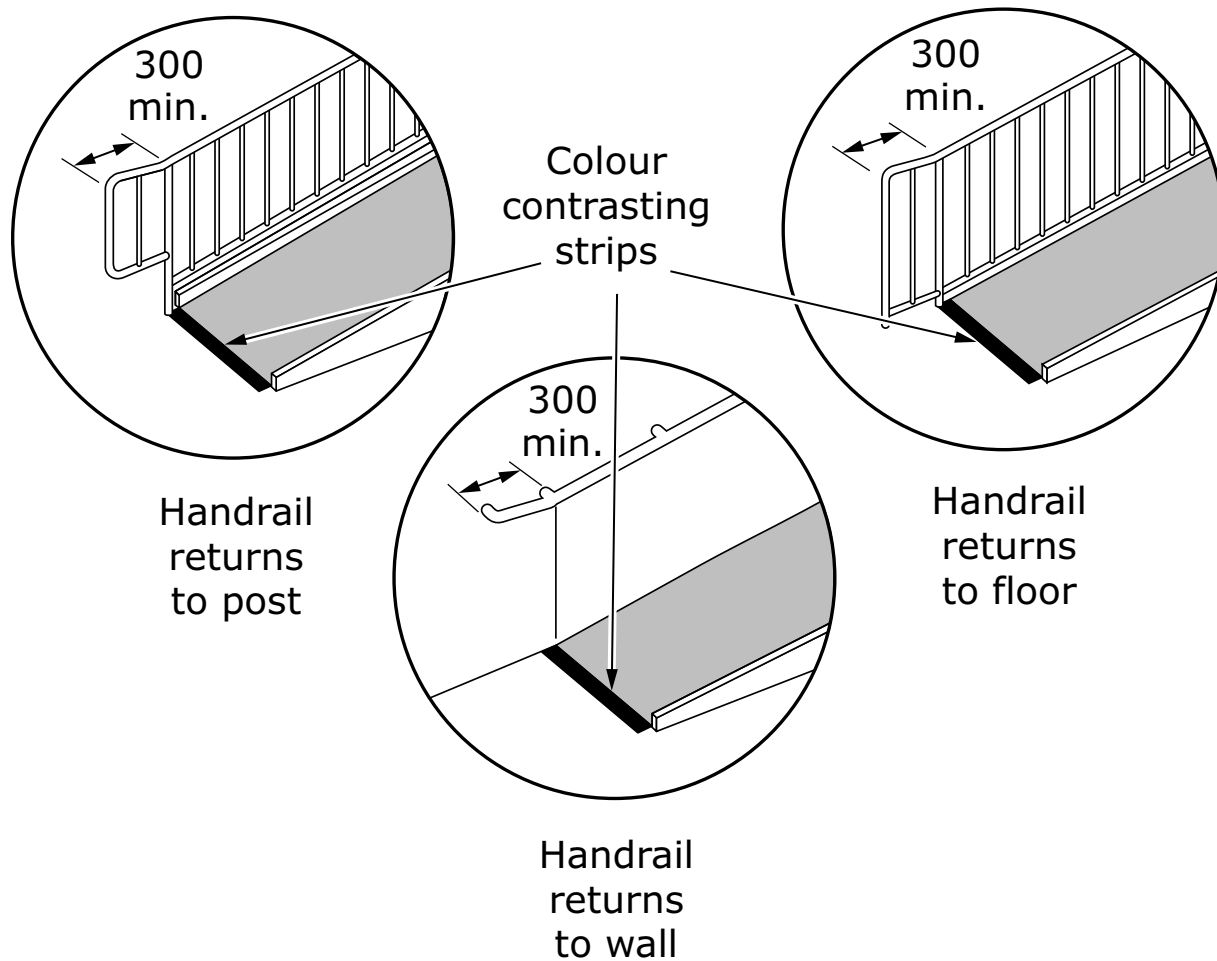
Illumination at the surface level of a ramp and its landings shall be at least 50 lx.

5.5.8 Ramp handrails

Ramps shall have handrails on both sides that

- a) comply with Clause 5.3;
- b) are continuous on the ramp and around landings;
- c) are colour-contrasted with their surroundings;
- d) have at least one set of handrails with a clear width between 920 and 1000 mm between the rails;
- e) have a height between 860 and 920 mm, measured from the ramp surface to the top of the rail; and
- f) have horizontal extensions beyond the top and bottom of the ramp
 - i) at least 300 mm long; and
 - ii) that are returned to the post, floor, or wall (see Figure 35).

Figure 35
Ramp handrail extensions
 (See Clause 5.5.8.)



Note: Near handrail omitted for clarity.

Notes:

- 1) Near handrail omitted for clarity.
- 2) All dimensions are in mm.

5.6 Elevating devices

5.6.1 Elevators

An accessible elevator shall comply with Appendix E of ASME A17.1/CSA B44.

5.6.2 Platform lifts

Elevating devices such as platform lifts shall comply with CSA B355 and the applicable requirements of authorities having jurisdiction.

5.6.3 Escalators

5.6.3.1 Route of travel

Escalators shall not be considered as part of an accessible route of travel.

5.6.3.2 Illumination

Escalators shall be illuminated to at least 100 lx at the tread surface level.

5.6.4 Moving walkways

5.6.4.1 General

A moving walkway shall

- a) comply with Clause 6.2 of ASME A17.1/CSA B44; and
- b) have an adjacent accessible route.

5.6.4.2 Treadway

The treadway on a moving walkway shall

- a) move at a constant speed for the entire distance between stationary entry and exit points;
- b) have a walking surface which does not accelerate (expand) or decelerate (contract) under foot;
- c) not have any portion that is comprised of rollers or sequential belts moving at differing speeds; and
- d) travel at a maximum speed of 2.25 km/h.

5.6.4.3 Width

The width of the exposed treadway of moving walkways shall be at least 1000 mm.

5.6.4.4 Angle of inclination

Moving walkways shall not be steeper than a ratio of 1:20 (5%).

5.6.4.5 Handrail

The handrail of a moving walkway shall be luminance-contrasted with the surrounding surface.

5.6.4.6 Illumination

Moving walkways shall be illuminated to at least 100 lx at the treadway surface.

5.6.4.7 Audible indication

An audible indication shall

- a) be provided to warn riders that the moving walkway is ending; and
- b) have a signal, measured at the annunciator, at least 10 dBA above the ambient noise level.

5.7 Emergency

5.7.1 Visible alarms

Visible alarms shall consist of lights that

- a) flash in conjunction with the audible emergency alarm;
- b) have a flash rate within the frequency range of 1 to 3 Hz;
- c) are synchronized to flash in unison;
- d) are placed so that a signal from at least one alarm is visible throughout any enclosed space; and
- e) are significantly brighter than the ambient light.

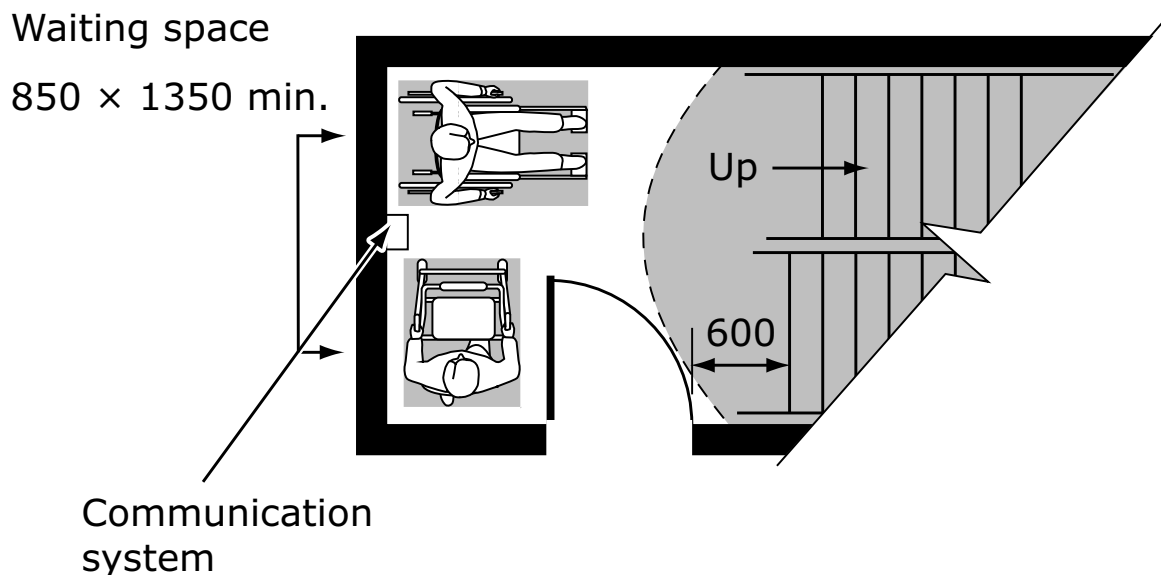
5.7.2 Areas of refuge

5.7.2.1 General

An area of refuge shall

- be of a size that provides for two spaces of at least 850×1350 mm each;
- have a door that complies with Clauses 5.2.1, 5.2.6, and 5.2.7;
- have a hands-free communication system that is
 - not higher than 1200 mm from the floor; and
 - connected to an emergency response system;
- be separated from the building floor area by a fire separation with a fire-resistance rating at least equal to that required for an exit;
- be smoke-protected; and
- be served directly by an exit or by a firefighters' elevator.

Figure 36
Example of area of refuge
 (See Clause 5.7.2.1.)



Note: All dimensions are in mm.

5.7.2.2 Emergency signage

5.7.2.2.1 Area of refuge

An area of refuge shall

- a) be identified by signage that complies with Clause 4.5;
- b) have the evacuation route to it identified by signage
 - i) that complies with Clause 4.5; and
 - ii) incorporates the symbols shown in Figure 37 a);
- c) where a horizontal separation is used as an area of refuge, have the evacuation route to it identified by signage that complies with Clause 4.5;
- d) be identified on all publicly displayed evacuation plans; and
- e) be designated in the fire safety / evacuation plan and procedure documents.

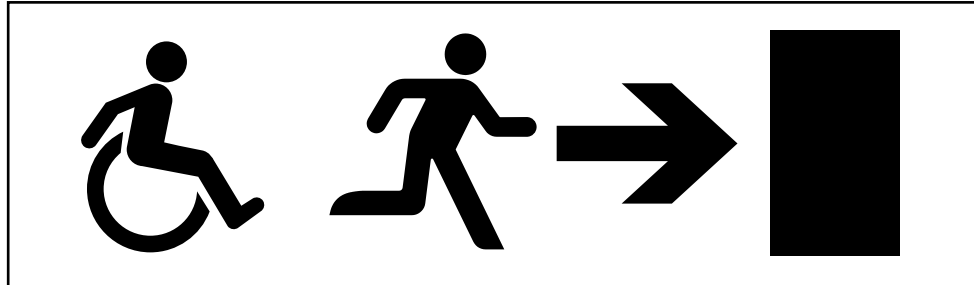
5.7.2.2.2 Accessible egress route

Where the evacuation route is different for people unable to evacuate independently, signs shall be posted indicating the accessible egress route (in accordance with the fire safety / evacuation plans) to

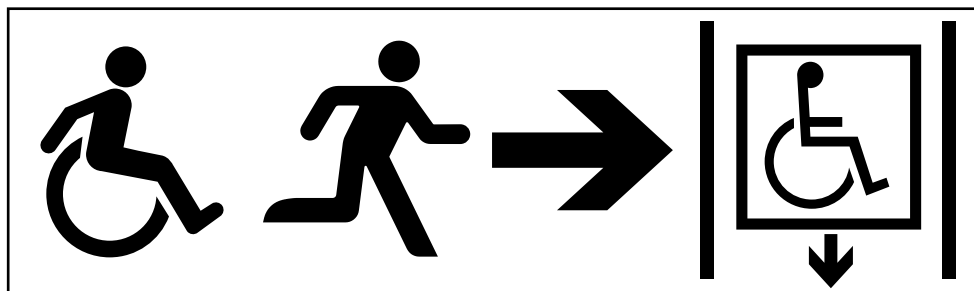
- i) the area of refuge as shown in Figure 37 a);
- ii) the final exit; or
- iii) the accessible egress route to the firefighter's elevator or self-operated accessible evacuation elevator as shown in Figure 37 b).

Plans for signage indicating the accessible egress route shall be included in the fire safety / evacuation plan and procedure documents, and this signage shall also be clearly identified on all publicly displayed evacuation plans.

Figure 37
Directional evacuation signs
 (See Clause 5.7.2.2.2.)



a) Directional evacuation sign to an area of refuge



b) Directional evacuation sign to a firefighters' elevator, or self-operated evacuation elevator

5.7.3 Evacuation plans

An emergency evacuation plan shall

- be mounted with the horizontal centreline 1500 ± 25 mm from the floor;
- be provided in at least a 14 point font;
- be available in alternative formats; and
- have signage that complies with Clause 4.5.

5.7.4 Access to secure areas

5.7.4.1 Security access systems

A security access system shall

- a) be located along the accessible route;
- b) be clearly visible before reaching the door;
- c) be adjacent to a clear floor area, 800 x 1350 mm, that is clear of the door swing but is no further than 1500 mm from it;
- d) where both activation pads and security access systems are used for the same door, comply with Clause 5.2.9.4;
- e) comply with Clause 4.2; and
- f) provide equitable alternative means to allow persons with disabilities through the security system.

5.7.4.2 Card access

5.7.4.2.1 Card reader access

Where a card is required to be inserted into a reader, the reader shall

- a) have the entry slot
 - i) located at a height between 800 and 900 mm from the floor;
 - ii) with its edges bevelled; and
 - iii) colour-contrasted with the surrounding surface;
- b) include tactile graphic symbols on the surrounding surface that
 - i) represent the card; and
 - ii) identify the orientation of the card insertion; and
- c) have both audible (beep) and visible (light) signals to indicate that access has been granted.

5.7.4.2.2 Proximity card access

Where a proximity card reader is used, it shall

- a) be located at a height between 800 and 1200 mm from the floor; and

- b) have both audible (beep) and visible (light) signals to indicate that access has been granted.

5.7.4.3 Keypads

A keypad shall

- a) be located at a height between 800 and 1200 mm from the floor;
- b) be colour-contrasted with the background;
- c) have characters that are colour-contrasted with the keys; and
- d) if numeric, be telephone type and have a raised dot that is centrally located on the number 5 key and has the following dimensions:
 - i) is 0.7 ± 0.1 mm high; and
 - ii) has a base 1.5 mm in diameter.

5.7.4.4 Security gates or screens

Security gates or screens shall

- a) comply with Clause [5.2.12](#); and
- b) where queue systems are used, have both audible (beep) and visible (light) signals to indicate “proceed” and “stop” instructions.

6 Interior facilities

6.1 Drinking fountains

6.1.1 Spouts

A spout shall

- a) have the opening between 750 and 900 mm from the floor (see Figure [38](#));
- b) be located at the front of the unit;
- c) direct the water flow in a trajectory that is parallel or nearly parallel to the front of the unit; and
- d) provide a water flow at least 100 mm high.

6.1.2 Controls

Controls shall

- a) not be foot-operated;
- b) allow the user to control the duration of flow;
- c) comply with Clause 4.2; and
- d) be located either on the front or on both sides of the fountain.

6.1.3 Floor area

A drinking fountain shall have a clear floor area of at least 800 × 1350 mm in front of the unit (see Figure 38).

6.1.4 Colour contrast

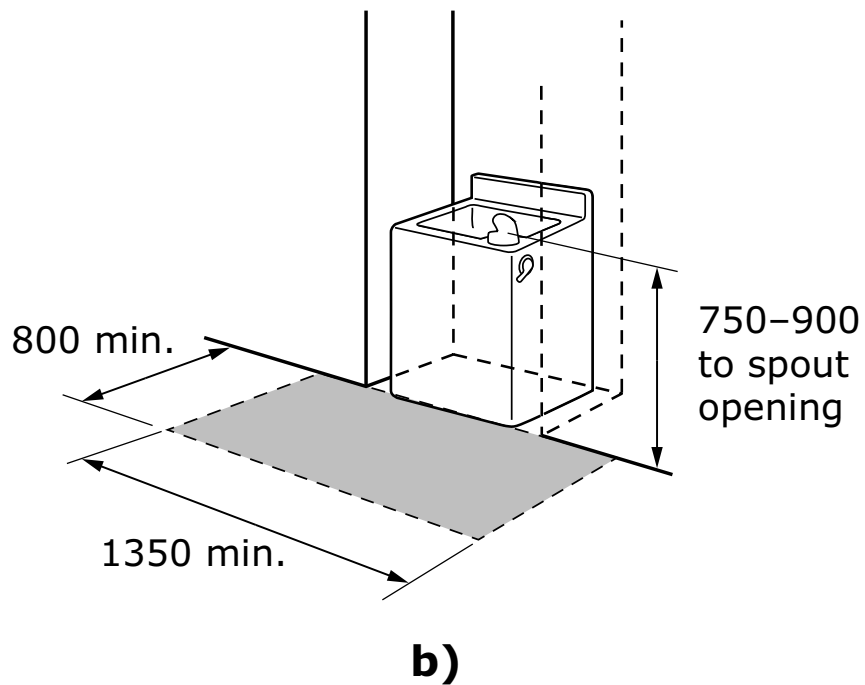
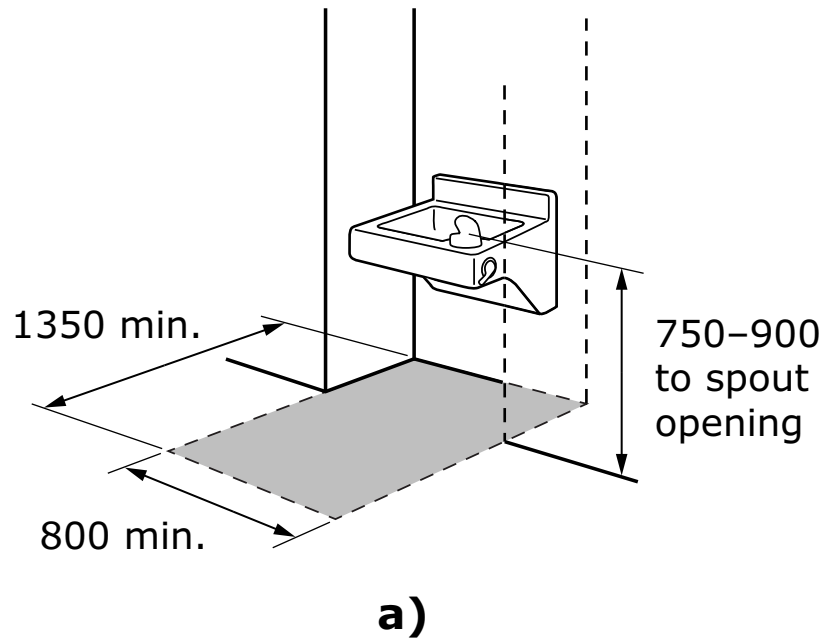
A drinking fountain shall be colour-contrasted with the background.

6.1.5 Cantilevered fountains

A cantilevered drinking fountain shall

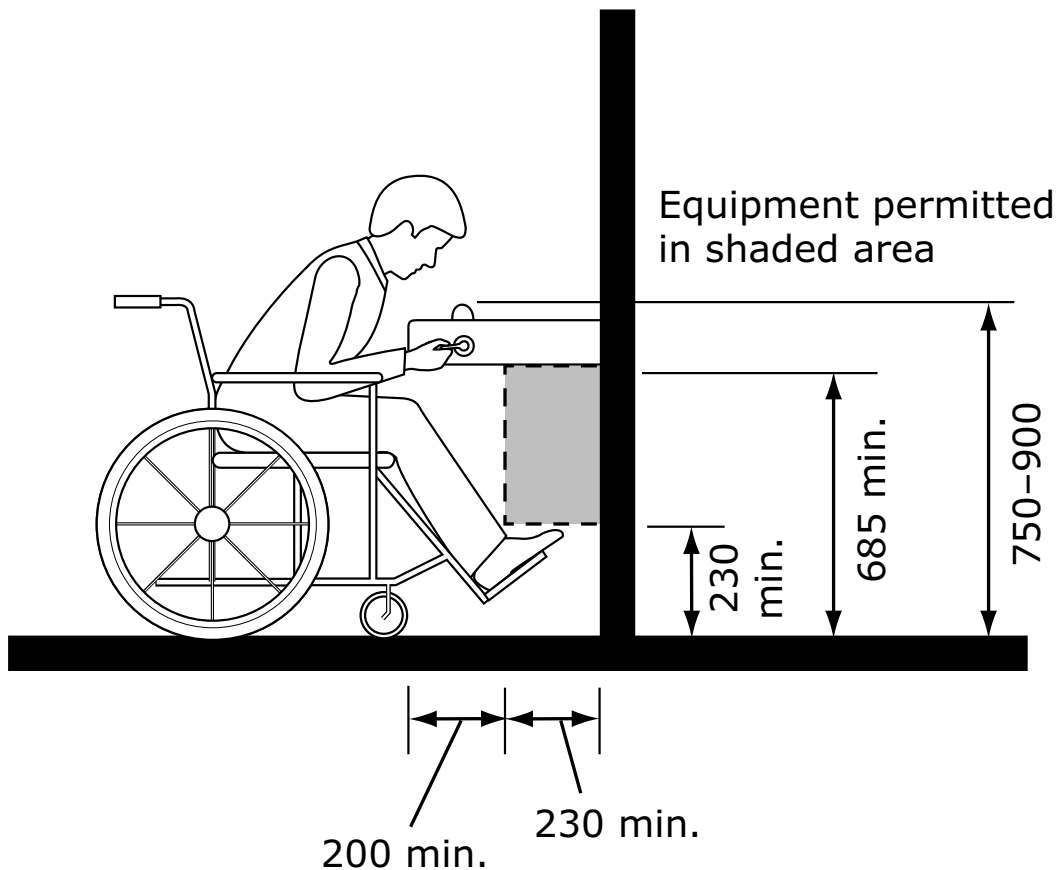
- a) be cane-detectable, recessed, or otherwise located out of the route of travel;
- b) have a knee clearance between the bottom of the apron and the floor at least 800 mm wide × 200 mm deep × 685 mm high (see Figure 39); and
- c) have a toe space at least 800 mm wide × 230 mm deep × 230 mm high.

Figure 38
Recessed drinking fountain
 (See Clauses 6.1.1, 6.1.3, and 8.6.5.)



Note: All dimensions are in mm.

Figure 39
Spout height and knee clearance at cantilevered fountain
 (See Clause 6.1.5.)



Note: All dimensions are in mm.

6.2 Washroom facilities

6.2.1 Identification

Signs at washroom entrances shall

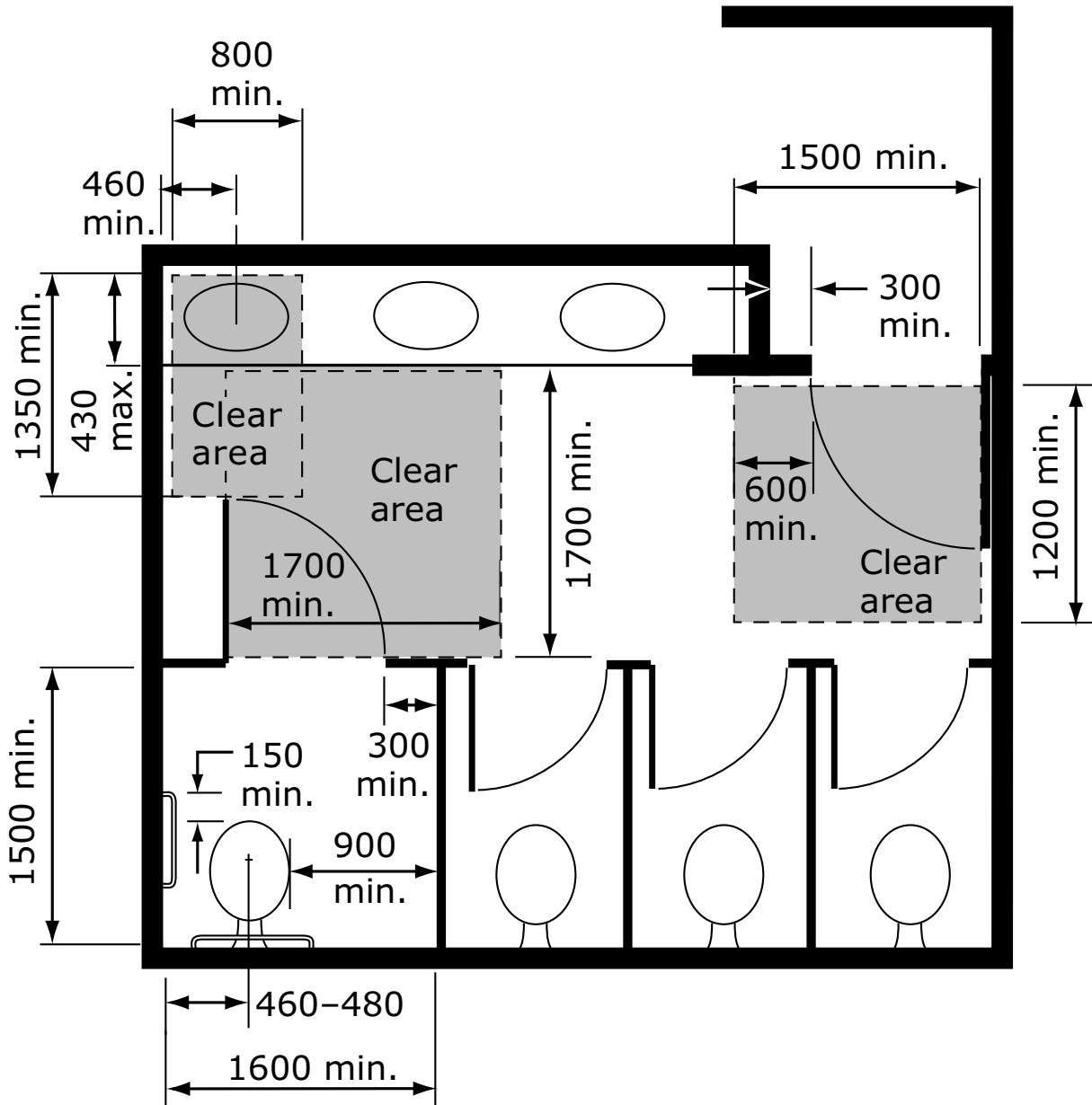
- comply with Clause 4.5;
- not be mounted on a door;
- if there is no door, be mounted on the outside walls, on both sides of the entrance opening; and
- if the washroom is not accessible, indicate the location of the nearest accessible washroom.

6.2.2 Floor area

A clear floor area for maneuvering shall be provided

- a) at the door, if there is one, that complies with Clause 5.2.2;
and
- b) in the interior, at least 1700 × 1700 mm in front of the accessible stall (see Figure 40).

Figure 40
Example of a washroom layout
 (See Clauses 6.2.2 and 6.2.7.2.)



Note: All dimensions are in mm.

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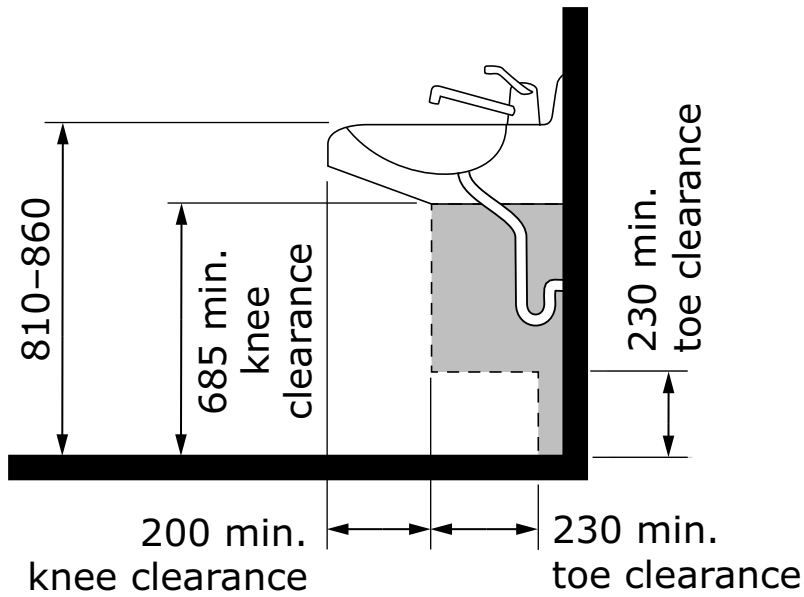
6.2.3 Lavatories

6.2.3.1 General

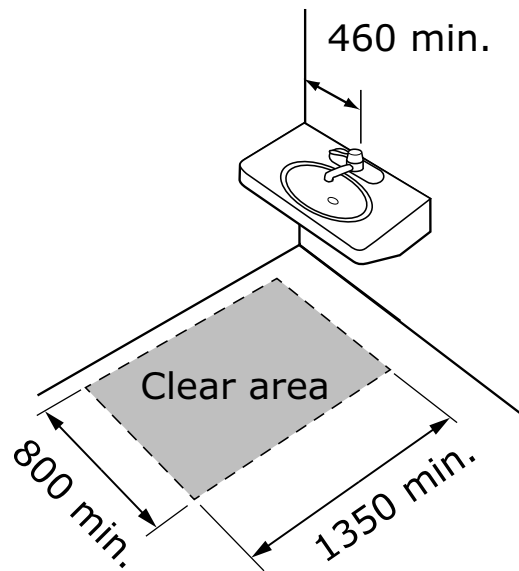
A lavatory shall

- a) be mounted with the centreline at least 460 mm from a side wall;
- b) have the top located between 810 and 860 mm from the floor;
- c) have a knee clearance centred on the lavatory at least 800 mm wide × 200 mm deep × 685 mm high with an additional toe clearance at least 800 mm wide × 230 mm deep × 230 mm high;
- d) have a clear floor area centred on the lavatory at least 800 × 1350 mm, of which not more than 480 mm may be under the lavatory; and
- e) have hot water and drain pipes offset to the rear [see Figure 41 a) and b)].

Figure 41
Lavatory clearances
 (See Clauses 6.2.3.1 and 6.2.3.2.)



a)



b)

Note: All dimensions are in mm.

6.2.3.2 Lavatory counters

A lavatory counter with a front apron shall have a knee clearance centred on the lavatory at least 800 mm wide × 685 mm high [see Figure 41 a) and b)].

6.2.3.3 Faucets

Faucets and other controls shall

- a) comply with Clause 4.2;
- b) not require the application of continuous force to maintain water flow; and
- c) where metered, provide at least 10 s of flow.

6.2.3.4 Water temperature

The temperature of the water supplied to the lavatory shall not exceed 49 °C.

6.2.4 Washroom accessories

6.2.4.1 Operation

The operable parts and controls of at least one of each type of washroom accessory shall comply with Clause 4.2.

6.2.4.2 Mirrors

A mirror shall be mounted with its bottom edge not more than 1000 mm from the floor (see Figure 42).

6.2.4.3 Soap dispensers

Where a soap dispenser is provided at the accessible lavatory, it shall be

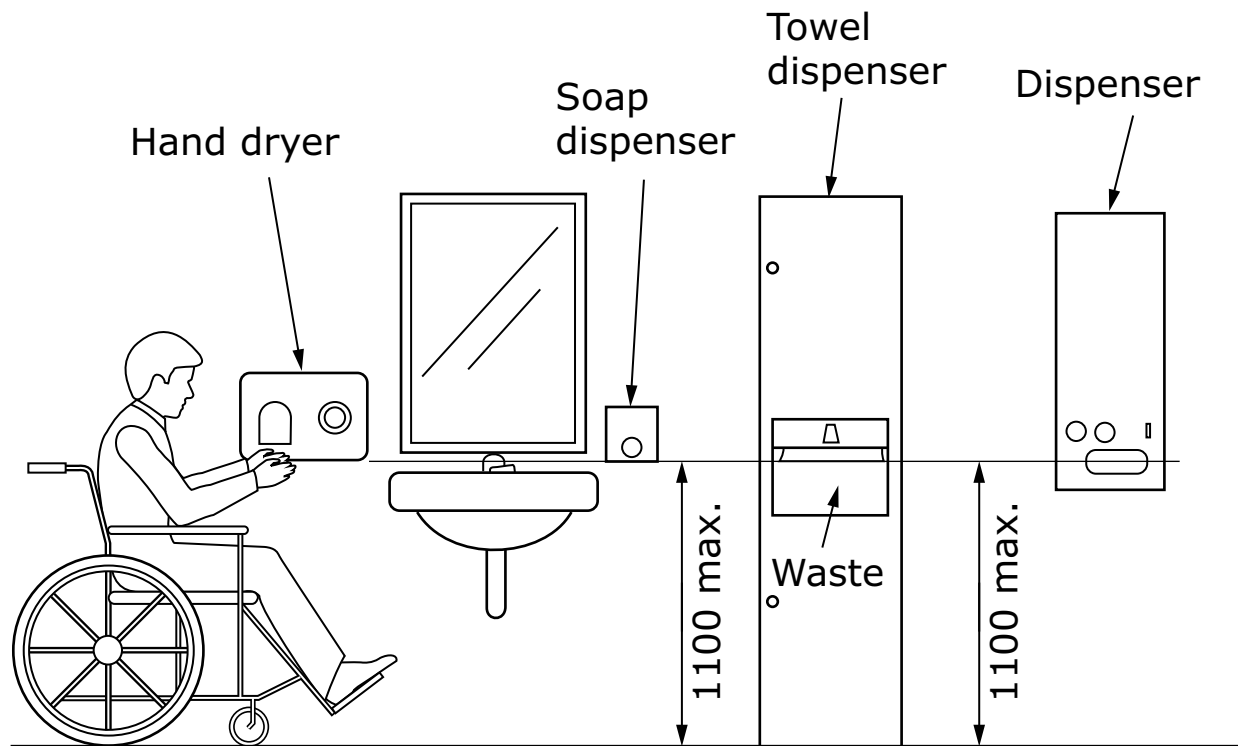
- a) located within a 500 mm reach of a person seated at the lavatory;
- b) located with the dispensing point no higher than 1100 mm; and
- c) operable with one hand to dispense soap on the palm of that hand (see Figure 42).

6.2.4.4 Towel dispensers/hand dryers

A towel dispenser and/or hand dryer adjacent to the accessible lavatory shall be

- located within a 500 mm reach of a person seated at the lavatory;
- no higher than 1100 mm; and
- operable with one hand to dispense towels or activate hand dryer (see Figure 42).

Figure 42
Washroom accessory heights
 (See Clauses 6.2.4.2 – 6.2.4.4.)



Note: All dimensions are in mm.

6.2.5 Grab bars

6.2.5.1 Size and spacing

A grab bar shall

- be slip-resistant;

- b) have a diameter between 30 and 40 mm;
- c) where mounted adjacent to a wall, have a space between 35 and 45 mm between the wall and the grab bar; and
- d) not rotate within its fittings.

6.2.5.2 Structural strength

A grab bar shall be installed to resist a force of at least 1.3 kN applied in any direction.

6.2.5.3 Surfaces

A grab bar and adjacent surfaces shall be free of any sharp or abrasive elements.

6.2.6 Toilets

6.2.6.1 Toilet fixtures

A toilet fixture shall have

- a) the top of the seat between 430 and 485 mm from the floor (see Figure 43);
- b) no spring-activated seat;
- c) a back support where there is no seat lid or tank; and
- d) where there is a tank, a tank lid that is securely attached.

6.2.6.2 Location

A toilet shall

- a) be located with its centreline between 460 and 480 mm from an adjacent wall (see Figure 43); and
- b) have a clear transfer space at least 900 mm wide × 1500 mm long on its open side, the width measured from the edge of the toilet bowl (see Figure 44).

6.2.6.3 Controls

Flush controls shall

- a) be automatically activated; or
- b) be hand-operated by a device that
 - i) complies with Clauses 4.2.1, 4.2.3, 4.2.4, 4.2.5, and 4.2.8; and

- ii) is not more than 350 mm from the transfer space side of the toilet.

6.2.6.4 Grab bars

Grab bars that comply with Clause 6.2.5 shall be provided as follows:

- a) There shall be one L-shaped grab bar that is
 - i) mounted on the side wall closest to the toilet; and
 - ii) has horizontal and vertical components that are at least 760 mm long, such that
 - 1) the horizontal component is 760 to 850 mm above the floor; and
 - 2) the vertical component is 150 mm in front of the toilet.
- b) There shall be a horizontal grab bar that is
 - i) mounted on the rear wall (see Figure 43);
 - ii) centred over the toilet (see Figure 43);
 - iii) not less than 600 mm long (see Figure 43); and
 - iv) mounted at the same height as the grab bar on the side wall, except where the toilet has an attached water tank, in which case the grab bar shall be mounted 100 mm above the top of the tank.

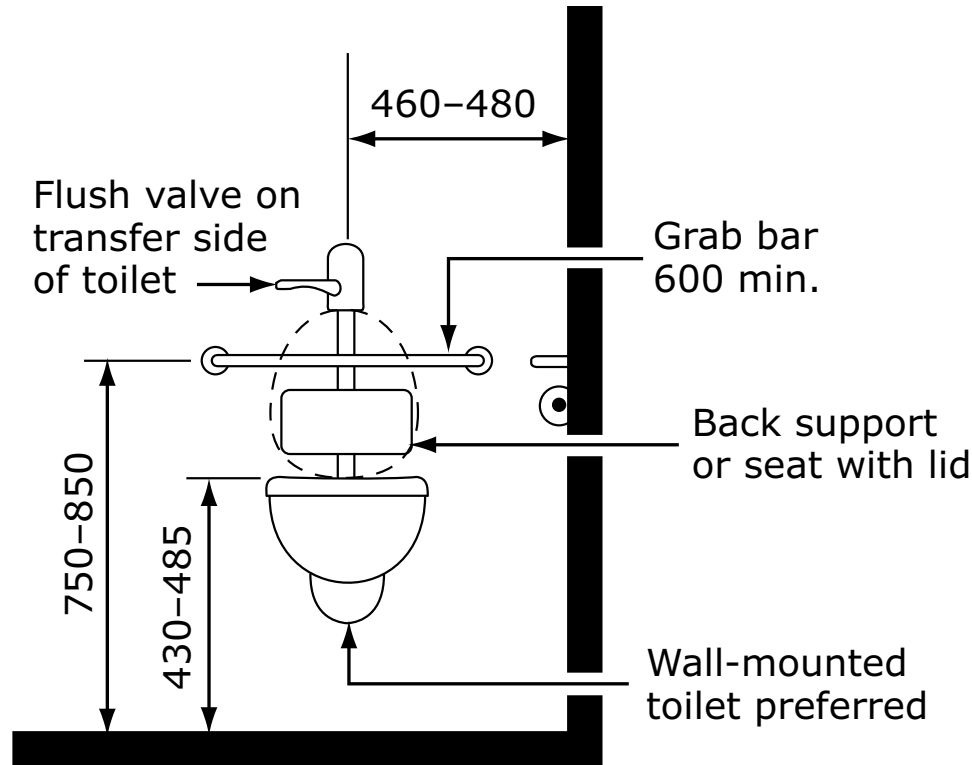
6.2.6.5 Toilet paper dispensers

A toilet paper dispenser shall be located

- a) such that the closest edge of the dispenser is 300 mm from the front of the toilet; and
- b) at a height between 600 and 800 mm from the floor.

Figure 43 Toilet

(See Clauses 6.2.6.1, 6.2.6.2, and 6.2.6.4.)



Note: All dimensions are in mm.

6.2.7 Toilet stalls

6.2.7.1 Accessible toilet stalls

An accessible toilet stall shall have

- internal dimensions at least 1600 mm wide × 1500 mm deep (see Figure 44);
- a toilet complying with Clause 6.2.6;
- a hook on a side wall
 - mounted not more than 1200 mm from the floor; and
 - projecting not more than 40 mm from the wall.

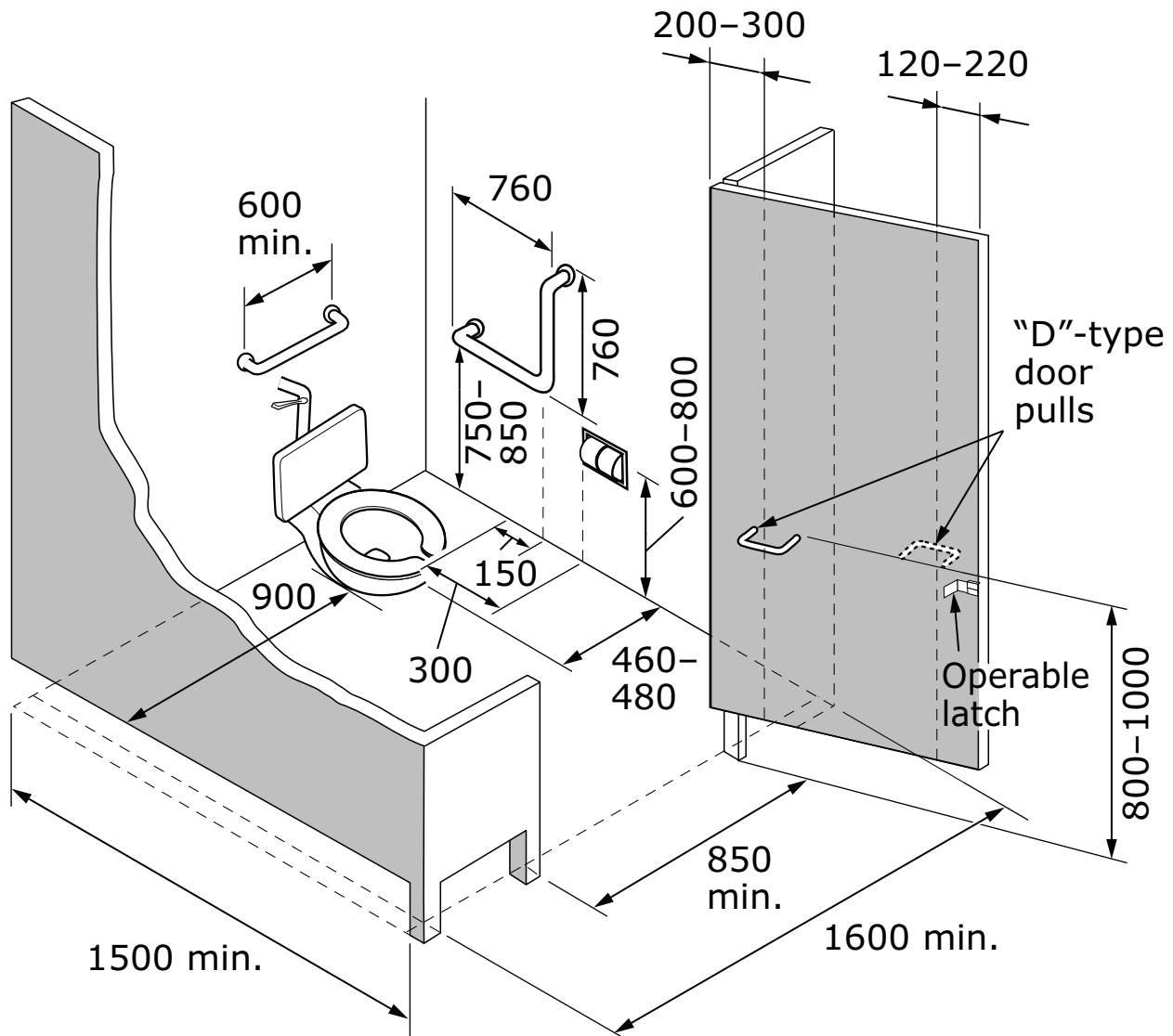
6.2.7.2 Toilet stall doors

Toilet stall doors shall

- a) provide a clear opening of at least 850 mm with the door in the open position;
- b) be aligned with the transfer space adjacent to the toilet, unless the internal dimensions of the toilet stall exceed the minimum values specified in Clause 6.2.7.1 a), such that there is additional manoeuvring area between the door and the transfer space (see Figures 40 and 44);
- c) have a “D”-type door pull at least 140 mm long, mounted horizontally on the inside of an outswinging door
 - i) with its centreline located between 200 and 300 mm from the hinge edge; and
 - ii) at a height between 800 and 1000 mm from the floor (see Figure 44);
- d) have a “D”-type door pull at least 140 mm long, mounted horizontally on the outside
 - i) with its centreline located between 120 and 220 mm from the latch edge of the door; and
 - ii) at a height between 800 and 1000 mm from the floor;
- e) be self-closing so that when at rest, the door will be ajar not more than 50 mm beyond the jamb;
- f) be latched from the inside by a device that complies with Clause 4.2.4; and
- g) have a clear area at least 1700 × 1700 mm in front of the stall that complies with Clause 5.2.2 (see Figure 40).

Figure 44 Toilet stall

(See Clauses 6.2.6.2, 6.2.6.4, 6.2.7.1, 6.2.7.2, and 6.3.2.)



Note: All dimensions are in mm.

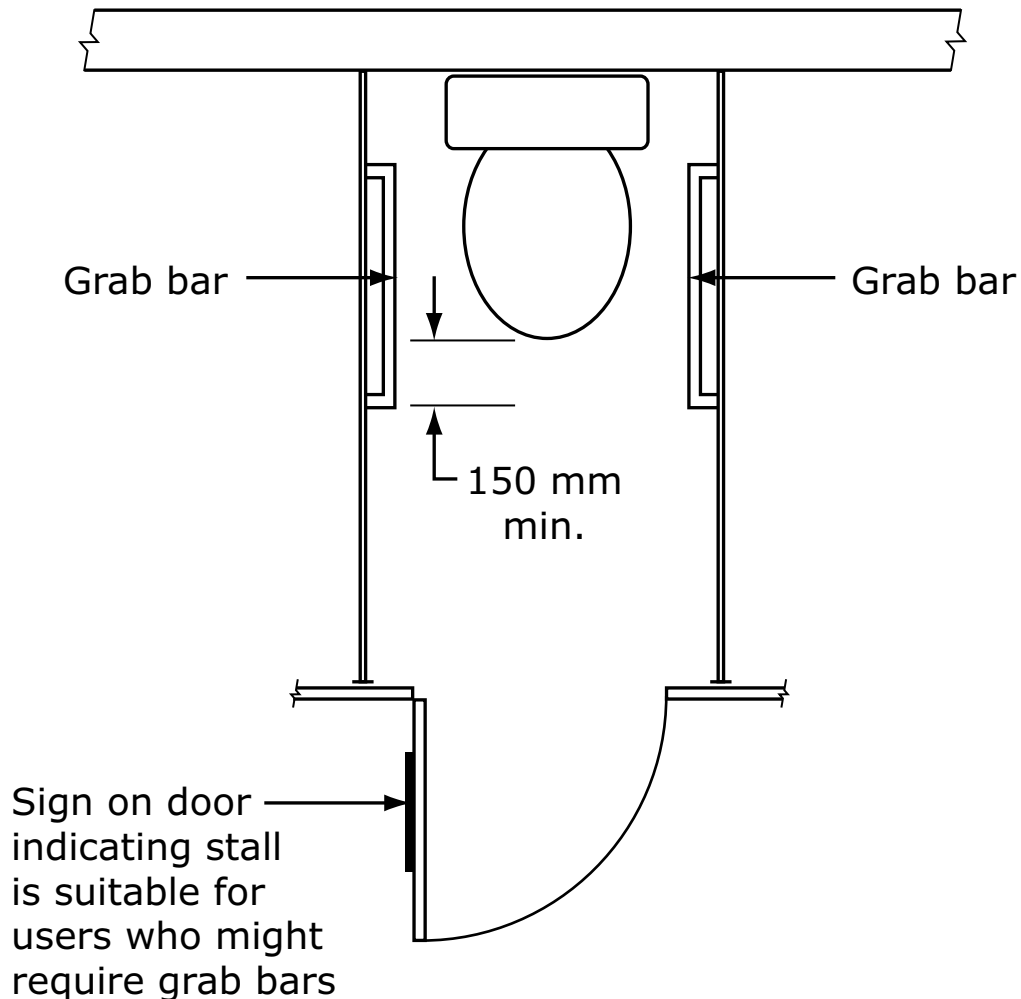
6.2.7.3 Toilet stalls for users with limited mobility

A toilet stall for users with limited mobility (see Figure 45) shall be a standard-sized stall equipped with

- a) horizontal grab bars, one on each side of the fixture, that
 - i) comply with Clause 6.2.5;
 - ii) are at a height between 750 and 850 mm from the floor;

- iii) begin not more than 300 mm from the rear wall; and
- iv) extend at least 450 mm in front of the toilet seat;
- b) a toilet fixture that complies with Clause 6.2.6.1;
- c) a door that
 - i) opens outward;
 - ii) is self-closing so that when at rest, the door will be ajar not more than 50 mm beyond the jamb; and
 - iii) is latched from the inside by a device that complies with Clause 4.2.4; and
- d) a sign on the door that
 - i) complies with Clause 4.5; and
 - ii) indicates that the stall is suitable for users who may require grab bar assistance.

Figure 45
Toilet stall for users with limited mobility
 (See Clause 6.2.7.3.)



Note: All dimensions are in mm.

6.2.8 Urinals

6.2.8.1 General

A urinal shall

- a) be a stall or wall-hung type, with the well located so that
 - i) the lower rim is not higher than 430 mm from the floor; and
 - ii) the upper rim is not lower than 860 mm from the floor;

- b) have a clear floor area in front of the urinal that is
 - i) adjacent to an accessible route;
 - ii) centred on the urinal;
 - iii) at least 800 mm wide x 1350 mm deep; and
 - iv) unobstructed by floor level changes or privacy screens; and
- c) have flush controls that are
 - i) automatically operated; or
 - ii) hand-operated, complying with Clauses 4.2.3 and 4.2.4.

6.2.8.2 Grab bars

Grab bars that comply with Clause 6.2.5 shall be

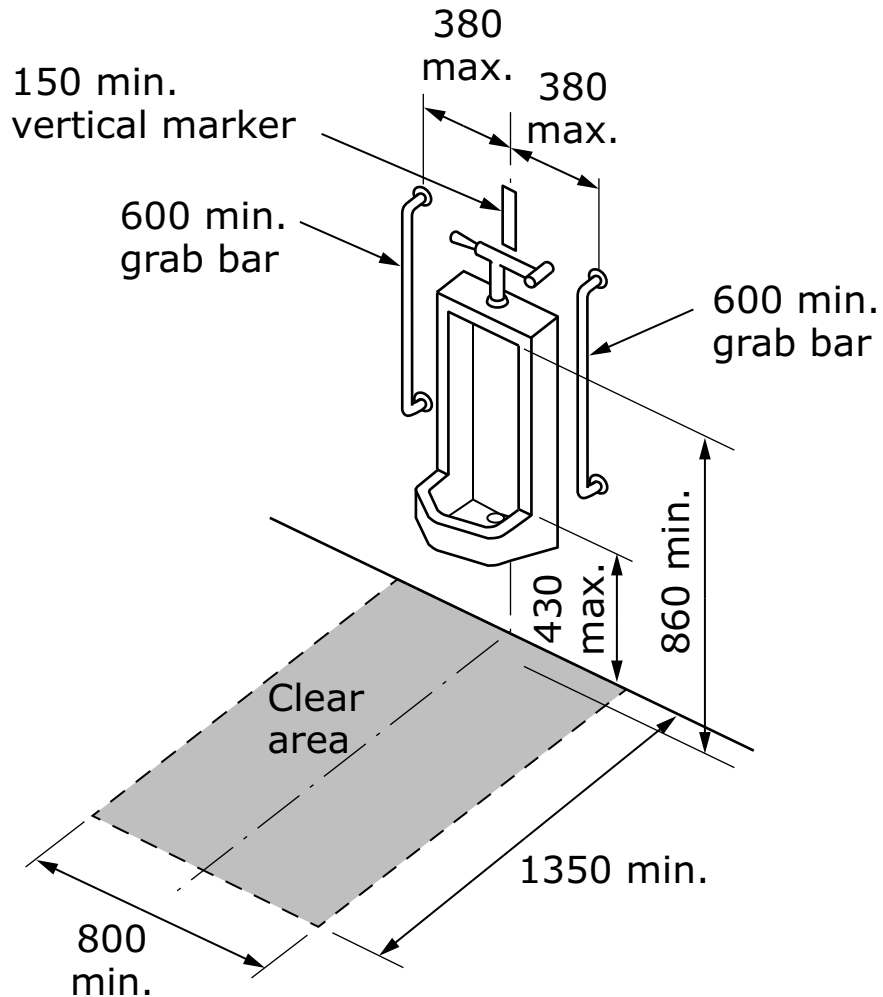
- a) at least 600 mm long;
- b) mounted vertically on the back wall
 - i) at each side of the urinal;
 - ii) not more than 380 mm from the centre of the urinal; and
 - iii) with the centre line 1000 mm from the floor; and
- c) colour-contrasted with the back wall (see Figure 46).

6.2.8.3 Centreline indicator

The centreline of a urinal shall be indicated by a vertical element that

- a) is centred on the urinal;
- b) extends to a height of at least 1300 mm from the floor, but never less than 150 mm above the upper urinal rim;
- c) is at least 50 mm wide;
- d) is raised at least 3 mm from the wall surface; and
- e) is colour-contrasted not less than 70% with the back wall.

Figure 46
Urinal
(See Clause 6.2.8.2.)



Note: All dimensions are in mm.

6.3 Universal washrooms

6.3.1 General

6.3.1.1

Where a universal washroom containing a single toilet and lavatory is provided, it shall

- provide a clear area of at least 1700 × 1700 mm;
- have a lavatory that complies with Clause 6.2.3;

- c) have a toilet that complies with Clause 6.2.6; and
- d) be identified by a sign that
 - i) complies with Clause 4.5.6; and
 - ii) shows a male and female pictogram or gender-neutral pictogram and the International Symbol of Access (see Figures 12 and 13).

6.3.1.2

A universal washroom shall be equipped with an emergency call system that can be actuated by a control located inside the washroom, which will activate audible and visual signal devices inside and outside of the washroom. A sign having lettering at least 25 mm and posted above the emergency button shall indicate that signal devices will activate when the button is pushed.

There shall be signage posted outside the washroom with instructions to passersby on how to retrieve the washroom key, open the door, and render assistance in the event of an emergency.

If the door has an electric strike, it shall be automatically released when the alarm button is pressed so that assistance can be provided.

6.3.2 Washroom door

A door to a universal washroom shall

- a) comply with Clause 5.2;
- b) have a locking mechanism on the inside that complies with Clause 4.2.4;
- c) have a power-assisted door opener; and
- d) be capable of being unlocked from the outside in an emergency situation.

6.3.3 Washroom accessories

Accessories in a universal washroom shall

- a) comply with Clause 6.2.4;
- b) include a shelf or counter at least 200 × 400 mm; and

- c) include a coat hook mounted on a side wall
 - i) at a height not more than 1200 mm from the floor; and
 - ii) protruding not more than 40 mm from the wall.

6.3.4 Adult change table

6.3.4.1

An adult change table, where provided, shall

- a) be located on an accessible route;
- b) be at least 760 mm wide × 1830 mm long;
- c) have 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;
- d) have its surfaces free of sharp edges, corners, or abrasive materials;
- e) be easy to clean;
- f) be designed to support a weight of at least 250 kg; and
- g) have a horizontal grab bar that
 - i) complies with Clause 6.2.5;
 - ii) is centred on the long dimension of the bench;
 - iii) is at least 1200 mm long; and
 - iv) is mounted so that it can be used regardless of the bench height adjustment.

6.3.4.2

A transfer space of 900 x 1500 mm adjacent to the adult change table shall be provided.

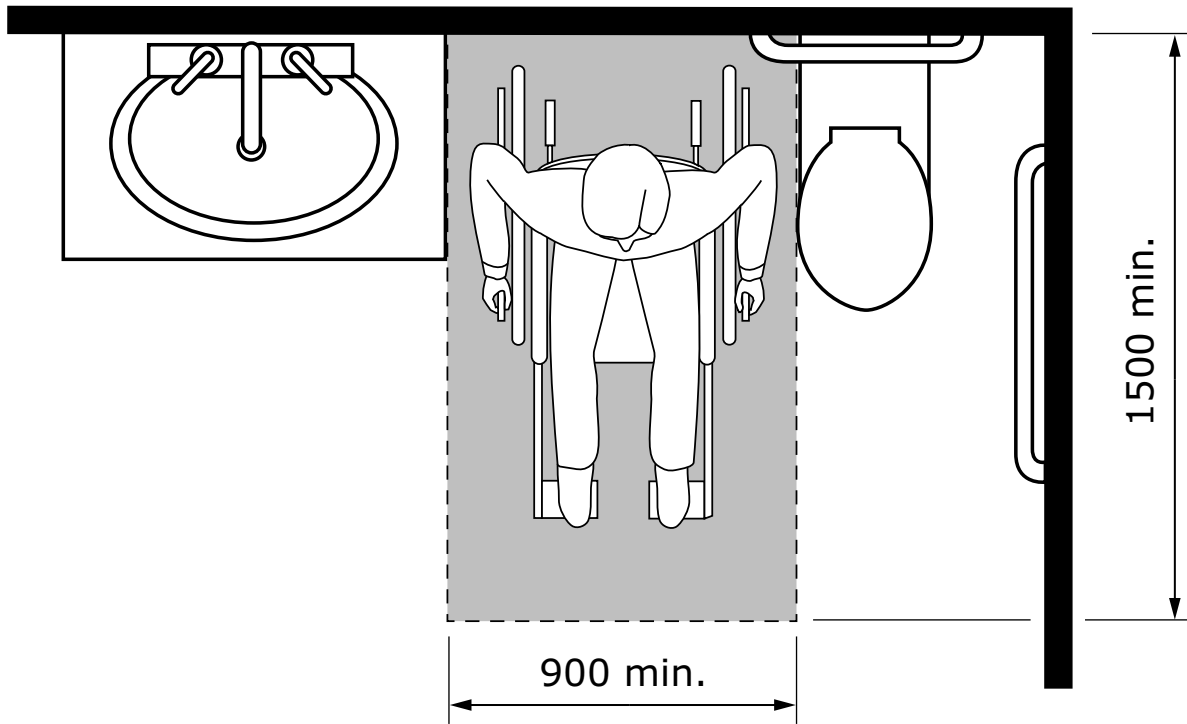
6.3.4.3

An adult change table, whether of the fixed or fold-down type, shall be installed so that it does not encroach into the clear transfer space when it is positioned for use. Controls for the table, if present, shall be no higher than 1200 mm.

6.3.4.4

Personal lifting devices, if provided, shall comply with CAN/CSA-Z10535.1, and shall be installed in accordance with CSA Z10535.2.

Figure 47
Universal washroom
 (See Clause 6.3.1.1.)

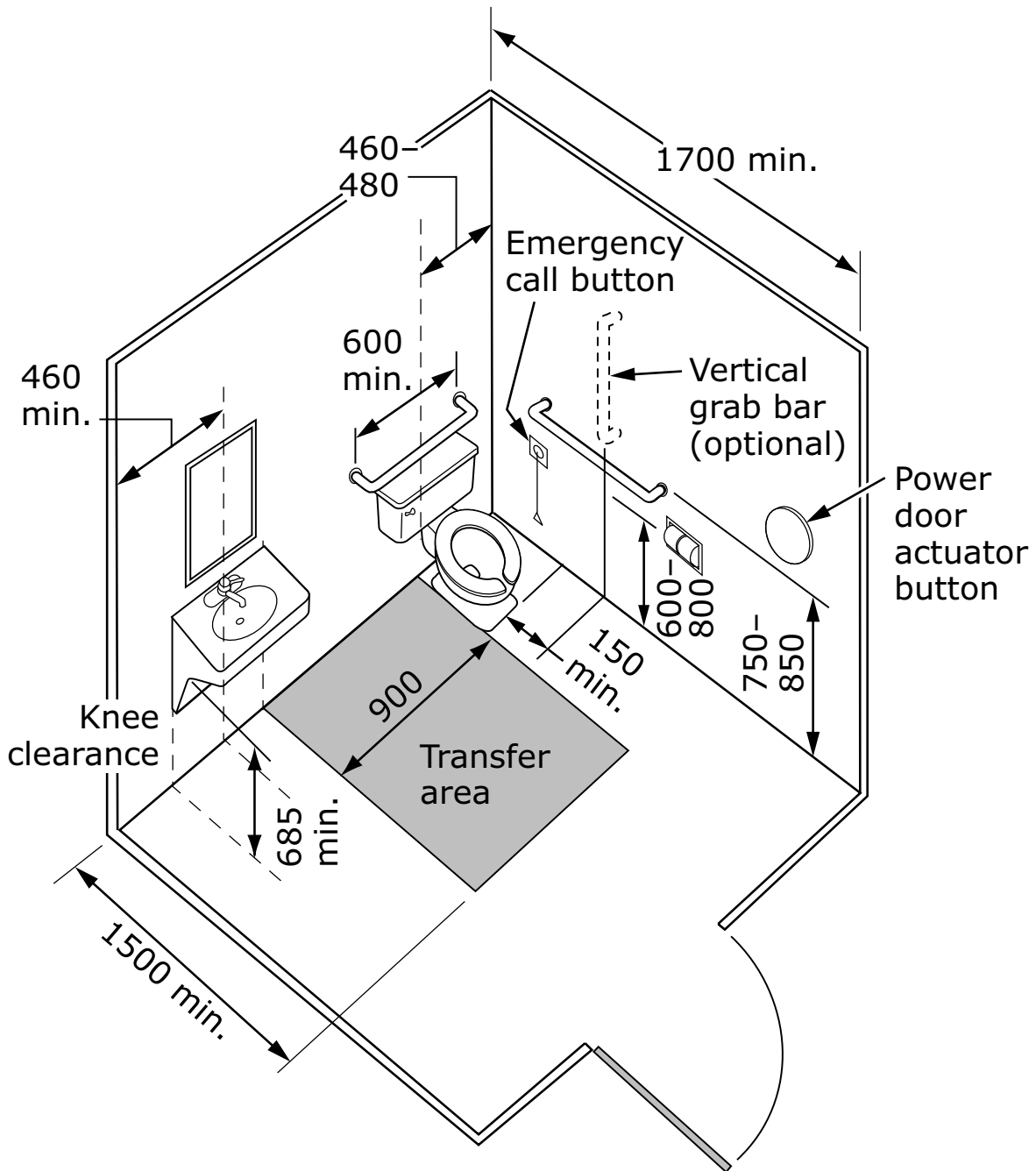


a) Clear transfer space beside toilet

(Continued)

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Figure 47 (Concluded)



b) Example layout

Note: All dimensions are in mm.

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6.4 Change benches

6.4.1 General

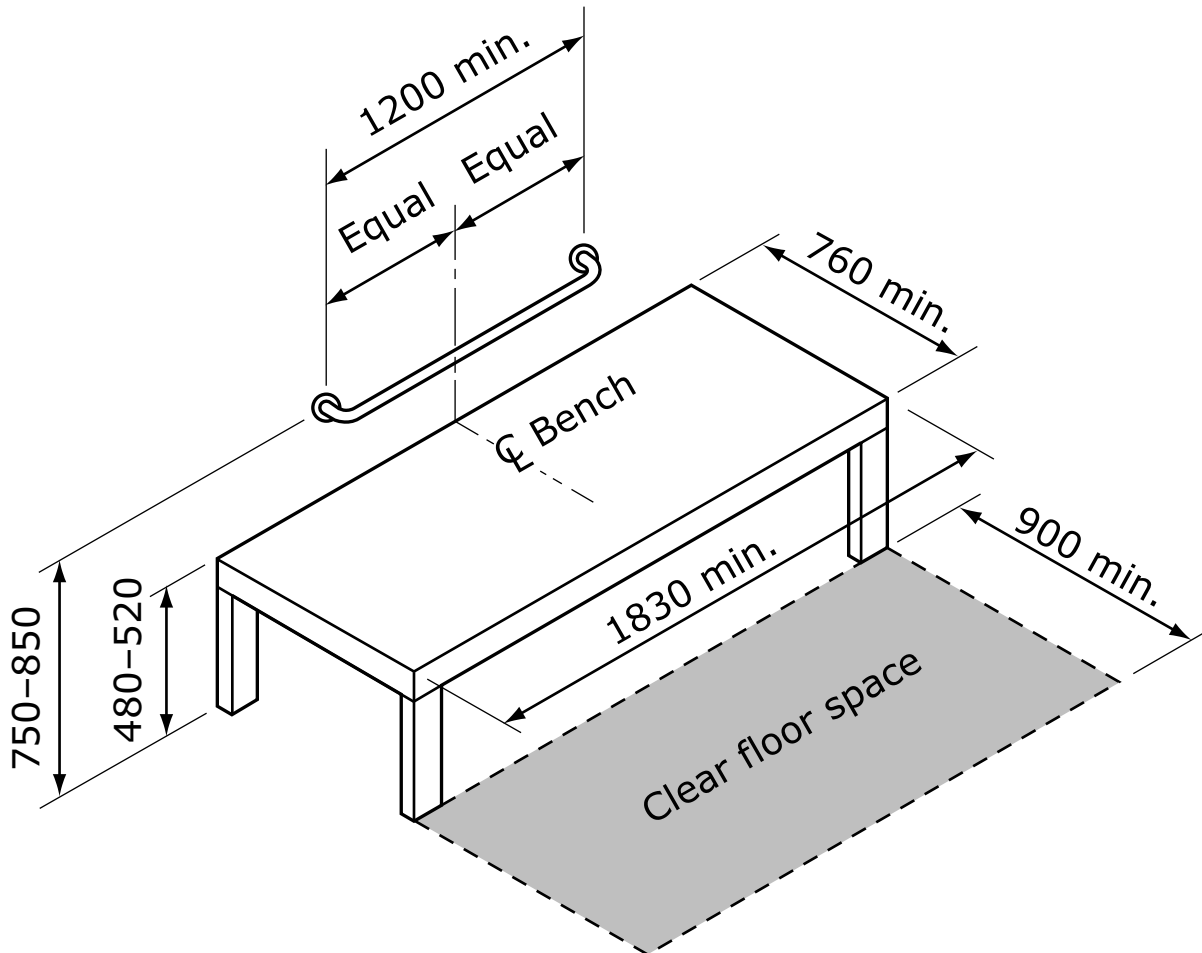
Where a change bench is provided, it shall

- a) be located on an accessible route;
- b) have an adjacent clear floor area at least 900 mm wide the whole length of the bench;
- c) be at least 760 mm wide × 1830 mm long;
- d) have its top surface between 480 and 520 mm from the floor (see Figure 48);
- e) be free of sharp edges or corners, and have no abrasive materials on surfaces;
- f) be easy to clean;
- g) be designed to support a weight of at least 250 kg; and
- h) have a horizontal grab bar that
 - i) complies with Clause 6.2.5;
 - ii) is centred on the long dimension of the bench;
 - iii) is at least 1200 mm long; and
 - iv) is mounted between 750 to 850 mm from the floor.

6.4.2 Transfer space

A transfer space of 900 x 1500 mm adjacent to the change bench shall be provided.

Figure 48
Change bench
 (See Clause 6.4.1.)



Note: All dimensions are in mm.

6.5 Bathing facilities

6.5.1 Water temperature

The temperature of the water supplied to the shower or bathtub shall not exceed 49 °C.

6.5.2 Showerheads

A showerhead shall

- be of the handheld type;
- be provided with a hose at least 1800 mm long;

- c) allow use in a fixed position;
- d) be mounted vertically
 - i) to be adjustable between 1200 and 2030 mm from the floor; and
 - ii) to not obstruct the use of the grab bars; and
- e) be protected with a valve in compliance with ASSE 1016/ASME A112.1016/CSA B125.16.

6.5.3 Enclosures

Doors or curtains for shower stalls shall not obstruct the controls or the transfer space.

6.5.4 Shower floors

The shower floor shall

- a) be slip-resistant even when wet; and
- b) slope minimally to provide positive drainage.

6.5.5 Roll-in shower stalls

6.5.5.1 Shower area

Roll-in shower stalls shall have an interior clear area of at least 900 × 1500 mm.

6.5.5.2 Access area

A clear floor area in front of the shower entrance shall be at least 900 × 1500 mm, with the 1500 mm dimension parallel to the shower entrance (see Figure 49).

6.5.5.3 Grab bars

In a roll-in shower (see Figure 49), four grab bars that comply with Clause 6.2.5 shall be mounted as follows:

- a) one horizontally on a side wall
 - i) at least 600 mm in length; and
 - ii) between 750 and 850 mm from the floor;
- b) one vertically on the opposite side wall
 - i) at least 1000 mm in length;
 - ii) with the lower end between 600 and 650 mm from the floor; and

- iii) between 50 and 80 mm from the adjacent clear floor area;
- c) one horizontally on the back wall
 - i) at least 1000 mm in length; and
 - ii) between 750 and 850 mm from the floor; and
- d) one vertically on the back wall
 - i) at least 750 mm in length;
 - ii) with the lower edge between 50 and 60 mm above the horizontal grab bar in Item c); and
 - iii) located between 400 and 500 mm from the side wall on which the other vertical grab bar is mounted.

6.5.5.4 Controls

Faucets and controls for roll-in shower stalls shall

- a) comply with Clause [6.2.3.3](#);
- b) be mounted in the centre on the back wall above the grab bar; and
- c) be not more than 1200 mm from the floor.

6.5.5.5 Thresholds

A threshold at the entrance to a roll-in shower shall

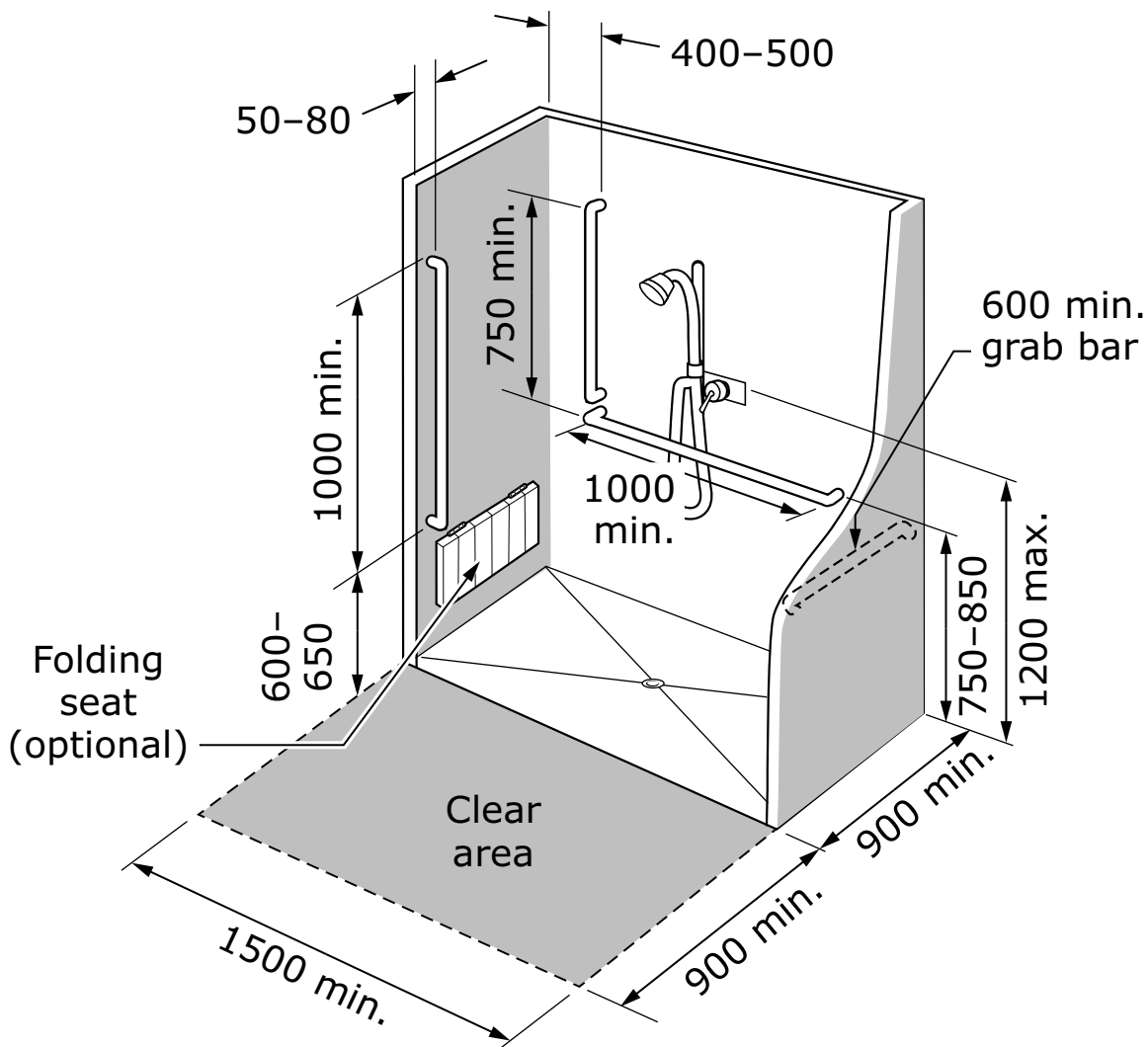
- a) not exceed 13 mm in height; and
- b) if between 7 and 13 mm in height, be bevelled at a slope not steeper than the ratio of 1:2 (50%).

6.5.5.6 Seat

In roll-in shower stalls, if a seat is provided it shall be

- a) on the side wall with the vertical grab bar;
- b) at least 400 mm wide extending the full depth of the stall, less a space allowed for the shower curtain;
- c) with its top between 430 and 485 mm from the floor; and
- d) with a smooth non-slip surface without rough edges.

Figure 49
Roll-in shower stall
 (See Clauses 6.5.5.2 and 6.5.5.3.)



Note: All dimensions are in mm.

6.5.6 Bathtubs

6.5.6.1 Access area

A clear floor area at least 800 mm wide shall be provided in front of the bathtub, along its whole length (see Figure 50).

6.5.6.2 Grab bars

Three grab bars that comply with Clause 6.2.5 shall be mounted as follows:

- a) one horizontally, centred on and along the length of the bathtub, that is
 - i) between 180 and 280 mm above the bathtub rim; and
 - ii) at least 1200 mm in length; and
- b) one vertically, at each end of the bathtub adjacent to the clear floor area,
 - i) whose lower end is between 180 and 280 mm above the bathtub rim;
 - ii) that are at least 1200 mm in length; and
 - iii) that are between 80 and 120 mm from the adjacent clear floor area (see Figure 50).

6.5.6.3 Controls

Faucets and other controls shall

- a) comply with Clause 6.2.3.3;
- b) be located at the foot end of the bathtub between the centreline of the bathtub and the clear floor area; and
- c) be not more than 450 mm above the bathtub rim.

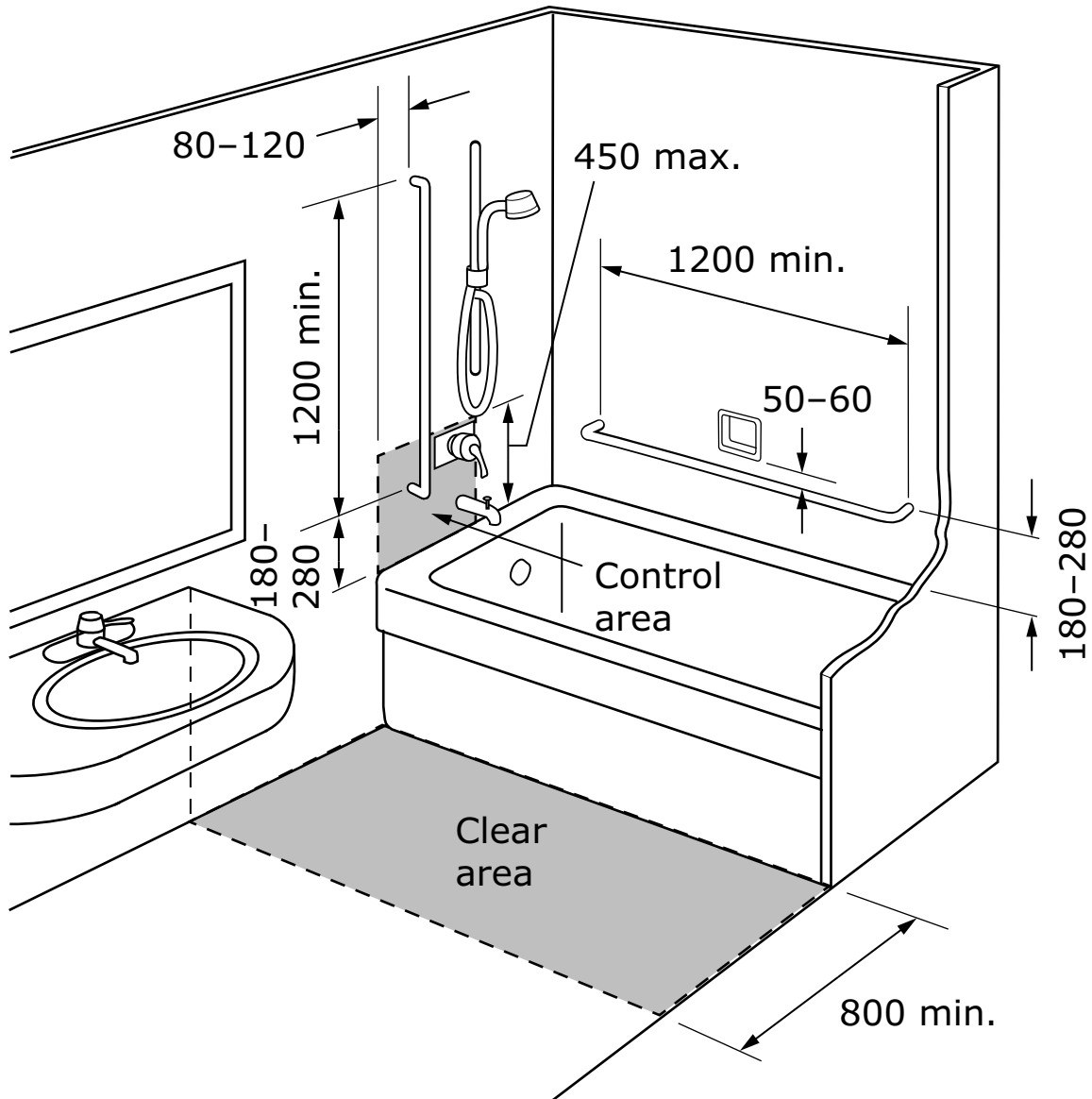
6.5.6.4 Enclosures

Enclosures employing sliding doors or tracks on the rim shall not be provided on bathtubs.

6.5.6.5 Bathtub floor

Bathtubs shall have a slip-resistant floor surface.

Figure 50
Bathtub area and grab bars
 (See Clauses 6.5.6.1 and 6.5.6.2.)



Note: All dimensions are in mm.

6.6 Communications

6.6.1 Assistive listening systems

Where an assistive listening system (ALS) is provided, an induction loop, infrared system, or radio frequency system shall be used.

6.6.2 Public telephones

6.6.2.1 Protruding parts

Telephones, enclosures, and related equipment shall comply with Clause 4.4.

6.6.2.2 Operating devices

A telephone shall have

- a) a keypad and function keys that comply with CSA T516; and
- b) its operable parts, including the coin slot,
 - i) not more than 1370 mm from the floor; or
 - ii) not more than 1200 mm from the floor if the telephone is designed for use by seated persons.

6.6.2.3 Cord length

The handset cord length shall be at least 1000 mm.

6.6.2.4 Illumination

The illumination level measured at the operating devices, directory, and shelf shall be at least 200 lx.

6.6.2.5 Telephones for standing persons

At the telephone, a level shelf shall

- a) be at least 450 mm wide × 300 mm deep;
- b) where no teletypewriter (TTY) or text telephone (TT) is provided, have a clear space above it at least 250 mm high × 225 mm wide [see Figure 52 b)]; and
- c) be at a height between 730 and 860 mm from the floor.

6.6.2.6 Telephones for seated persons

At the telephone, a clear floor area shall

- be at least 800 mm wide × 1350 mm deep, which shall extend not more than 480 mm under the shelf; and
- have a knee clearance between 685 to 730 mm high [see Figure 52 a)].

6.6.2.7 Telephones for persons who are hard of hearing, deafened, deaf, or speech-impaired

6.6.2.7.1 Volume control

A telephone with a volume control shall

- comply with CSA T515;
- have a graduated volume control; and
- be identified by the symbol of accessibility for persons who are hard of hearing (see Figure 51).

Figure 51
Symbols of accessibility for persons who are hard of hearing
 (See Clauses 6.6.1 and 6.6.2.7.1.)

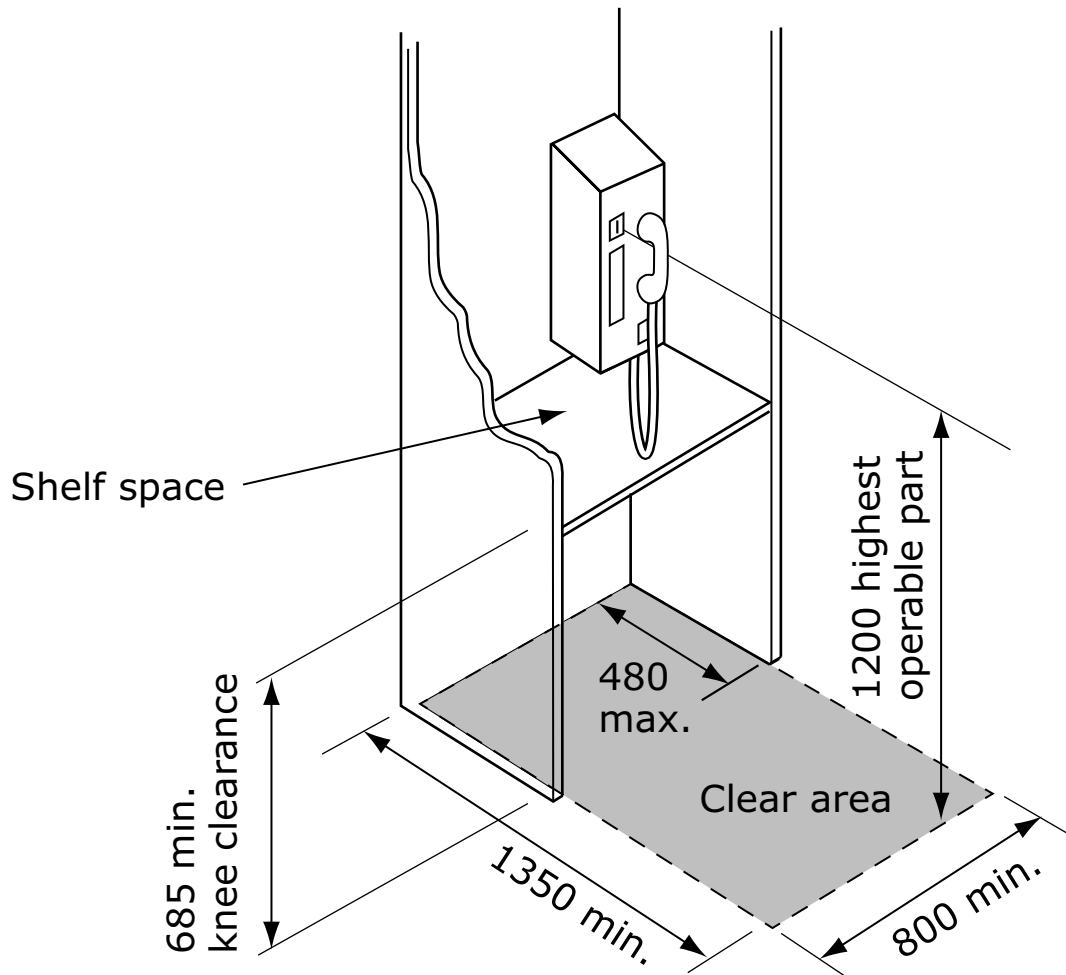


a)



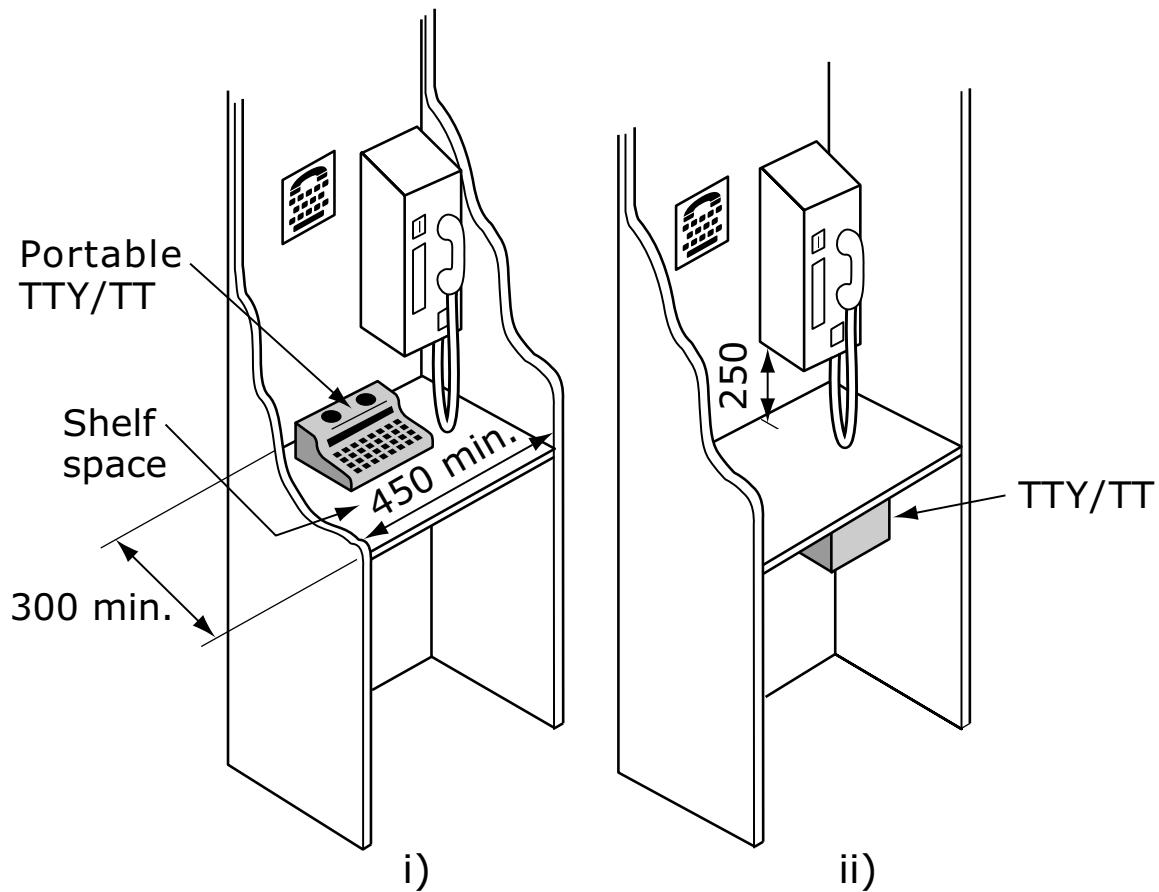
b)

Figure 52
Telephone height and shelf
 (See Clauses 6.6.2.5 and 6.6.2.6.)



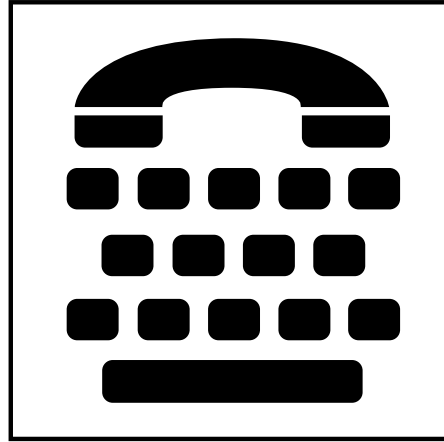
a) Telephone for a seated person

(Continued)

Figure 52 (Concluded)**b) Options for TTY/TT telephones**

Note: All dimensions are in mm.

Figure 53
Symbol for teletypewriter (TTY)
(See Clause 6.6.2.7.2.)



6.6.2.7.2 Identification of teletypewriter

Where a teletypewriter (TTY) or a text telephone (TT) is provided at a public telephone, it shall be identified by the symbol for a TTY (see Figure 53).

6.6.2.8 Directional signs

When directional signs to telephones are provided, they shall include the appropriate symbols of accessibility.

6.7 Seating

6.7.1 Spaces at tables and counters

6.7.1.1 Floor area

A seating space for persons using a wheeled mobility device, such as that provided at counters, tables, or work surfaces, shall have

- a) a clear floor area not less than 800 × 1350 mm [see Figure 54 a) and b)]; and
- b) adequate manoeuvring space to approach it.

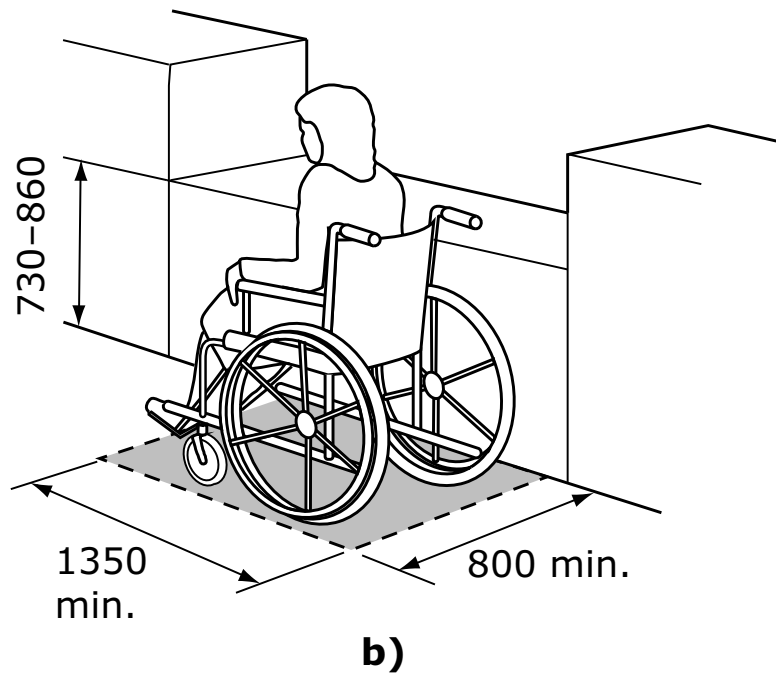
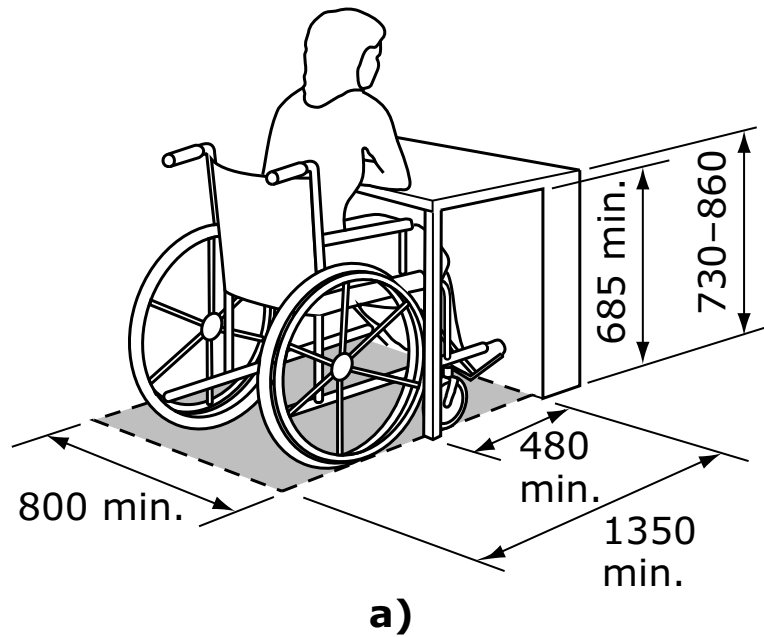
6.7.1.2 Height

A table or counter surface shall be at a height between 730 and 860 mm from the floor.

6.7.1.3 Knee clearance

Where a forward approach is used, the knee clearance shall be at least 800 mm wide × 480 mm deep × 685 mm high, which may overlap the clear floor area by not more than 480 mm [see Figure 54 a)].

Figure 54
Seating at tables and counters
 (See Clauses 6.7.1.1 and 6.7.1.3.)



Note: All dimensions are in mm.

6.7.2 Rest area seating

6.7.2.1 Bench or seat area

A bench or seat area shall

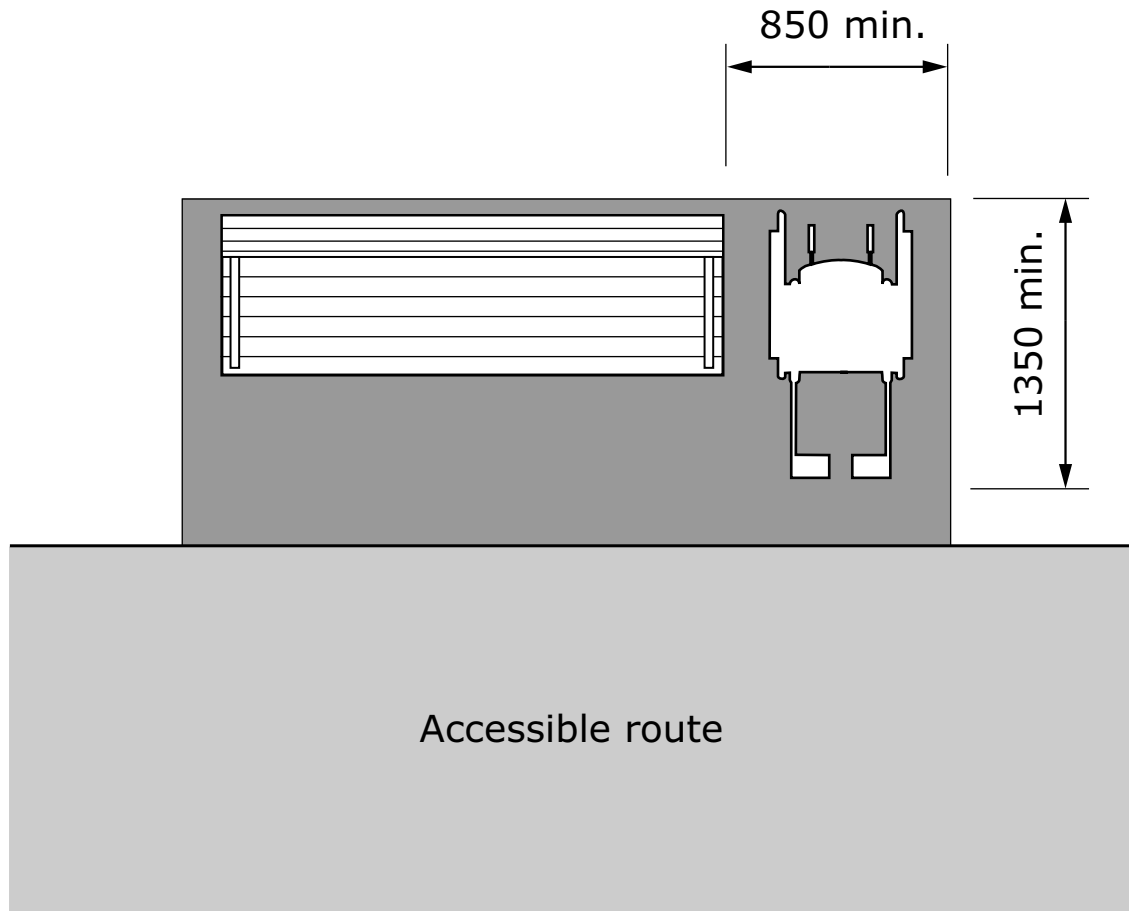
- a) be located adjacent to an accessible route;
- b) have a level and firm surface; and
- c) have an adjacent level and firm area at least 850×1350 mm that is not part of the route of travel.

6.7.2.2 Benches or seats

A bench or a seat shall

- a) be stable;
- b) have a seat height between 430 and 485 mm from the floor; and
- c) where there is more than one, provide a mix of options, i.e., some with back rests, some with arm rests, and some with both.

Figure 55
Bench area
 (See Clauses 6.2.7.1 and 8.6.3.1.)



Note: All dimensions are in mm.

6.7.3 Viewing spaces in assembly areas

6.7.3.1 Floor area

A viewing space for a person using a wheeled mobility device shall have a clear floor area that is

- at least 850 × 1350 mm; and
- on a clear and level surface.

6.7.3.2 Location of viewing spaces

A viewing space for a person using a wheeled mobility device shall

- a) adjoin the accessible circulation routes adjacent to a means of egress;
- b) be an integral part of the seating plan;
- c) be dispersed throughout the seating area on all levels (see Figure 56);
- d) be located adjacent to other seating; and
- e) provide for at least half of the spaces to be placed side by side (i.e., paired).

6.7.3.3 Sight lines

A viewing space for a person using a wheeled mobility device shall provide lines of sight that are

- a) comparable to those for all viewing positions; and
- b) not reduced or obstructed by standing members of the audience (see Figure 57).

6.7.3.4 Adaptable seating

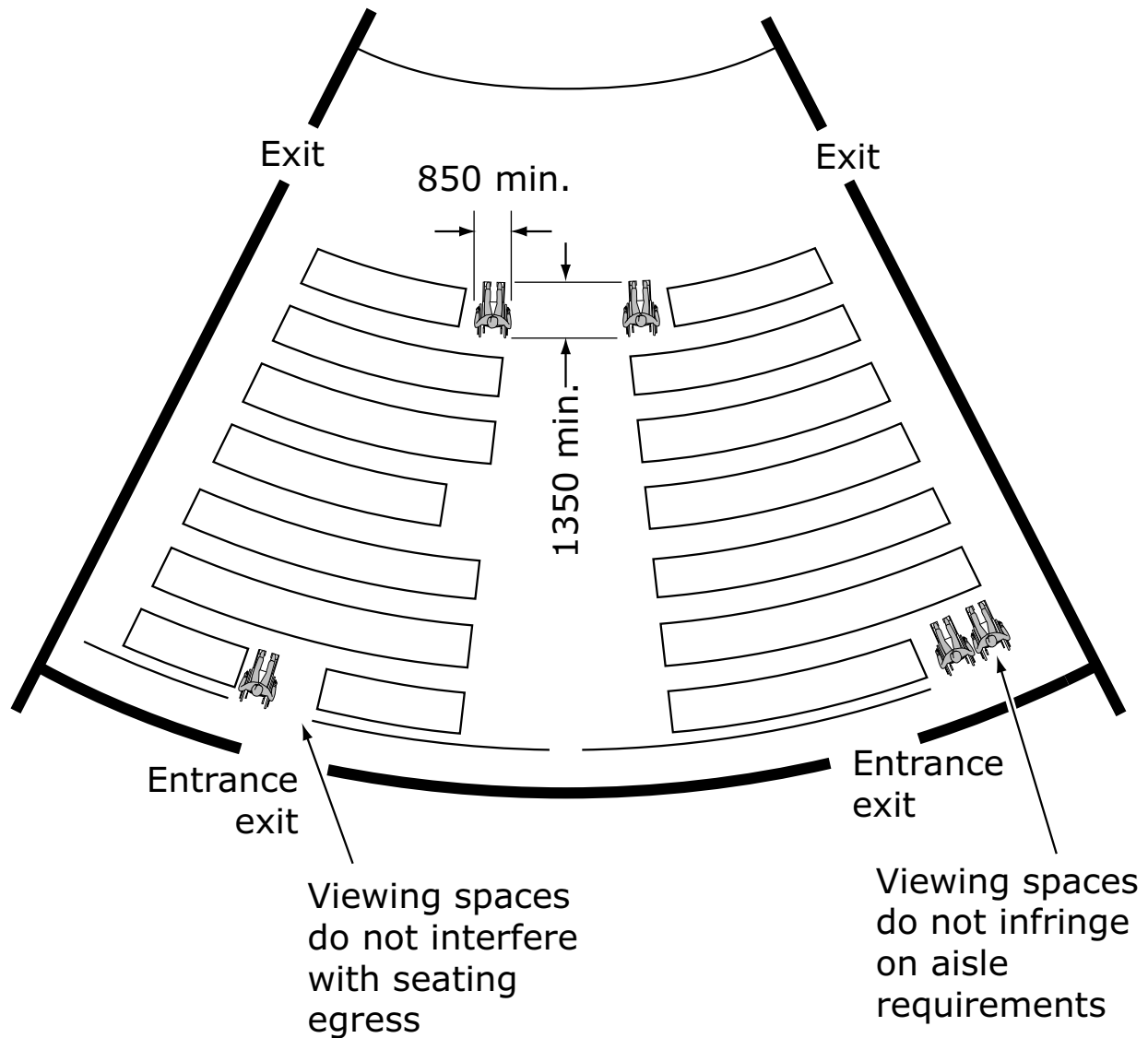
Fixed seats designated for adaptable seating shall be

- a) located adjoining a barrier-free path of travel without infringing on egress from any row of seating or any aisle requirements;
- b) equipped with a movable or removable armrest on the side of the seat adjoining the barrier-free path of travel; and
- c) situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.

Table 6
Number of wheeled mobility device viewing spaces
 (See Clause 6.7.3.3.)

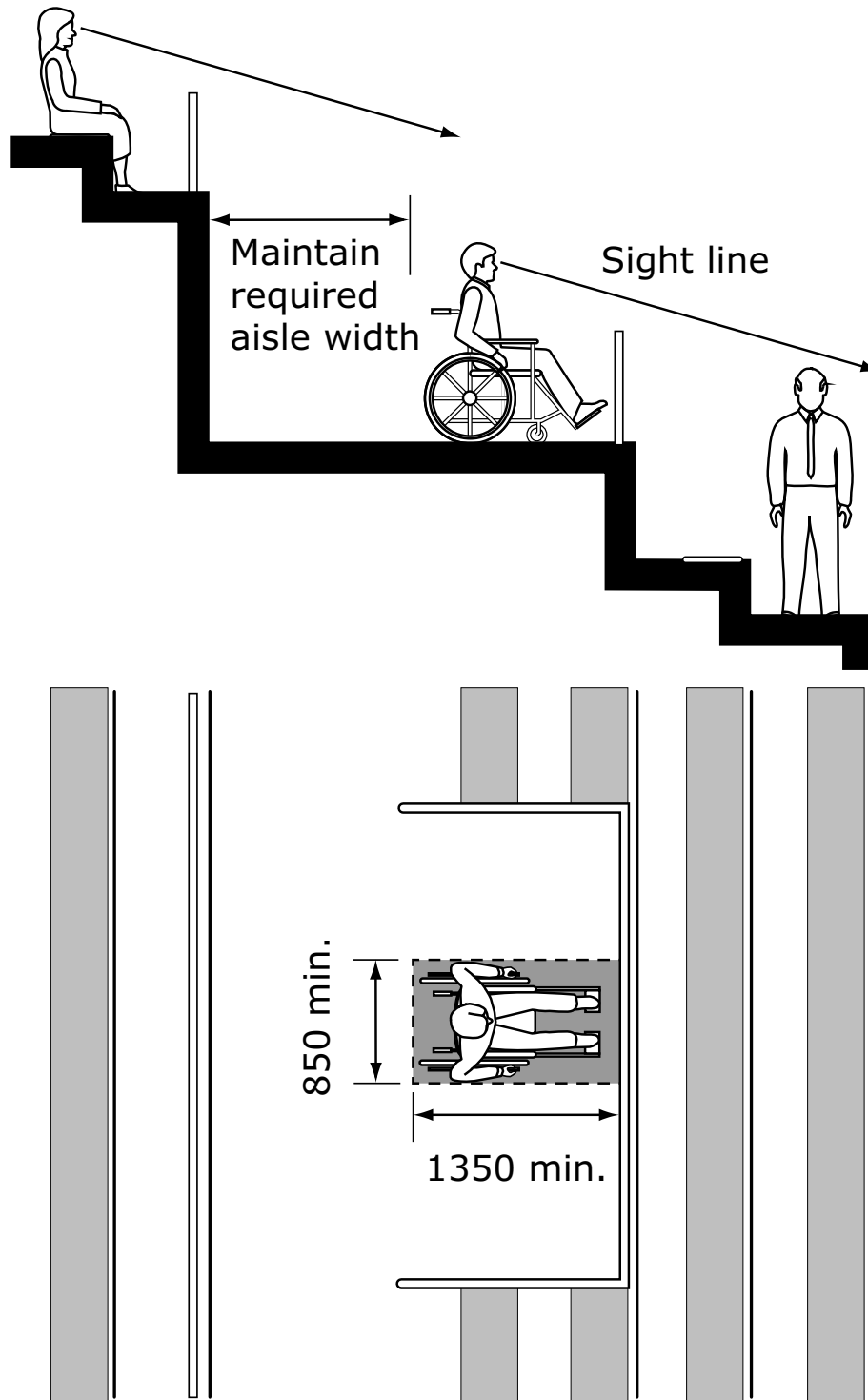
Number of seats	Wheeled mobility device viewing spaces
4 to 25	1
26 to 50	2
51 to 150	4
151 to 300	5
301 to 500	6
501 to 5000	6, plus 1 for each 150, or fraction thereof
Over 5000	36, plus 1 for each 200, or fraction thereof

Figure 56
Assembly area viewing spaces
 (See Clause 6.7.3.2.)



Note: All dimensions are in mm.

Figure 57
Stadium or arena viewing spaces
 (See Clause 6.7.3.3.)



Note: All dimensions are in mm.

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6.8 Dressing rooms, fitting rooms, and locker rooms

6.8.1

Accessible dressing rooms, fitting rooms, and locker rooms shall include

- a) a change bench that complies with Clause 6.4, including access and transfer space requirements;
- b) an emergency call system with appropriate signage, which will activate an indicator light and an audible signal both inside and outside the room, to summon non-emergency customer service assistance if needed (see Clause 6.3.1.2);
- c) an accessible clothing hook
 - i) at a height not more than 1200 mm from the floor; and
 - ii) protruding not more than 40 mm from the wall;
- d) a full length mirror; and
- e) grab bars.

6.8.2

For an individual dressing room, fitting room, or locker room, the door shall either swing out, or if it swings in, there shall be a clear floor space of at least 800 x 1350 mm beyond the door swing inside the room. The clear floor space shall be positioned for parallel approach to the long side of the bench and have room for a 1700 mm diameter turning circle.

6.8.3

If the change bench is not affixed to a wall, then back support shall be provided. Back support shall be at least 1100 mm in length, and extend from a point 50 mm maximum above the seat to a point 450 mm minimum above the seat.

7 Residential accommodation – Permanent and short-term

7.1 General

The requirements of this Clause comprise residential accommodation, which includes

- a) permanent (private use) accommodation in a dwelling unit (e.g., house, semi-detached, duplex, row-house, multi-plex, townhouse, condominium, or apartment) with two possible levels of access, either:
 - i) a visitable dwelling; or
 - ii) an accessible dwelling; and
- b) short-term (public use) accommodation in an accessible bedroom or suite and other common use areas of a hotel/motel, hostel, education residence, or emergency shelter, as well as any other communal residences.

7.2 Design requirements

7.2.1 Common use spaces

In multi-unit residential accommodation, all common use spaces and services shall comply with the applicable sections of Clauses 4, 5, 6, 8, and 9.

7.2.2 Dwelling units

Whether for permanent or short-term accommodation, a dwelling unit shall comply with either

- a) Clause 7.3 for a visitable level of accommodation; or
- b) Clause 7.4 for an accessible level of accommodation.

7.3 Visitable dwelling units

7.3.1 Exterior circulation

7.3.1.1 Exterior route

An exterior route to a visitable unit entrance shall have

- a) a width of at least 1000 mm;

- b) a stable, firm, and slip-resistant surface;
- c) a running slope not steeper than in a ratio of 1:20 (5%), unless designed as a ramp;
- d) a cross slope not greater than in a ratio of 1:50 (2%); and
- e) the side edges either
 - i) have no drop-off, or a slope leading from it not steeper than 1:20; or
 - ii) comply with Clause 5.5.6 where there is a drop-off or a slope steeper than 1:20.

7.3.1.2 Entrance landing

From the accessible route, the visitable entrance landing shall have a level area at least 1700 × 1700 mm.

7.3.2 Entrance door

The visitable entrance door shall have

- a) no step at the door;
- b) a clear opening that complies with Clause 5.2.1; and
- c) a threshold that complies with Clause 5.2.6.

7.3.3 Interior circulation

7.3.3.1 Corridors

On the visitable floor, corridors shall

- a) be at least 1000 mm wide; and
- b) have no level changes requiring steps.

7.3.3.2 Doors

On the visitable floor, doorways shall have

- a) a clear opening that complies with Clause 5.2.1; and
- b) a threshold that complies with Clause 5.2.6.

7.3.4 Washroom

On the visitable floor, a washroom shall be provided with

- a) a door that swings outward or is sliding; and
- b) a clear route to the toilet at least 1000 mm wide.

7.4 Accessible dwelling units

7.4.1 Circulation

7.4.1.1 Parking

Interior, exterior, or covered parking spaces shall have

- a) pedestrian routes that comply with Clause 9.2;
- b) designated parking spaces that comply with Clause 9.4; and
- c) if the spaces serve multiple residences, signage that complies with Clause 9.4.

7.4.1.2 Passenger pick-up areas

Where provided, a passenger pick-up area shall comply with Clause 9.3.

7.4.1.3 Exterior route

An exterior route shall

- a) comply with Clauses 4.3.2 and 7.3.1; and
- b) have a clear width of at least 1600 mm.

7.4.1.4 Changes in level

7.4.1.4.1 Ramps

Where there is a change in level having a slope greater than a ratio of 1:20 (5%), it shall be designed as a ramp that complies with either

- a) Clause 8.2.7 for an exterior ramp; or
- b) Clause 5.5 for an interior ramp.

7.4.1.4.2 Stairs

Stairs shall comply with either

- a) Clause 8.2.8 for exterior stairs; or
- b) Clause 5.4 for interior stairs.

7.4.1.4.3 Elevating devices

Where an elevating device is used to overcome a change in level, it shall comply with either

- a) Appendix E of ASME A17.1/CSA-B44 for elevators and service lifts;
- b) CAN/CSA-B613 for platform lifts within a dwelling; or
- c) CAN/CSA-B335 for an elevating device whose change in level is not more than
 - i) 7000 mm for an enclosed runway; or
 - ii) 2500 mm for an unenclosed runway.

7.4.1.5 Entrances and doors

7.4.1.5.1 Entrance landings

An entrance landing shall

- a) comply with Clause 7.3.1.2; and
- b) be illuminated to a level of at least 50 lx.

7.4.1.5.2 Entrance doors

An entrance door shall

- a) comply with Clause 7.3.2;
- b) have a manoeuvring area that complies with Clause 5.2.2;
- c) have door hardware that complies with Clause 5.2.7; and
- d) have a door-opening force that complies with Clause 5.2.8.

7.4.1.5.3 Signage

All identification and numbers shall comply with Clauses 4.5.1 to 4.5.5.

7.4.1.5.4 Door bells or intercoms

A door bell or intercom system shall

- a) comply with Clause 4.2;
- b) where connected to a security release door opener, have a visual and audible signal at the entrance to indicate a “go ahead”; and
- c) be connected to a communication system within the unit.

7.4.1.5.5 Door viewers

Where a door viewer is installed, a second one shall be located at a height between 1000 and 1200 mm from the floor.

7.4.2 Interior circulation

7.4.2.1 Corridors

A corridor shall

- a) have a clear width of at least 1000 mm;
- b) have no steps or changes in level; and
- c) comply with Clauses 4.3.1, 4.3.2, and 4.3.3.

7.4.2.2 Doors and doorways

Doors shall

- a) comply with Clause 5.2; and
- b) for washroom/bathroom, roll-in closet and general storage, swing outward or be sliding.

7.4.2.3 Floor surfaces

A floor surface shall comply with Clause 4.3.1.

7.4.3 Bathrooms

7.4.3.1 Lavatory

A lavatory shall comply with Clause 6.2.3.

7.4.3.2 Medicine cabinets

A medicine cabinet shall

- a) be adjacent to a clear floor area of at least 800 × 1350 mm (which may include the knee clearance at the lavatory);
- b) be located within a horizontal reach of not more than 500 mm;
- c) have the bottom shelf located not more than 1000 mm from the floor;
- d) have doors and hardware that comply with Clause 4.2.3; and
- e) be illuminated to a level of at least 200 lx.

7.4.3.3 Storage

A bathroom storage shelf shall be located not more than 1100 mm from the floor.

7.4.3.4 Towel bar

A towel bar shall

- a) be installed not more than 1100 mm from the floor; and
- b) have a clear floor area of 800 × 1350 mm located within a horizontal reach of not more than 500 mm.

7.4.3.5 Mirror

A mirror shall comply with Clause [6.2.4.2](#).

7.4.3.6 Toilet

A toilet shall comply with Clauses [6.2.6.1](#), [6.2.6.2](#), and [6.2.6.3](#).

7.4.3.7 Structural support for grab bars

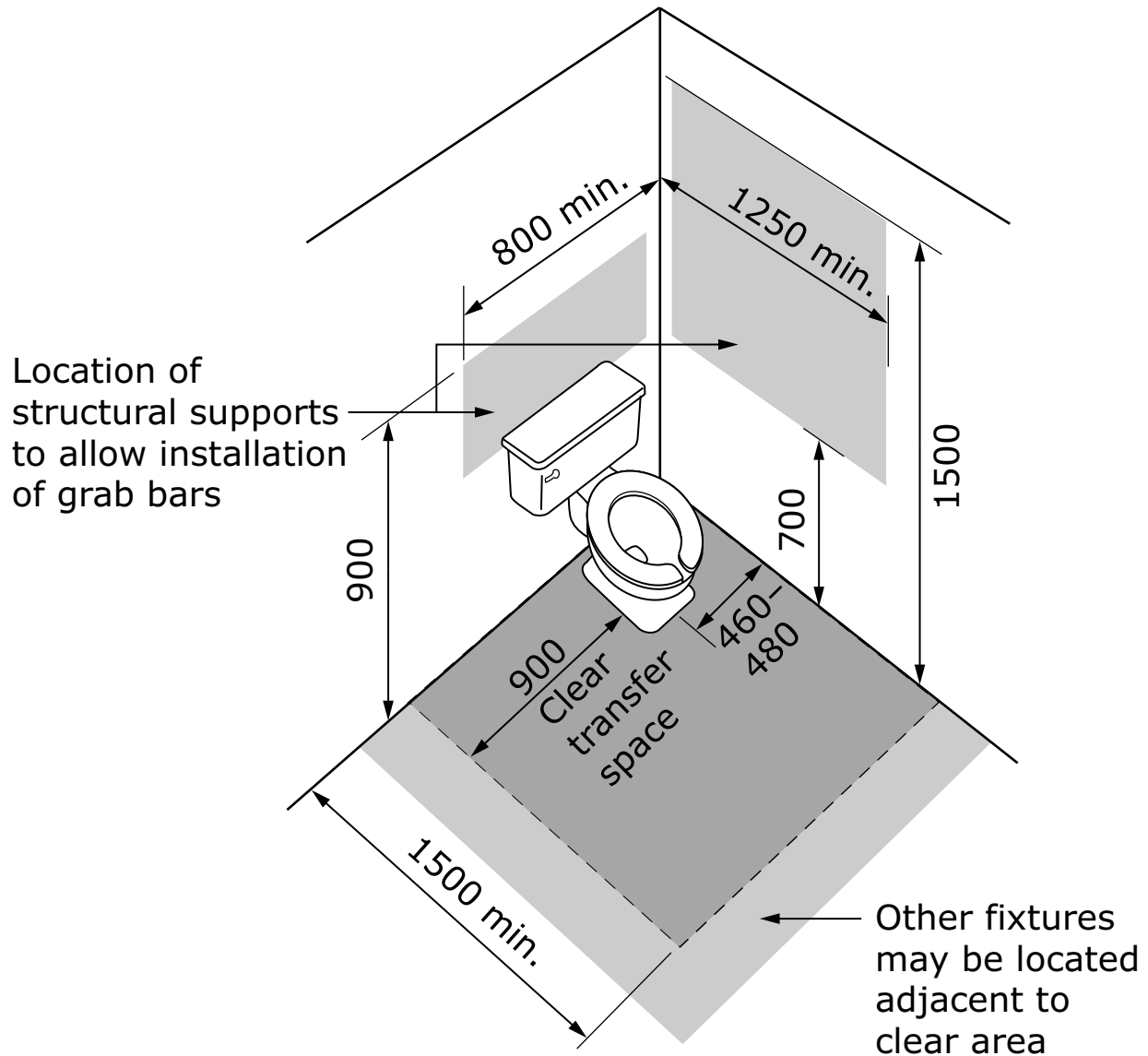
Structural support areas in the walls around the toilet shall be

- a) capable of supporting grab bars to resist a force of at least 1.3 kN applied in any direction;
- b) located in the back wall
 - i) continuous between at least 700 and 900 mm from the floor; and
 - ii) from the corner out to at least 800 mm; and
- c) located in the side wall
 - i) continuous between at least 700 and 1500 mm from the floor; and
 - ii) from the corner out to at least 1250 mm (see Figure [58](#)).

7.4.3.8 Toilet paper dispenser

A toilet paper dispenser shall comply with Clause [6.2.6.5](#).

Figure 58
Toilet access area and structural support in walls
 (See Clause 7.4.3.7.)



Note: All dimensions are in mm.

7.4.3.9 Bathtub

7.4.3.9.1 General

A bathtub shall have

- a length of at least 1500 mm;

- b) unobstructed access along the full length of its open side from an adjacent clear floor area at least 800 mm wide;
- c) faucets and other controls that comply with Clause 6.5.6.3;
- d) a showerhead that complies with Clause 6.5.2; and
- e) water temperature that complies with Clause 6.5.1.

7.4.3.9.2 Structural support for grab bars

Structural support areas in the walls around the bathtub shall be

- a) capable of supporting grab bars to resist a force of at least 1.3 kN applied in any direction; and
- b) continuous around the three walls surrounding the bathtub, from the bathtub rim to the underside of the ceiling.

7.4.3.10 Shower stall

7.4.3.10.1 General

With the exception of grab bar installation, a shower stall shall comply with Clauses 6.5.1 to 6.5.5.

7.4.3.10.2 Structural support for grab bars

Structural support areas in the walls around the shower stall shall be

- a) capable of supporting grab bars to resist a force of at least 1.3 kN applied in any direction; and
- b) continuous around the walls surrounding the shower stall, between at least 700 and 1500 mm from the floor.

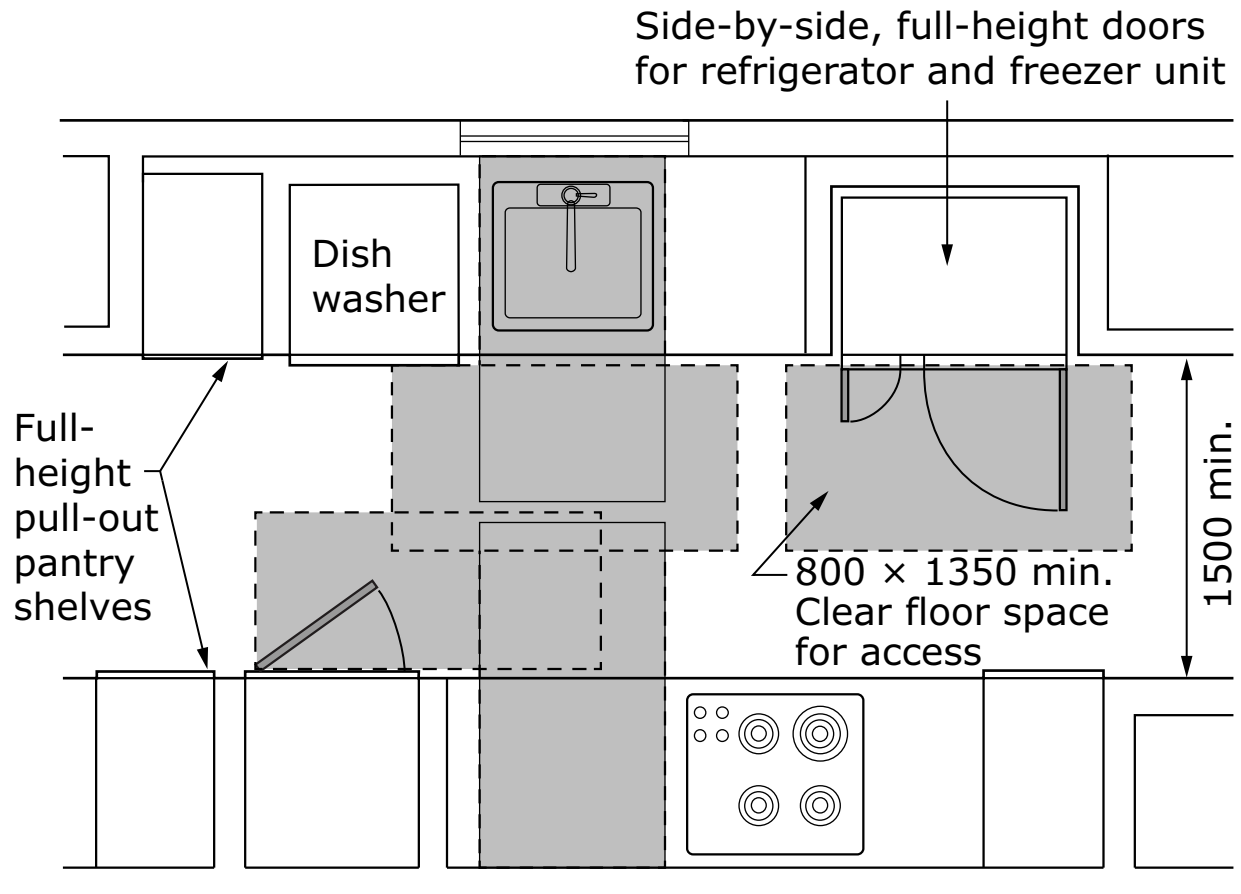
7.4.4 Kitchens

7.4.4.1 Floor area

A clear floor area of at least 800 × 1350 mm shall be provided

- a) directly in front of kitchen fixtures; and
- b) to the one side where drawers or doors open (see Figure 59).

Figure 59
Plan of parallel kitchen
 (See Clause 7.4.4.1.)



Note: All dimensions are in mm.

7.4.4.2 Counters

At least one counter shall

- be at least 800 mm wide × 600 mm deep;
- be at a height between 730 and 860 mm;
- have a clear floor area of at least 800 × 1350 mm, which may extend up to 480 mm underneath the work surface;
- have a knee clearance under the counter at least 800 mm wide × 200 mm deep × 685 mm high with an additional toe clearance at least 800 mm wide × 230 mm deep × 230 mm high (see Figures 60 and 61);
- have no sharp or abrasive surfaces under it; and

f) have electrical outlets at the side or the front of it.

7.4.4.3 Base cabinets

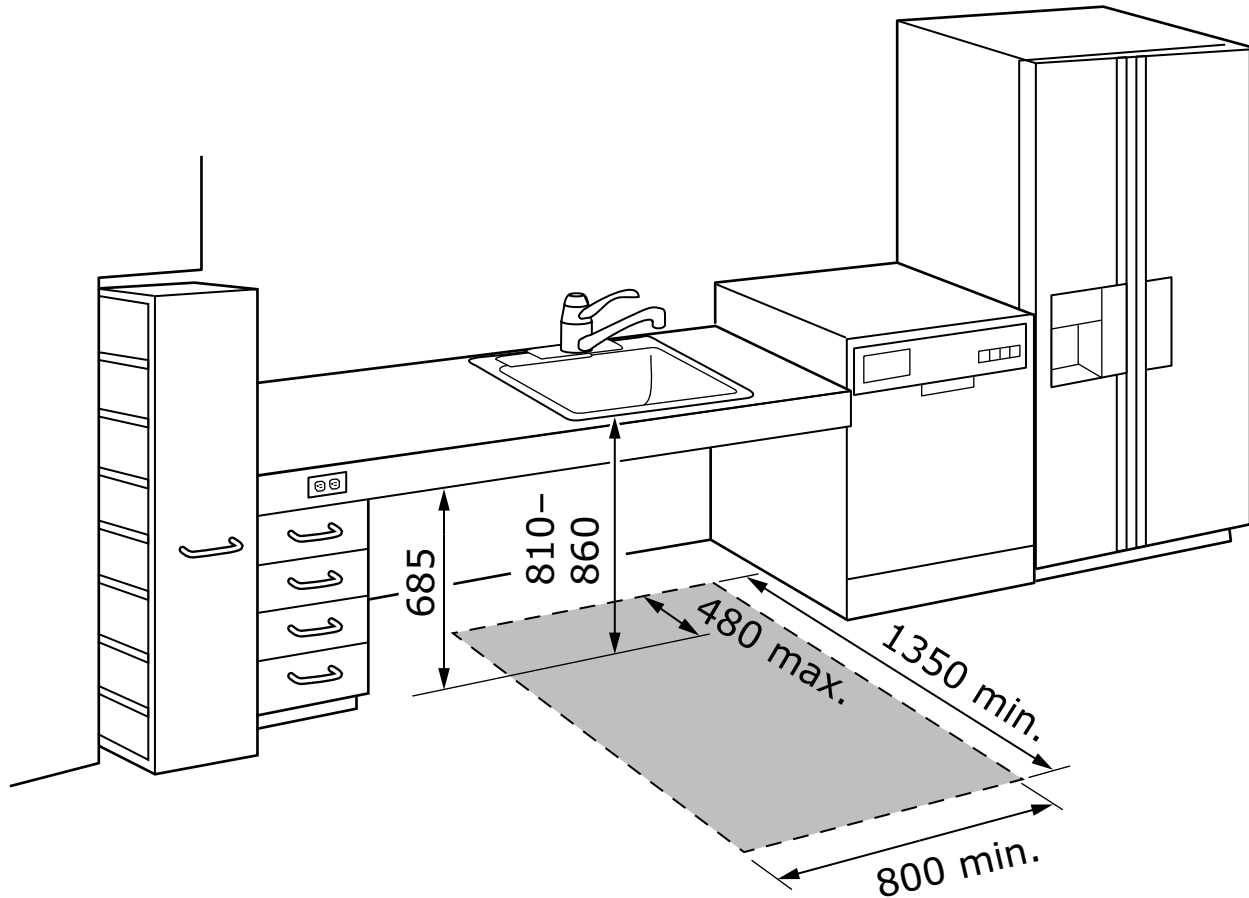
Base cabinets shall have a toe space at least 150 mm deep × 230 mm high.

7.4.4.4 Sinks

A sink shall

- a) be located with the centreline at least 460 mm from a side wall;
- b) have the rim height located between 810 and 860 mm from the floor;
- c) have a knee clearance centred on the sink at least 800 mm wide × 200 mm deep × 685 mm high, with an additional toe space at least 800 mm wide × 230 mm deep × 230 mm high;
- d) have a clear floor area at least 800 × 1350 mm, which may extend up to 480 mm underneath the sink;
- e) have faucets that are either
 - i) handles of the lever type that are operable with a closed fist; or
 - ii) automatically activated;
- f) have no sharp or abrasive surfaces under it; and
- g) have hot water and drain pipes offset to the rear and not abut the clear space (see Figure 60).

Figure 60
Work surface and sink
 (See Clauses 7.4.4.2, 7.4.4.4, and 7.4.4.8.)



Note: All dimensions are in mm.

7.4.4.5 Illumination

Kitchen illumination levels shall

- be 300 lx for countertops or work surfaces; and
- have operating controls that comply with Clause 4.2.7.

7.4.4.6 Cooktops

7.4.4.6.1

A cooktop or range shall have

- a) controls that
 - i) are located such that they do not require reaching across the heating surface to operate; and
 - ii) comply with Clause 4.2;
- b) a cooking surface height located between 810 and 860 mm from the floor;
- c) an adjacent work surface at least 400 mm wide at the same height as the cooking surface; and
- d) a clear floor area at least 800 × 1350 mm centred on the cooking surface.

7.4.4.6.2

Stand-alone built in cook tops shall have

- a) a knee clearance centred on the cooktop at least 800 mm wide × 200 mm deep × 685 mm high, with an additional toe clearance at least 800 mm wide × 230 mm deep × 230 mm high; and
- b) insulation or other protection on the underside where the knee clearance is provided (see Figure 61).

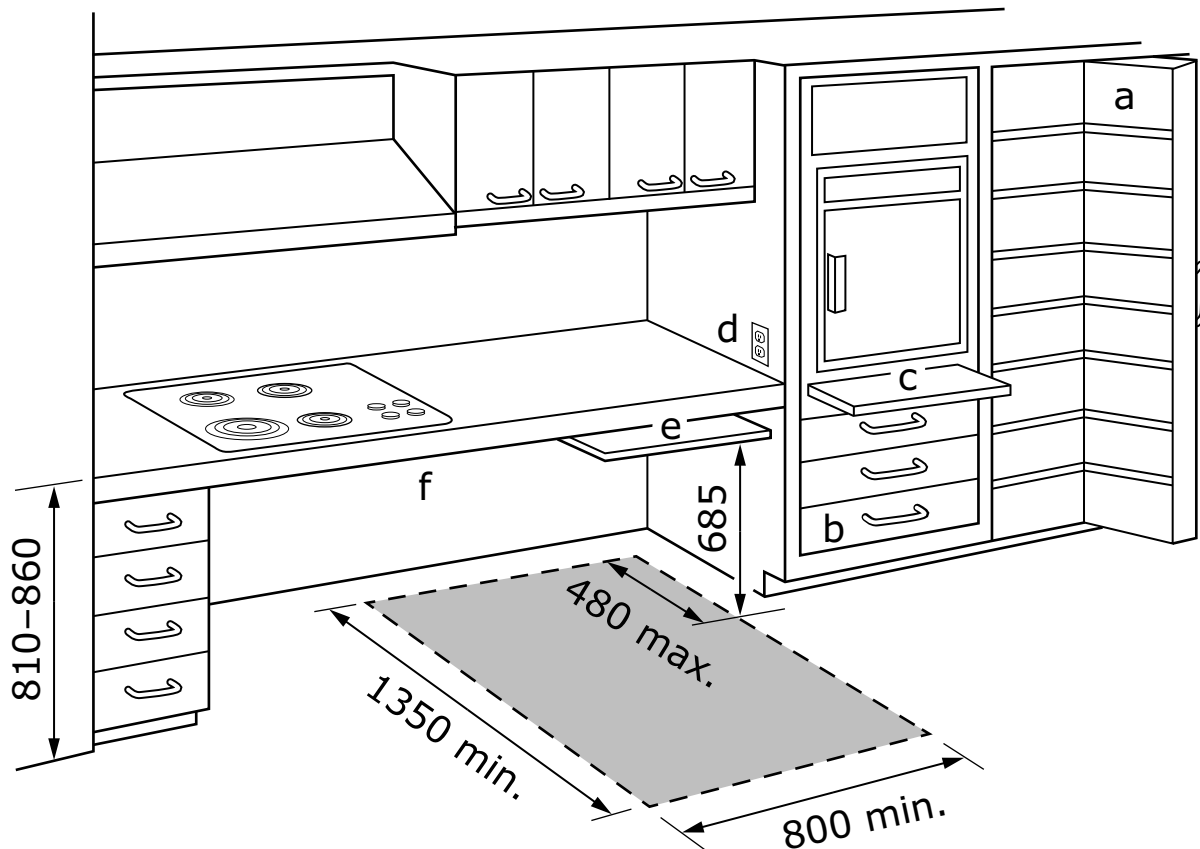
7.4.4.7 Ovens

7.4.4.7.1 Controls

Oven controls shall

- a) be located on the front panel; and
- b) comply with Clause 4.2.

Figure 61
Cooking unit, oven, and pantry storage
 (See Clauses 7.4.4.2, 7.4.4.6.2, and 7.4.4.7.2.)



Legend:

- a = Full height pantry with shelves on swing out door
- b = "D"-type pulls on cupboards and drawers
- c = Pull-out shelf under wall oven
- d = Electronic outlets accessible from seated position
- e = Pull-out workboard for easy access and use
- f = Knee space under countertop cooking unit

Note: All dimensions are in mm.

7.4.4.7.2 Heat-resistant shelf

At a side-opening oven, a horizontal, heat-resistant shelf shall be provided either

- a) beside the latch edge of the oven door; or
- b) in the form of a pull-out shelf under the oven door that
 - i) extends the width of the oven; and
 - ii) pulls out at least 250 mm (see Figure 61).

7.4.4.8 Refrigerators

A refrigerator shall

- a) be either
 - i) an over-and-under type, with the freezer shelf space not more than 1100 mm from the floor; or
 - ii) a vertical side-by-side type (see Figure 60);
- b) have a self-defrosting freezer; and
- c) have controls that comply with Clause 4.2.

7.4.4.9 Kitchen storage

Cabinets, drawers, and shelves shall have

- a) at least one shelf not more than 1100 mm from the floor (where it is above a work surface); and
- b) "D"-type door pulls mounted close to the
 - i) bottom of upper cabinet doors; and
 - ii) top of base cabinet doors.

7.4.5 Bedrooms

7.4.5.1

A bedroom shall have a clear floor area of at least 800 × 1350 mm on at least two sides of the bed.

7.4.5.2

There shall be at least one electrical outlet provided at a convenient height in a location where access is not impeded by furniture.

7.4.5.3

At least one of every other outlet connection type for computer network and communications purposes should be provided at a convenient height and located where access is not impeded by furniture.

7.4.6 General features of dwellings

7.4.6.1 Emergency and security alarms

An alarm shall

- a) include both audible and visual signals; and
- b) comply with Clause 5.7.1.

7.4.6.2 Windows

Windows shall

- a) where intended for viewing, except where located above a counter, have a sill no higher than 750 mm from the floor; and
- b) where operable for ventilation, have an opening and locking mechanisms that comply with Clause 4.2.

7.4.6.3 Operating controls

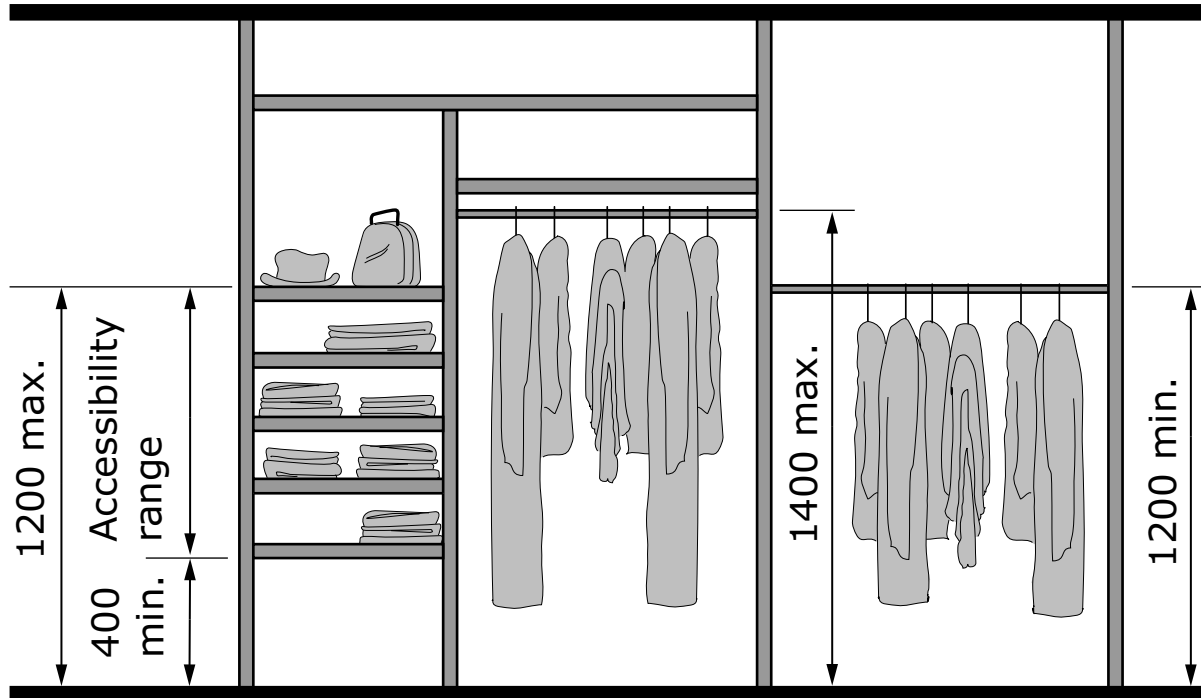
Operating controls, such as electrical switches and outlets, thermostats, communication systems, breaker boxes, exhaust fans, water shut-off valves, etc., shall comply with Clause 4.2.

7.4.6.4 Clothes closets

A clothes closet shall have

- a) a clear floor area of at least 800 × 1350 mm in front of it;
- b) a clothes rail 1200 to 1400 mm from the floor; and
- c) where shelves are provided, at least three shelves between 400 and 1200 mm from the floor (see Figure 62).

Figure 62
Clothes closets
 (See Clause 7.4.6.4.)



Note: All dimensions are in mm.

7.4.6.5 General storage

A general storage space shall

- have a door that swings outward;
- have an electric outlet on the inside, close to the door; and
- be capable of being illuminated to a level of at least 50 lx.

7.4.6.6 Miscellaneous services

Services such as laundry facilities, post boxes, garbage disposals, or hose bibs shall

- be on an accessible route;
- have a clear floor area at least 800 × 1350 mm in front of each service; and
- have controls and operating mechanisms that comply with Clause 4.2.

7.4.7 Outdoor living areas

An outdoor living area such as a patio, balcony, or deck shall

- a) be adjacent to an accessible route;
- b) have a surface that complies with Clause 4.3;
- c) be at least 1700 × 1700 mm in area;
- d) have a manoeuvring area at the door that complies with Clause 5.2.2;
- e) have a no step, level threshold through patio doors or openings onto a patio, deck, or balcony; and
- f) be capable of being illuminated to a level of at least 50 lx at the floor level.

8 Exterior circulation, spaces, and amenities

8.1 Scope

The requirements of this Clause deal with exterior pedestrian locations, on public or private property, that include circulation routes, spaces, and amenities that are part of

- a) public areas such as rights-of-way, parks, plazas, recreation facilities, etc.; and
- b) private areas such as outdoor restaurants, theatres, and the grounds of multi-unit residential, commercial, educational, club, and other complexes.

8.2 Accessible routes

8.2.1 General

An accessible exterior pedestrian route shall

- a) comply with Clauses 4.3.1, 4.3.2, 4.3.4, and 4.4;
- b) where adjacent to a vehicular route, be separated from it by
 - i) a curb with a curb ramp;
 - ii) a railing or other barrier; or
 - iii) a tactile attention indicator surface complying with Clause 4.3.5;
- c) where bollards are used to prevent vehicles from entering the pedestrian route, have them comply with Clause 8.3.9;

- d) where traversing a vehicular area, comply with Clause 8.3; and
- e) in high pedestrian traffic areas be delineated on both sides by texture- and colour-contrasted surfaces at least 300 mm wide.

8.2.2 Width

The clear width of an accessible pedestrian route shall be

- a) at least 1600 mm; or
- b) where adjacent to a curb ramp, at least 1350 mm (see Clause 8.3.3.8 and Figure 63).

8.2.3 Slope

The running and cross slopes of an accessible pedestrian route shall comply with Clause 5.1.2.

8.2.4 Drainage

A pedestrian route shall

- a) be well drained to prevent the accumulation of ice and water; and
- b) not allow water from building down-spouts or other drainage systems to flow across it.

8.2.5 Edge protection

Where an accessible path is immediately adjacent to a vertical drop, edge protection or hand rails shall be provided as follows:

- a) If the vertical drop is between 75 and 600 mm deep, there shall be edge protection with a minimum height of 100 mm.
- b) If the vertical drop is greater than 600 mm, there shall be a hand rail complying with Clause 5.5.8.
- c) Edge protection is not required for a standard road curb.
- d) Edge protection is not required on the active side of a transit platform where the vertical drop is less than 250 mm. If the vertical drop at a transit platform is 250 mm or more, the edge shall be protected with a tactile attention indicator that complies with Clause 4.3.5.3.

8.2.6 Shared-use routes

An accessible route that is shared with other users, such as cyclists, in-line skaters, etc., shall

- a) be delineated or separated from these activities by grade separation, curbs, bollards, or other physical means; and
- b) designate the separate routes by signage (on grade and on posts) that complies with Clause 4.5.

8.2.7 Exterior ramps

An exterior ramp shall

- a) have a running slope and length that complies with Clause 5.5.1;
- b) have a cross slope that complies with Clause 5.5.2;
- c) be at least 1200 mm wide;
- d) have level landings that
 - i) comply with Clause 5.5.4; and
 - ii) are designed to drain water from their surface (but not exceed the specified cross slope);
- e) have the sloped and level surfaces comply with Clauses 4.3.1 and 4.3.4;
- f) on ramps and landings that are not at grade or adjacent to a wall, have edge protection complying with Clause 5.5.6; and
- g) where the vertical rise is more than 250 mm, have handrails that comply with Clause 5.5.8 (see Figure 33).

8.2.8 Exterior stairs

Exterior stairs shall

- a) comply with Clause 5.4;
- b) where the distance between the handrails is greater than 2200 mm, have an intermediate handrail that is located between 920 and 1000 mm from one of the handrails;
- c) be designed to avoid water accumulation; and
- d) have landings designed to drain water from their surface [but not be steeper than the ratio of 1:50 (2%)].

8.2.9 Illumination for pedestrian routes

Illumination along a pedestrian route shall

- a) be continuous and not create any dark or shadow areas;
- b) have lighting standards located off the pedestrian route or space, but adjacent to it; and
- c) illuminate components along a pedestrian route, such as stairs, ramps, or rest areas, to at least 50 lx at ground level.

8.3 Pedestrian crossings

8.3.1 General

A pedestrian crossing traversing a vehicular right-of-way shall

- a) where at grade,
 - i) be perpendicular to the vehicular route being crossed;
 - ii) comply with Clauses 8.3.2 to 8.3.6; and
 - iii) comply with Clause 8.3.7, when signals are provided; or
- b) when designed as an overpass or underpass, comply with Clause 8.3.10.

8.3.2 Pedestrian crossing variations

8.3.2.1 Pavement grade level

A pedestrian crossing with the crosswalk at the pavement grade level shall have its crosswalk connected to the pedestrian route beyond a vehicular right-of-way by a curb ramp complying with Clause 8.3.3.

8.3.2.2 Raised crossings

A raised crossing shall have its crosswalk connected to the pedestrian route beyond a vehicular right-of-way by a blended transition complying with Clause 8.3.3.

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 ramp, 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%.

8.3.3.4 Surface

8.3.3.4.1

The surface of a curb ramp or blended transition shall

- a) be stable, firm, and slip-resistant;
- b) have a level transition to adjacent surfaces; and
- c) have a tactile attention indicator surface that
 - i) complies with Clause [4.3.5.3](#);
 - ii) extends the full width of the curb ramp or transition area; and
 - iii) has a length between 600 and 650 mm, starting between 300 and 350 mm from the road face of the curb.

8.3.3.4.2

There shall be a tactile attention indicator surface on a curb ramp before a level curb-to-gutter transition.

8.3.3.5 Width

The width of a curb ramp or blended transition, exclusive of flared sides, shall be

- a) at least 1500 mm; or
- b) where at a marked crosswalk, match that of the crosswalk.

8.3.3.6 Flared sides

Flared sides shall

- a) be provided on a curb ramp or blended transition where pedestrians are likely to walk across it;
- b) have a slope, measured parallel to the curb line, with a ratio between 1:10 (10%) and 1:15 (6.66%) (see Figure 63); and
- c) be slip resistant.

8.3.3.7 Curb ramp drainage

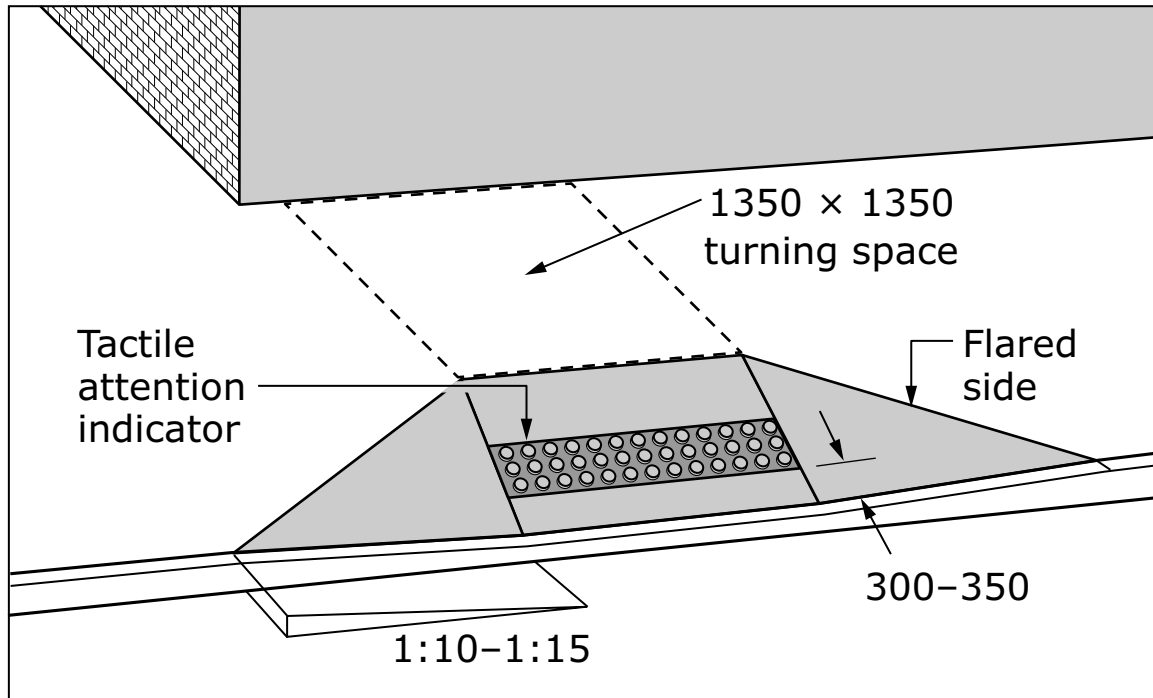
A curb ramp or blended transition shall

- a) provide for appropriate drainage so that water does not accumulate on the pedestrian route; and
- b) have no catch basin covers within the pedestrian crossing unless they meet the requirement for gratings (see Clause 4.3.4).

8.3.3.8 Turning space

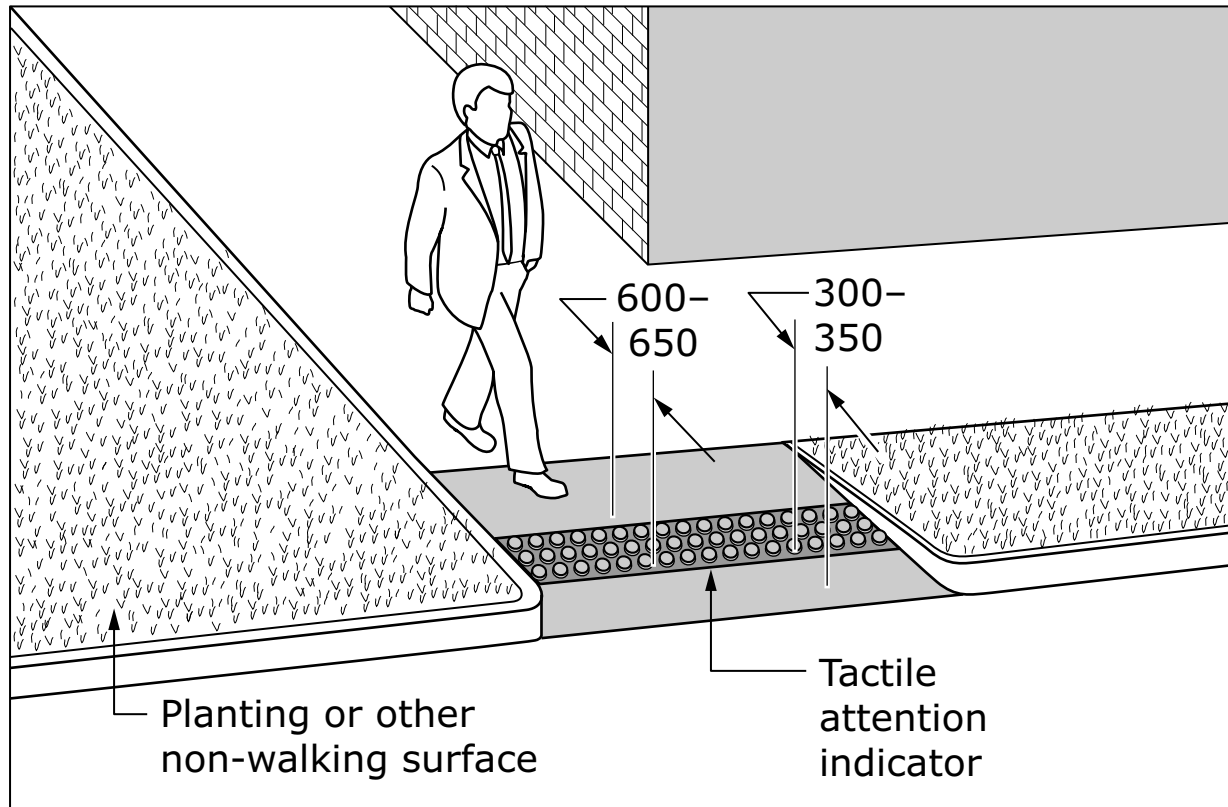
There shall be a turning space at least 1350 x 1350 mm at the top of a curb ramp level with the pedestrian route. This turning space may overlap other turning or clear spaces.

Figure 63
Accessible route and curb ramp with flared sides
 (See Clauses 8.2.2 and 8.3.3.6.)



Note: All dimensions are in mm.

Figure 64
Curb ramp with returned curb sides
 (See Clause 8.3.3.6.)



Note: All dimensions are in mm.

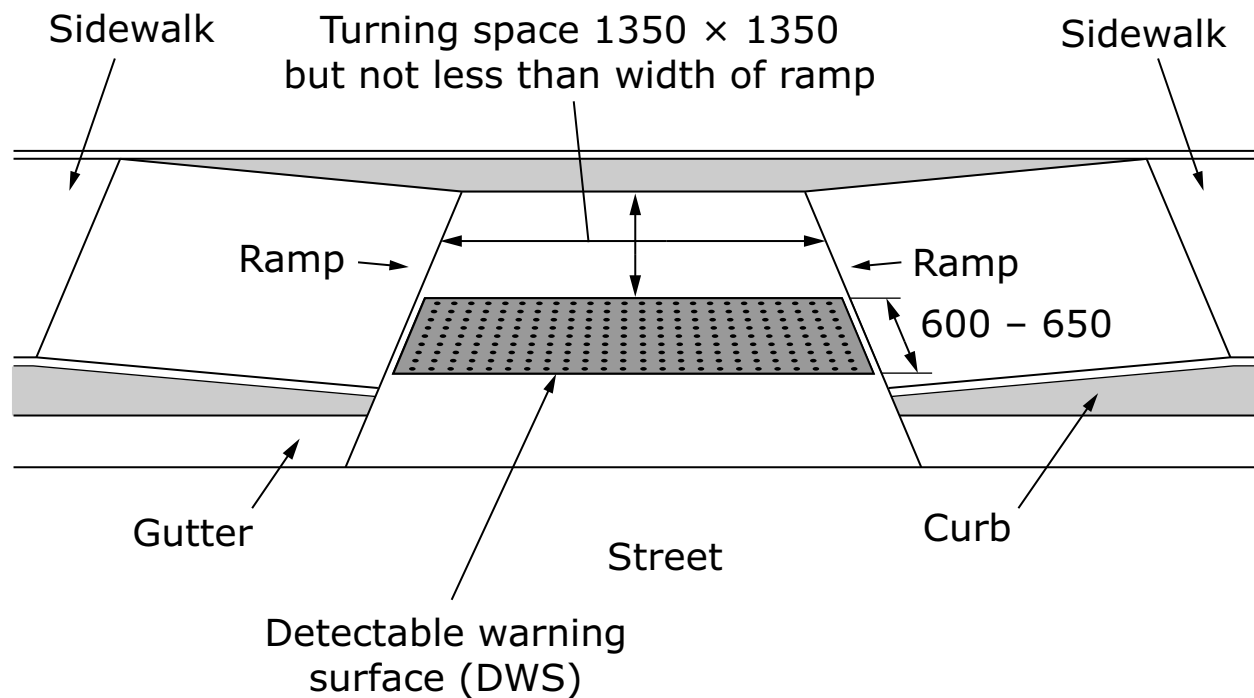
8.3.3.9 Parallel curb ramp

Where a curb ramp is located on an accessible narrow route, the sidewalk itself shall

- be ramped down in-line at a slope of between 1:12 (8.33%) and 1:15 (6.66%) to a landing space to allow directional turning at street level;
- have the turning space at least 1350 x 1350 mm, but not less than the width of the ramp;
- have the turning space running and cross slope not to exceed 1:50 (2%); and
- have a tactile attention indicator surface that
 - complies with Clause 4.3.5.3;

- ii) is located on the turning space at the transition to vehicular right-of-way;
- iii) extends the full width of the transition to vehicular right of way;
- iv) is no more than 150 mm back from the line of the road face of the curb; and
- v) has a length between 600 and 650 mm.

Figure 65
Parallel curb ramp
 (See Clause 8.3.3.9.)



Note: All dimensions are in mm.

8.3.4 Crosswalks

8.3.4.1 Surface

A crosswalk shall

- a) be at least 1800 mm wide between pavement markings (where provided);

- b) have a running slope not steeper than in a ratio of 1:20 (5%);
- c) have a cross slope
 - i) not exceeding a ratio of 1:50 (2%) for crossings with stop control;
 - ii) not exceeding a ratio of 1:20 (5%) for crossings without stop control; or
 - iii) in the case of mid-block pedestrian crossings, matching the street or highway grade; and
- d) where crossing rail tracks at grade,
 - i) be level and flush with the top of the rail at its outer edges;
 - ii) be aligned with the top of the rail between the rails;
 - iii) where possible, have wheel flange way openings not more than 64 mm at non-freight rail tracks or 76 mm at freight rail tracks; and
- e) have a tactile attention indicator surface, complying with Clause 4.3.5.3, spanning the width of the pedestrian crossing and located so that the edge nearest the rail crossing is between 1800 and 4600 mm from the centreline of the nearest rail.

8.3.4.2 Pavement markings

Where provided, crosswalk pavement markings shall

- a) comply with the Manual of Uniform Traffic Control Devices for Canada; and
- b) be slip resistant.

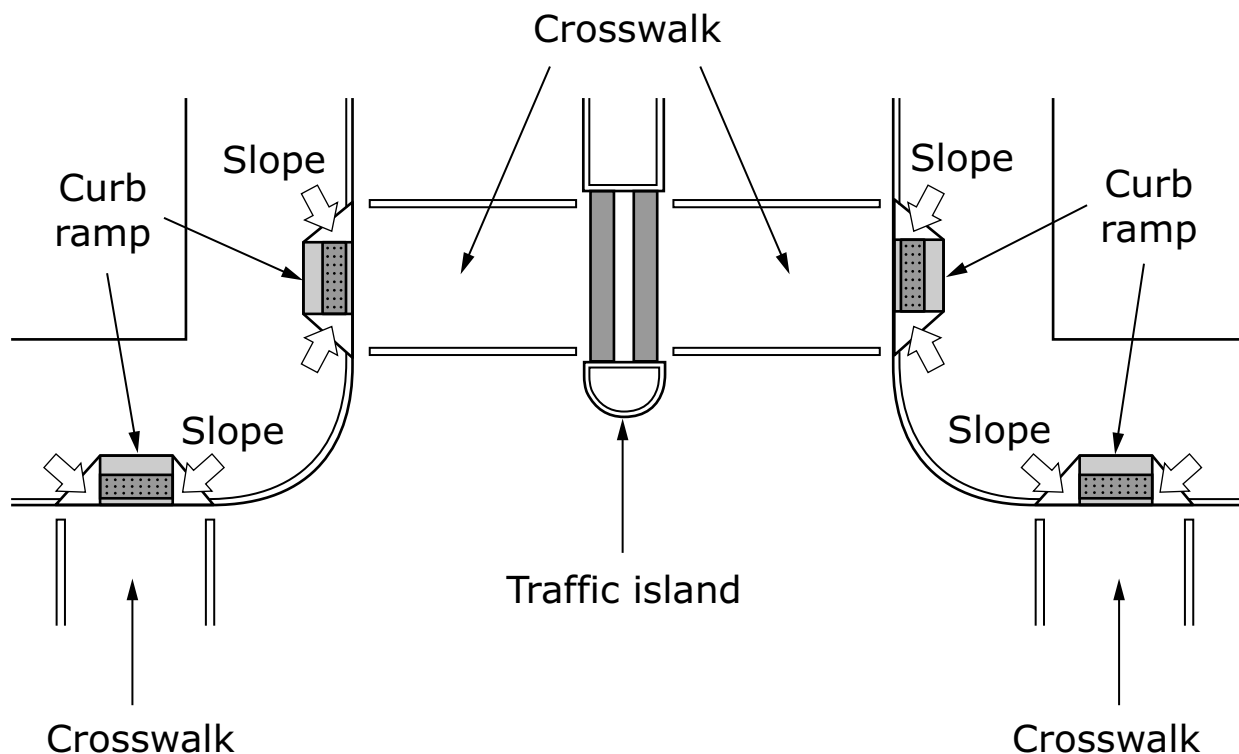
8.3.5 Alignment of pedestrian crossing components

Pedestrian crossing components shall be located to

- a) limit exposure to vehicular traffic by following a line that is perpendicular to the vehicular route being crossed;
- b) be fully outside all motor vehicle and cycling lanes of the parallel roadway;
- c) in the case of refuge islands and medians, where possible, have all components (e.g., curb ramps, blended transitions,

- crosswalk segments) in a single continuous lateral alignment; and
- d) have curb ramps or blended transitions
- i) lead people directly into the crossing area designated for pedestrian use; and
 - ii) be located at the side of the crosswalk furthest from the parallel vehicular roadway (see Figure 66).

Figure 66
Intersection design
 (See Clauses 8.3.5 and 8.3.6.3.)



8.3.6 Medians and pedestrian refuge areas

8.3.6.1 General

Where the pedestrian route connects crosswalk segments across a median or island, the island segment shall

- a) provide an area at least 1600 mm wide to allow for passing;

- b) be at least 2100 mm long in the direction of pedestrian travel; and
- c) where longer than 2100 mm or changing direction, be channelized to define the route to be taken; or
- d) where signalized and the island segment is less than 2100 mm long, have the pedestrian clearance signal interval set long enough to allow a person to travel the entire length of the pedestrian crossing and comply with Clause 8.3.7.3.

8.3.6.2 Raised medians or islands

A pedestrian crossing route within a raised median or island shall

- a) where cut through level with the roadway, comply with Clause 8.3.6.4; or
- b) where of sufficient length, have
 - i) at both sides of the island, curb ramps or blended transitions complying with Clause 8.3.5; and
 - ii) a walkway at least 600 mm long between tactile attention indicator surfaces.

8.3.6.3 Level medians and islands

Within a pedestrian crossing, an island level with the roadway shall

- a) if less than 2100 mm long, not require a tactile attention indicator surface; or
- b) if more than 2100 mm long,
 - i) have at each roadway edge a tactile attention indicator 600 mm deep, complying with Clause 4.3.5.3; and
 - ii) have a walkway at least 600 mm deep between the tactile attention indicator surfaces (see Figure 66).

8.3.6.4 Bulb-outs (curb extensions)

8.3.6.4.1

Where bulb outs are provided, they shall

- a) only be used on streets with a parking lane;
- b) extend along the curb for at least 2000 mm;

- c) not have street furniture or utility equipment located between a pedestrians path and parallel traffic lanes or within 1000 mm of the curb line on the street being crossed; and
- d) include a curb ramp complying with Clause 8.3.3.

8.3.6.4.2

If a bulb-out is used at a transit stop, it shall be

- a) of sufficient length to accommodate all transit vehicle access doors;
- b) if at a far-side stop, of sufficient length to have the transit vehicle remain at least 1200 mm clear of the pedestrian crosswalk; and
- c) when used to create an accessible transit stop in a cycle lane comply with Clause 8.5.3.

8.3.7 Pedestrian crossing signals

8.3.7.1 Accessible pedestrian signals (APS)

Where provided, an accessible pedestrian signal installation shall comply with the Transportation Association of Canada Guidelines for Understanding, Use and Implementation of Accessible Pedestrian Signals.

8.3.7.2 Activation push buttons at pedestrian crossings

Where provided, a pedestrian crossing activation push button shall either

- a) for accessible pedestrian signals, comply with Clause 8.3.7.1; or
- b) for conventional pedestrian signals
 - i) be adjacent to the accessible pedestrian route without obstructing it;
 - ii) be located on a pole at a height of 1100 ± 150 mm above the level of the pedestrian route; and
 - iii) have a clear level area 800×1350 mm adjacent to or overlapping the pedestrian route.

8.3.7.3 Pedestrian signal timing

The timing of the pedestrian clearance interval shall be calculated

- a) using a pedestrian walk speed not more than 1.1 m/s; and
- b) to include the entire length of the pedestrian crossing.

8.3.8 Speed bumps

Where a speed bump is installed, a clear level space on the roadway at least 1200 mm wide shall be provided between the speed bump and the edge of the roadway.

8.3.9 Bollards

Where bollards or curbs are located adjacent to a pedestrian route or space, they shall

- a) be colour-contrasted with their surroundings; and
- b) where access is intended between the bollards or curbs, provide a clear width of at least 1200 mm to allow the passage of wheeled mobility aids.

8.3.10 Overpasses and underpasses

8.3.10.1 Pedestrian access route

A pedestrian overpass or underpass shall contain a pedestrian access route that complies with Clause 8.2.

8.3.10.2 Pedestrian approach

Where the pedestrian approach route has a slope steeper than a ratio of 1:20 (5%), the approach shall either

- a) be designed as a ramp and
 - i) comply with Clause 8.2.7 for unprotected exterior installations; or
 - ii) if weather protected, comply with Clause 5.5.1; or
- b) be equipped with an elevating device that allows for independent operation and complies with either
 - i) Appendix E of ASME A17.1/CSA B44; or
 - ii) CSA B355.

8.4 Intersection design

8.4.1 General

Accessible pedestrian intersection elements shall be provided

- a) at all intersections in urban and suburban areas; and
- b) in rural areas, at intersections with a concentration of commercial or residential activity.

8.4.2 Types of intersections

8.4.2.1 Uncontrolled access ramp intersections

Where an uncontrolled vehicular access ramp intersects a pedestrian route, it shall have

- a) a marked pedestrian crossing that complies with Clause 8.3;
- b) a vehicle stop line clearly defined by signage on and beside the roadway; and
- c) a traffic control device that complies with the requirements of the Manual of Uniform Traffic Control Devices, either
 - i) a YIELD here to pedestrians sign; or
 - ii) a signalized pedestrian crossing having an accessible pedestrian signal complying with Clause 8.3.7.

8.4.2.2 Sign controlled intersections

A sign controlled intersection with a pedestrian route shall

- a) have a marked pedestrian crossing that complies with Clause 8.3 for each controlled leg of the intersection; and
- b) where an uncontrolled slip lane forms part of the intersection, comply with Clause 8.3.7.

8.4.2.3 Signal-controlled intersections

8.4.2.3.1 Design specifications

A signal-controlled intersection shall comply with the Manual of Uniform Traffic Control Devices for Canada.

8.4.2.3.2 General intersections

A general signal-controlled intersection in a pedestrian route shall

- a) have a marked pedestrian crossing that complies with Clause 8.3 for each controlled leg of the intersection; and
- b) where an uncontrolled slip lane forms part of the intersection, comply with Clause 8.4.2.1.

8.4.2.3.3 Continuous or parallel flow intersections

A continuous or parallel flow intersection shall

- a) comply with Clause 8.4.2.3.1;
- b) be equipped with accessible pedestrian signals that comply with Clause 8.3.7;
- c) have
 - i) a marked pedestrian crossing that complies with Clause 8.3 for each controlled leg of the intersection; and
 - ii) tactile pedestrian crosswalk surfaces where the crossing is between opposing traffic flows; and
- d) have channelizing features or tactile pathways on islands where the pedestrian route is between opposing traffic flows.

8.4.2.4 Roundabout intersections

A roundabout intersection having a pedestrian route of travel shall

- a) have the pedestrian route alongside the roadway delineated from the vehicular route by curbs or other elements to preclude passage where a pedestrian street crossing is not intended;
- b) at each approach roadway that intersects the pedestrian route, have a marked pedestrian crossing that
 - i) complies with Clause 8.3; and
 - ii) is located at least 7.6 m from the circulation traffic lanes;
- c) have, a tactile direction indicator surface to indicate the junction of a crosswalk and pedestrian route alongside the roadway, which
 - i) complies with Clause 4.3.5.4;

- ii) extends from the centreline of the ramp or blended transition across the full width of the pedestrian route alongside the roadway; and
- iii) is 600 mm long;
- d) for roundabout intersections with single-lane approach and exit legs, provide at each crosswalk a YIELD here to pedestrians sign that complies with the Manual of Uniform Traffic Control Devices for Canada; and
- e) at roundabouts with multi-lane pedestrian street crossings
 - i) have entry and exit lanes of the roundabout separated by a splitter island;
 - ii) have on the splitter island a channelized pedestrian route to ensure pedestrians follow the intended route;
 - iii) have separate offset pedestrian crossings for entry and exit lanes of the roundabout; and
 - iv) have for each multi-lane segment of a pedestrian street crossing an accessible pedestrian signal (APS) complying with Clause 8.3.7.1. Signals shall clearly identify which pedestrian street crossing segment the signal serves.

8.4.2.5 Vehicular overpasses or underpasses

Where two vehicular rights-of-way meet at an overpass or underpass, the intersection shall

- a) provide a pedestrian route that complies with Clause 8.2 for each route where pedestrians are allowed;
- b) where marked pedestrian crossings are provided, comply with Clause 8.3; and
- c) where an uncontrolled ramp intersects the pedestrian route, comply with Clause 8.4.2.1.

8.4.2.6 Pedestrian mid-block crosswalks

Where a pedestrian crosswalk is installed at an uncontrolled, mid-block location to facilitate crossing a vehicular right-of-way, it shall

- a) have a marked pedestrian crossing that complies with Clause 8.3; and

- b) have traffic signals complying with the Manual of Uniform Traffic Control Devices for Canada (see Clause 8.3.7).

8.4.2.7 Rail lines

Where a rail line right-of-way intersects a pedestrian route as defined in Clause 8.2, a pedestrian crossing shall be provided that complies with Clause 8.3.4.

8.4.3 Intersection design features

8.4.3.1 Raised intersections

A raised intersection shall

- a) have its crosswalks connected to the pedestrian path beyond a vehicular right-of-way by a blended transition that complies with Clause 8.3.3;
- b) contain the crosswalks within the raised area of the intersection; and
- c) have one side of the crosswalk continuously attached to the grade break between the roadway approach slope and the raised area.

8.4.3.2 Intersection corners

Corner radii shall be designed to ensure that vehicles do not drive over pedestrian refuge areas.

8.4.3.3 Angle of intersection

Intersecting vehicular routes (not including access ramps) shall meet either

- a) at 90° angles for new intersections; or
- b) at angles not less than 75° where the right-of-way is restricted.

8.5 Transit stops

8.5.1 General

Equipment at transit stops, including shelters, shall

- a) not obstruct the accessible route; and

- b) comply with Clauses 4, 5.2, and 5.5.

8.5.2 Identification

A transit stop shall

- a) be identified with
 - i) a distinctive visual and tactile stop pole, where the tactile element can be accessed at or below 1200 mm from the ground; and
 - ii) a tactile direction indicator complying with Clause 4.3.5.4, at least 600 mm deep, extending the width of the pedestrian route [See Figure 7 b)];
- b) have signage complying to Clause 4.5, that, where routes are identified, provides the information visually, and via either
 - i) in braille and raised characters; or
 - ii) user or proximity-actuated audible signals;
- c) where a transit platform is separated from the pedestrian route by traffic lanes, have its identification located at the intersection of the pedestrian route and the pedestrian crossing to the transit platform;
- d) have no sharp edges or corners on equipment such as poles or signs; and
- e) where stop identification numbers are posted for real time transit information, have them in large print, braille, and raised numerals.

8.5.3 Boarding or alighting areas

A transit boarding or alighting area shall

- a) have a firm, stable, and slip-resistant surface;
- b) when higher than 250 mm above the transit right-of-way, have a tactile attention indicator surface along the unprotected drop-off edge that complies with Clause 4.3.5.3;

- c) at each loading position intended for users of a wheeled mobility aid, provide
 - i) a clear length of at least 2400 mm, measured perpendicular to the curb or vehicular route edge; and
 - ii) a clear width of at least 1500 mm, measured parallel to the vehicular route;
- d) have its grade with no slope steeper than in a ratio of 1:50 (2%);
- e) when at the side of a roadway, be connected to the pedestrian path by a pedestrian route complying with Clause 8.2; and
- f) when separated from a pedestrian path by traffic lanes, be connected to the pedestrian route by a pedestrian crossing that
 - i) complies with Clause 8.3; and
 - ii) is equipped with accessible pedestrian signals that comply with Clause 8.3.7.
- g) when located in a bicycle lane have
 - i) the bicycle lane raised to the level of the adjacent pedestrian path;
 - ii) tactile attention indicators at the top of bicycle ramps that connect the bicycle lane across the boarding area;
 - iii) a tactile attention indicator delineating the line between the pedestrian path and the bicycle lane;
 - iv) curb grade separation from the adjacent traffic lane; and
 - v) signage advising cyclists to stop before entering the boarding area when a transit vehicle is present for the purpose of boarding or alighting passengers.

8.5.4 Transit shelters

Where provided, a transit shelter shall

- a) have a level access to the accessible route;
- b) have the floor and ground surfaces comply with Clause 4.3;
- c) have protrusion hazards comply with Clause 4.4;
- d) have the signage comply with Clause 4.5;

- e) have an unobstructed clear floor area at least 1700 × 1700 mm directly inside the doorway;
- f) where no door is provided, have a clear opening at least 1000 mm wide; and
- g) where a door is provided, comply with Clause 5.2.

8.6 Urban furniture and equipment

8.6.1 General

Urban furniture and equipment shall

- a) not obstruct any part of an accessible route (see Clause 8.2); and
- b) where pedestrian use or interaction is intended, be adjacent or connected to the accessible pedestrian route.

8.6.2 Amenity zone

Where urban furniture and equipment are provided, they shall be located in an amenity zone that

- a) is consistently located on one or both sides of an accessible route;
- b) contains within it the required urban elements;
- c) does not reduce the required clear width of the accessible route;
- d) is at least 300 mm wide, with a preferred width of 600 mm;
- e) has its surface texture- and colour-contrasted with the surrounding area; and
- f) where containing a transit stop, complies with Clause 8.5.

8.6.3 Rest areas

8.6.3.1 Benches or seating

Where a bench or seating is provided, it shall

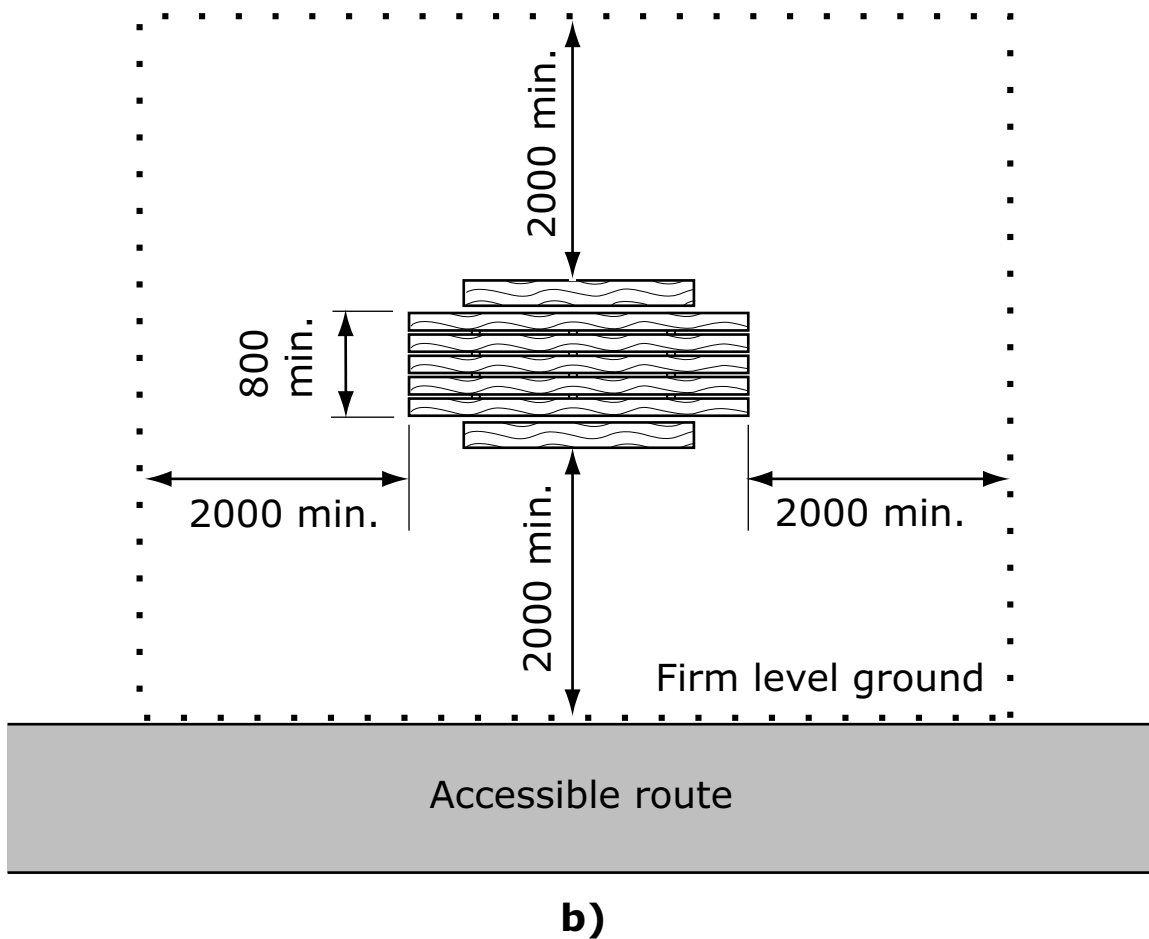
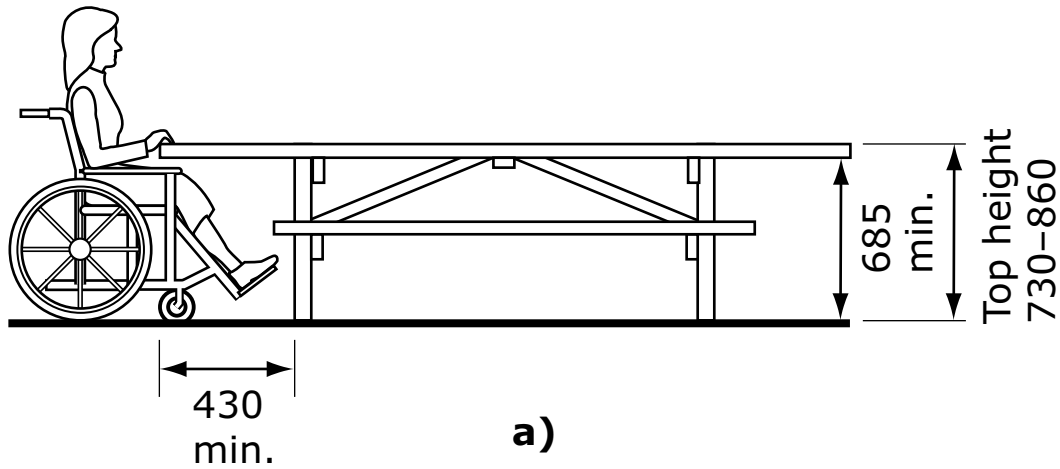
- a) comply with Clause 6.7.2; and
- b) have the adjacent level area separated by a raised curb or barrier from a drop off or downward slope.

8.6.3.2 Picnic tables

Where a picnic table is provided, it shall be

- a) on a level and firm surface that extends at least 2000 mm on all sides; and
- b) equipped with a knee clearance under the table at least 800 mm wide × 430 mm deep × 685 mm high (see Figure 67).

Figure 67
Picnic table
 (See Clause 8.6.3.2.)



Note: All dimensions are in mm.

8.6.4 Public telephones

Where a public telephone is provided, it shall

- a) comply with Clause 6.6.2;
- b) be located on a firm, stable, and slip-resistant surface;
- c) have the ground surface around and under the telephone colour-contrasted with its surroundings; and
- d) be cane-detectable.

8.6.5 Drinking fountains

Where a drinking fountain is provided, it shall

- a) be located adjacent or connected to an accessible route; and
- b) comply with Clause 6.1 (see Figure 38).

8.6.6 Permanent washrooms

Where a permanent washroom is provided, it shall

- a) be connected to an accessible route;
- b) have level access from the washroom entry door to the accessible route;
- c) where doors are provided, comply with Clause 5.2;
- d) where applicable, comply with Clauses 6.2 and 6.3; and
- e) have signage that complies with Clause 4.5.7.

8.6.7 Information kiosks

Where an information kiosk is provided, it shall

- a) be located adjacent to or connected to an accessible route;
- b) where applicable, comply with
 - i) Clause 4.1 for area allowances;
 - ii) Clause 4.2 for operating controls;
 - iii) Clause 4.3 for ground surfaces; and
 - iv) Clause 4.5 for clearances;
- c) where counters are provided, comply with Clause 6.7.1; and
- d) where a self-service interactive device is provided, comply with CAN/CSA-B651.2.

8.6.8 Exterior signage

Exterior signage shall

- a) comply with Clause 4.5; and
- b) comply with the Clause 4.4.2.

8.6.9 Bicycle parking

Where bicycle parking is provided, it shall be located such that bicycles do not protrude into the accessible pedestrian route.

8.6.10 Parking meters, newspaper dispensers, or mail or courier boxes

Where a parking meter/ticket dispenser, newspaper dispenser, mailbox (both street and community), or courier box is provided, it shall

- a) be accessed from a clear ground area of at least 800 x 1350 mm that is connected to the accessible route;
- b) be securely fixed to the ground, post, or wall;
- c) have the ground surface firm, stable, and slip-resistant;
- d) be cane-detectable to the ground;
- e) have the operating mechanisms
 - i) located between 900 and 1200 mm above ground;
 - ii) comply with Clauses 4.2.2 and 4.2.4 to 4.2.8; and
 - iii) comply with CAN/CSA-B651.2 for self-service interactive devices;
- f) have signage that complies with Clause 4.5; and
- g) be colour-contrasted with their surroundings.

8.6.11 Waste receptacles, recycling bins, or ashtrays

Where a waste receptacle, recycling bin, or ashtray is located along an accessible route, it shall

- a) be located adjacent or connected to the accessible route;
- b) be securely fastened to the ground, post, or wall;
- c) have the opening or lid not higher than 1060 mm from the ground;
- d) have a clear ground area of at least 800 × 1350 mm at the opening or lid;
- e) be cane detectable to the ground; and

f) be colour-contrasted with the surroundings.

8.6.12 Reflecting pools

An unprotected edge of a reflecting pool shall

- a) have a firm, stable, and slip-resistant surface;
- b) have adequate drainage so that water does not accumulate on the surface; and
- c) have a tactile attention indicator surface that complies with Clause 4.3.5.3.

8.6.13 Miscellaneous items

Miscellaneous items installed in the public right-of-way, such as an intersection traffic control box, a hydro transformer, or a hydrant, shall

- a) be located off the accessible route;
- b) comply with Clause 4.4; and
- c) in the case of guy wires
 - i) be clearly distinguished from their surroundings by colour contrasting materials; and
 - ii) where in a paved public area be vertical to a height of 2050 mm from the ground.

8.7 Landscaping elements

8.7.1 Flower or shrub planters

Where a flower or shrub planter is provided along an accessible route, it shall

- a) be located off the accessible route; and
- b) comply with Clause 4.4.

8.7.2 Planting bed edges

The edges of planting beds located adjacent to an accessible route shall

- a) be clearly defined by texture and colour-contrast from the surroundings; and
- b) be designed to prevent ground cover or drainage from entering the pedestrian route.

8.7.3 Vegetation

Vegetation located adjacent to an accessible route or rest area shall

- a) have no thorns or sharp edges;
- b) have no planting that can drop large seed-pods overhanging or close-by;
- c) not be poisonous; and
- d) where tree branches or shrubs overhang the accessible route, comply with Clause 4.4.

8.7.4 Guy wires

Guy wires located along an accessible pedestrian route shall

- a) be contained so as not to obstruct pedestrian areas of travel;
- b) have any protrusions comply with Clause 4.4; and
- c) be clearly distinguished from their surroundings by colour-contrasted materials.

8.7.5 Grates around trees

Where provided, a grate around a tree shall

- a) comply with Clause 4.3.4;
- b) be slip resistant; and
- c) have edge protection at the tree opening a minimum of 100 mm in height.

8.7.6 Tree guards

Where a tree guard is provided, it shall be cane detectable to comply with Clause 4.4.

8.8 Temporary facilities

8.8.1 Construction along an accessible route

Where a section of an accessible route is affected by construction, a safe and secure alternative pedestrian route through or around the improvement area shall

- a) comply with Clause 8.2; and
- b) be announced with signage that complies with Clause 4.5.

8.8.2 Scaffolding

Where scaffolding is erected on or above an accessible route, it shall

- a) provide a walkway at least 1600 mm wide;
- b) have a height clearance that complies with Clause 4.4; and
- c) have all other requirements comply with Clause 5.1.

8.8.3 Temporary outdoor toilets

Where a temporary outdoor toilet is provided, at least one shall

- a) be located adjacent or connected to an accessible route;
- b) have toilet identification that complies with Clause 4.5.7;
- c) have the entry door level with or ramped to the accessible route;
- d) have a door that
 - i) opens to the outside; and
 - ii) is at least 850 mm wide;
- e) have a clear interior space at least 1600 × 1500 mm; and
- f) have a toilet that
 - i) has the top of the seat between 430 and 485 mm from the floor;
 - ii) has grab bars that comply with Clause 6.2.6.4; and
 - iii) has a toilet paper dispenser that complies with Clause 6.2.6.5.

9 Vehicular access

9.1 General

The requirements of this Clause deal with passenger pick-up areas and with designated parking spaces, which may be located in either an exterior area or an interior structure.

9.2 Pedestrian routes

A pedestrian route from a passenger pick-up area or a designated parking space shall

- a) be part of the shortest accessible route to the building or facility entrance;

- b) where it is exterior, comply with Clause 8.2; and
- c) where it is interior, comply with Clause 5.1.

9.3 Passenger pick-up areas

9.3.1 Access aisle

At a passenger pick-up area, a side access aisle shall be provided on the roadway that is

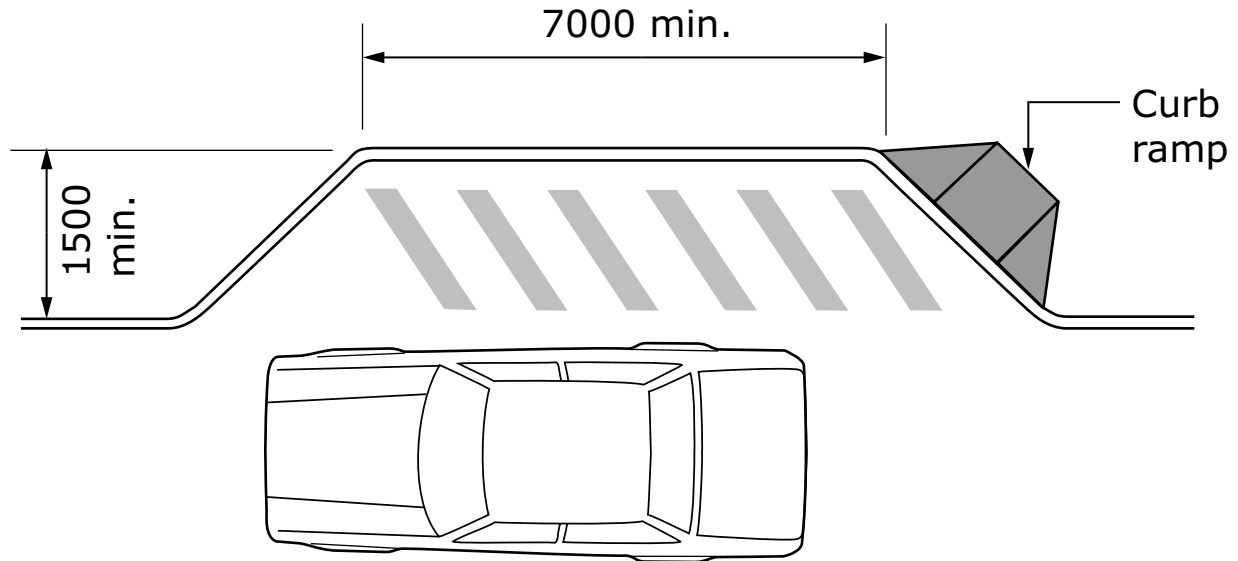
- a) adjacent and parallel to the accessible route;
- b) at least 1500 mm wide × 7000 mm long; and
- c) separated from the walkway either
 - i) by a curb containing a curb ramp that complies with Clause 8.3.3; or
 - ii) where there is no curb, by a tactile attention indicator surface that complies with Clause 4.3.5.3 (see Figure 68).

9.3.2 Height clearance

The clearance from the pavement to the underside of any ceiling structure or hanging object shall

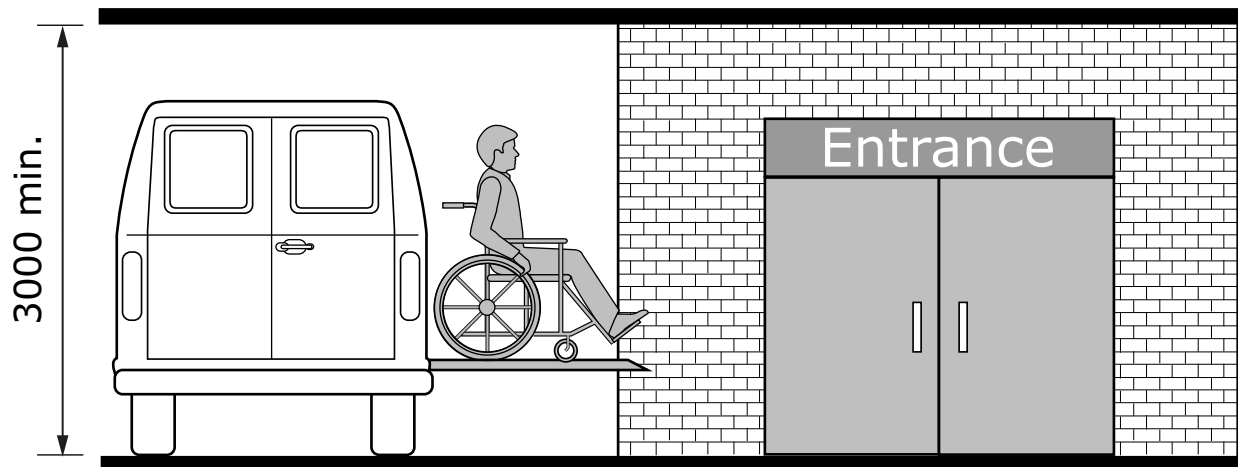
- a) be at least 3000 mm
 - i) at the passenger pick-up area; and
 - ii) along the vehicular route from the site entrance (see Figure 69); and
- b) be identified with a sign indicating clearance height.

Figure 68
Access aisle at passenger pick-up area
 (See Clause 9.3.1.)



Note: All dimensions are in mm.

Figure 69
Height clearance at passenger pick-up area
 (See Clauses 9.3.2 and 9.4.2.)



Note: All dimensions are in mm.

9.4 Designated accessible parking

9.4.1 Area allowances

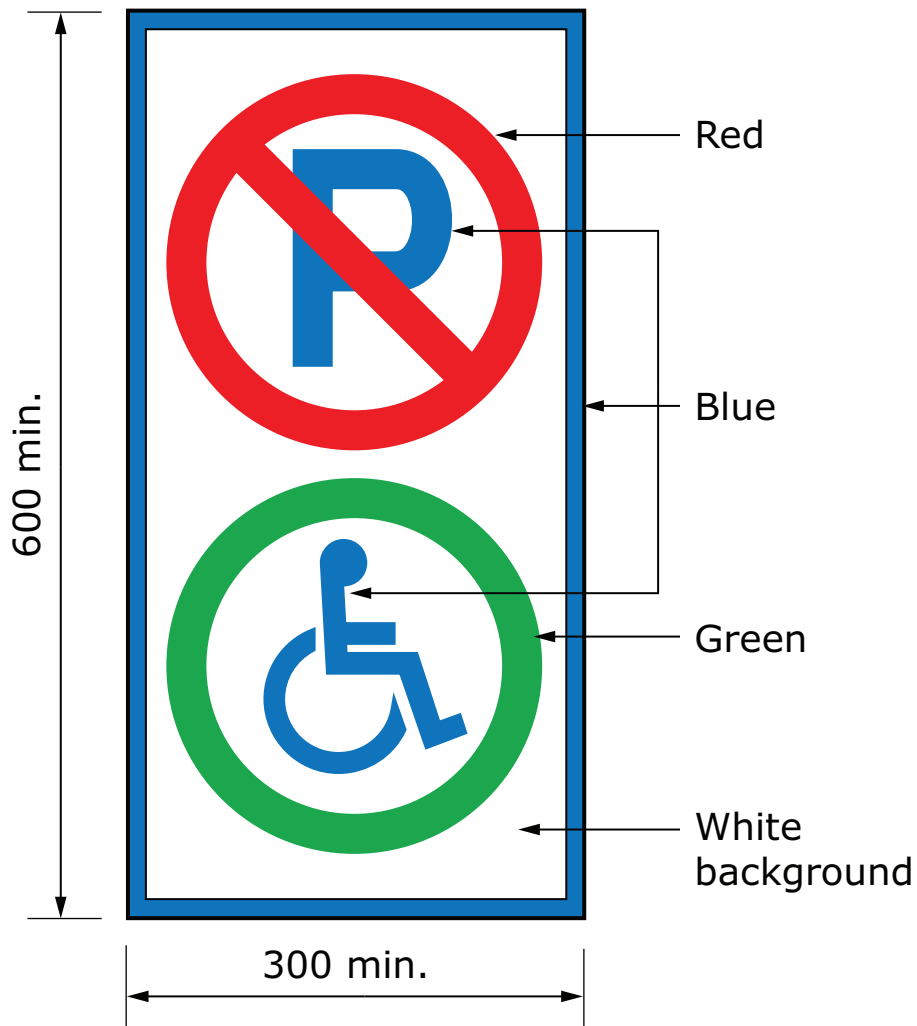
A designated accessible parking space shall

- a) be at least 2600 mm wide;
- b) have an adjacent side access aisle at least 2000 mm wide (see Figure 71); and
- c) have an adjacent rear access aisle at least 2000 mm long (see Figure 72).

Table 7
Recommended number of designated parking spaces
(See Clause 9.4.1.)

Number of designated parking spaces (see Clause 9.4.1)	Number of designated accessible parking spaces (see Clause 9.4)	Number of designated limited mobility parking spaces (see Clause 9.5)
2-50	1-3	2-6
51-100	2-4	4-8
101-200	4-8	8-16
201-300	5-10	10-20
301-500	6-12	12-24
Over 500	6-12 plus 1-3 for every 100 spaces over 500	12-24 plus 2-6 for every 100 spaces over 500

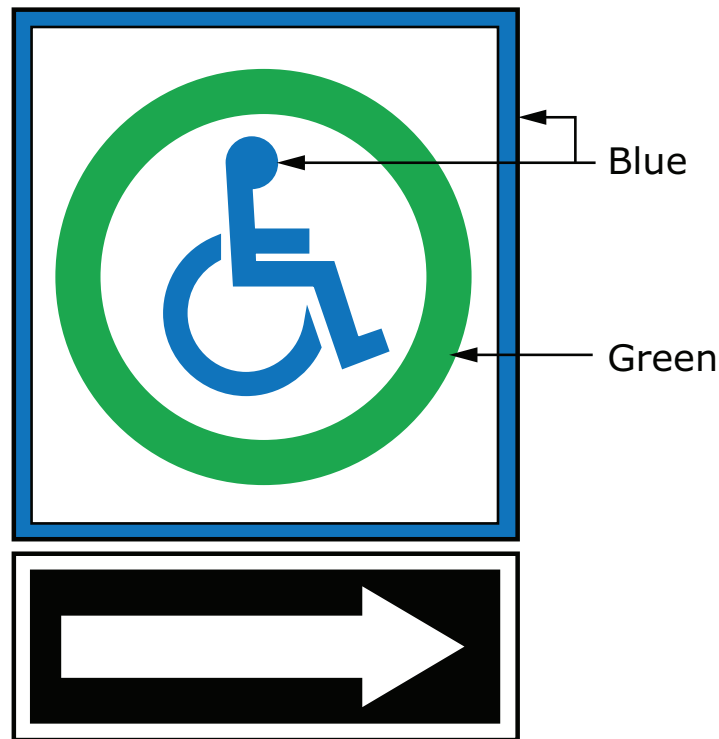
Figure 70
Designated parking signs
 (See Clauses 9.4.4.1 and 9.4.4.2.)



a) Uniform traffic control sign

(Continued)

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Figure 70 (Concluded)**b) Directional sign to parking spaces**

Note: All dimensions are in mm.

9.4.2 Height allowances

The clearance from the pavement to the underside of any ceiling structure or hanging object shall be at least 2750 mm

- a) along the vehicular route; and
- b) at the designated accessible parking space(s) (see Figure 69).

9.4.3 Surface

A designated parking space and its adjacent side aisle shall

- a) have a surface that is level, stable, firm, and slip-resistant;
- b) on the side access aisle, have diagonal markings that resist fading or removal; and

- c) where bollards or curbs separate the vehicular area from a pedestrian route, have them comply with Clause 8.3.9.

9.4.4 Signage for designated accessible parking

9.4.4.1 Identification

A designated accessible parking space shall be identified by

- a) a vertically mounted sign; and
- b) the International Symbol of Access painted on the pavement (see Figure 12).

9.4.4.2 Vertical signs

A vertical sign shall

- a) be at least 300 mm wide × 450 mm high;
- b) have the centre of the sign between 1500 to 2000 mm from the ground;
- c) incorporate the International Symbol of Access (see Figure 12); and
- d) comply with Clause 4.4.

9.4.4.3 Pavement signs

A painted sign on the pavement shall

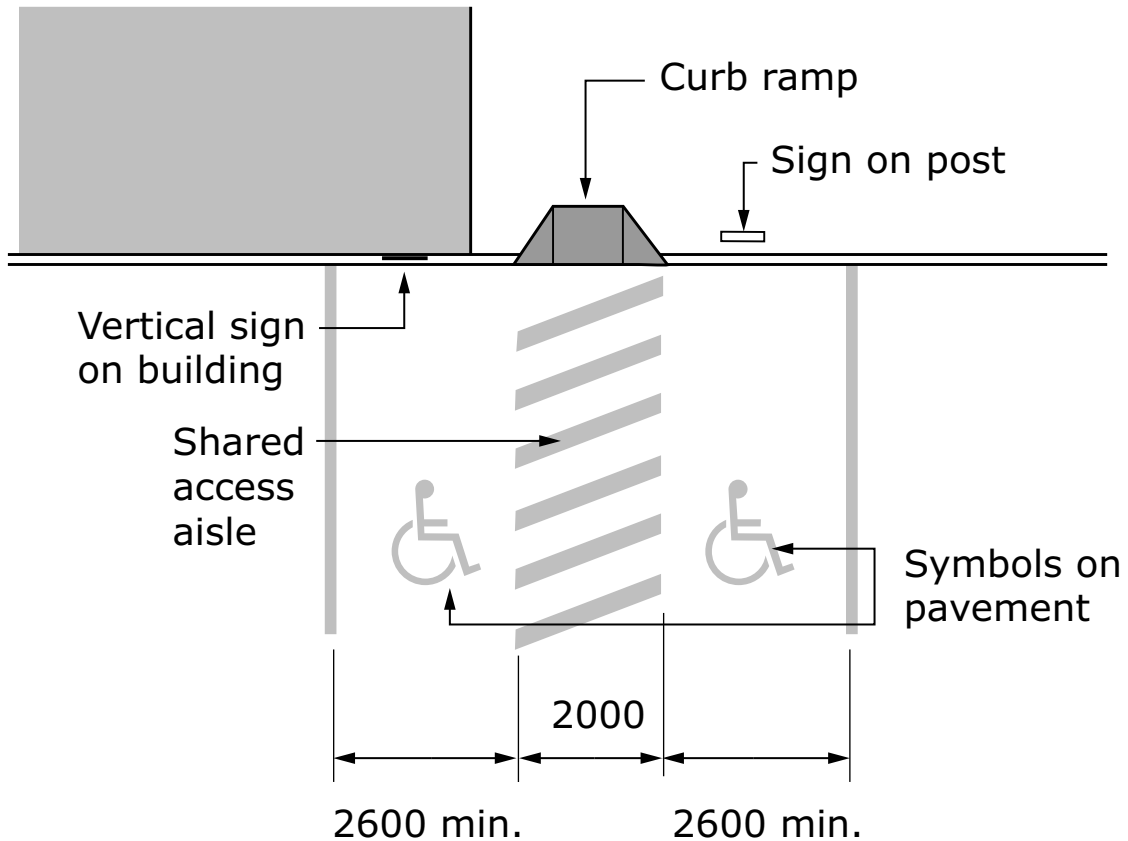
- a) be located in the centre of the parking space; and
- b) have the International Symbol of Access (see Figure 12)
 - i) at least 1000 mm long; and
 - ii) colour-contrasted with the background pavement.

9.5 Designated accessible parking spaces for limited mobility users

Where provided as a courtesy, a designated accessible car space for users with limited mobility shall be

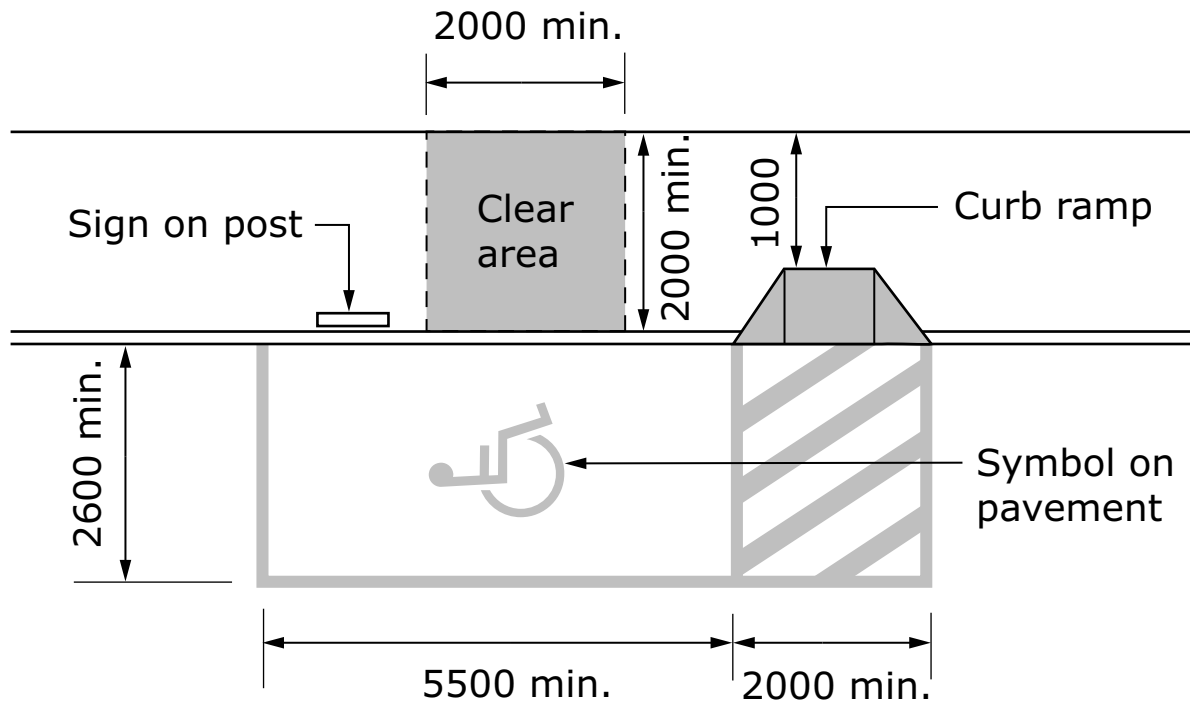
- a) at least 2400 mm wide; and
- b) identified by a sign for limited mobility access.

Figure 71
Perpendicular accessible parking space
 (See Clause 9.4.1.)



Note: All dimensions are in mm.

Figure 72
Parallel accessible parking space
 (See Clause 9.4.1.)



Note: All dimensions are in mm.

9.6 Ticketing dispensers or payment machines

A ticketing dispenser or payment machine for parking (at street side or in a parking facility) shall

- a) have its self-service interactive device comply with CAN/CSA-B651.2; and
- b) be accessed by a route that complies with either
 - i) Clause 5.1 for an interior location; or
 - ii) Clause 8.2 for an exterior location.

Annex A (informative)

Anthropometrics of mobility aid users

Note: This Annex is not a mandatory part of this Standard.

A.1 Scope

This Annex contains dimensions that can be used for guidance when designing accessible facilities and equipment for persons using mobility aids.

A.2 Reach ranges for a person in a wheeled mobility device

A.2.1 Forward reach without obstruction

The highest forward reach is 1200 mm from the floor, and the lowest forward reach is 400 mm from the floor (see Figure [A.1](#)).

A.2.2 Forward reach over obstruction

The highest forward reach is 1100 mm from the floor, which allows for a touch-reach over a 600 mm deep obstruction or a grasp-reach over a 500 mm deep obstruction (see Figure [A.2](#)).

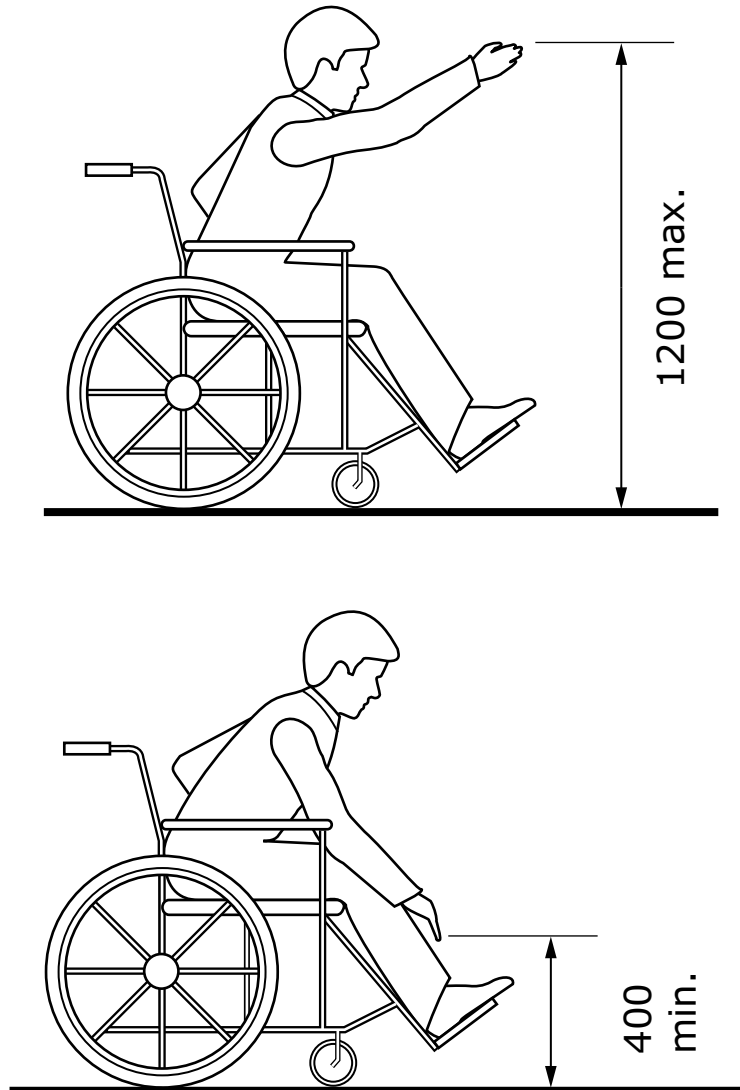
A.2.3 Side reach without obstruction

The highest side reach for touch is 1400 mm from the floor, and the lowest side reach for touch is 230 mm from the floor (see Figure [A.3](#)).

A.2.4 Side reach over obstruction

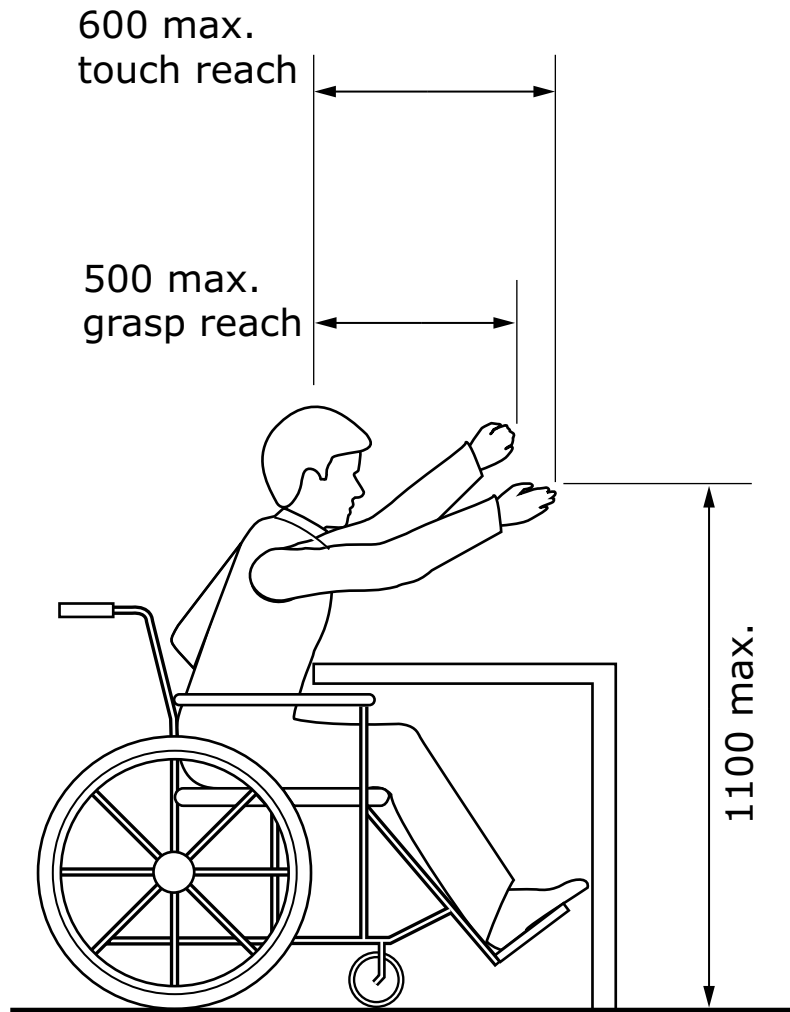
The highest side reach over an 860 mm high obstruction is 1200 mm from the floor, which allows for a touch-reach depth of 600 mm or a grasp-reach depth of 500 mm (see Figure [A.4](#)).

Figure A.1
Forward reach without obstruction
(See Clause A.2.1.)



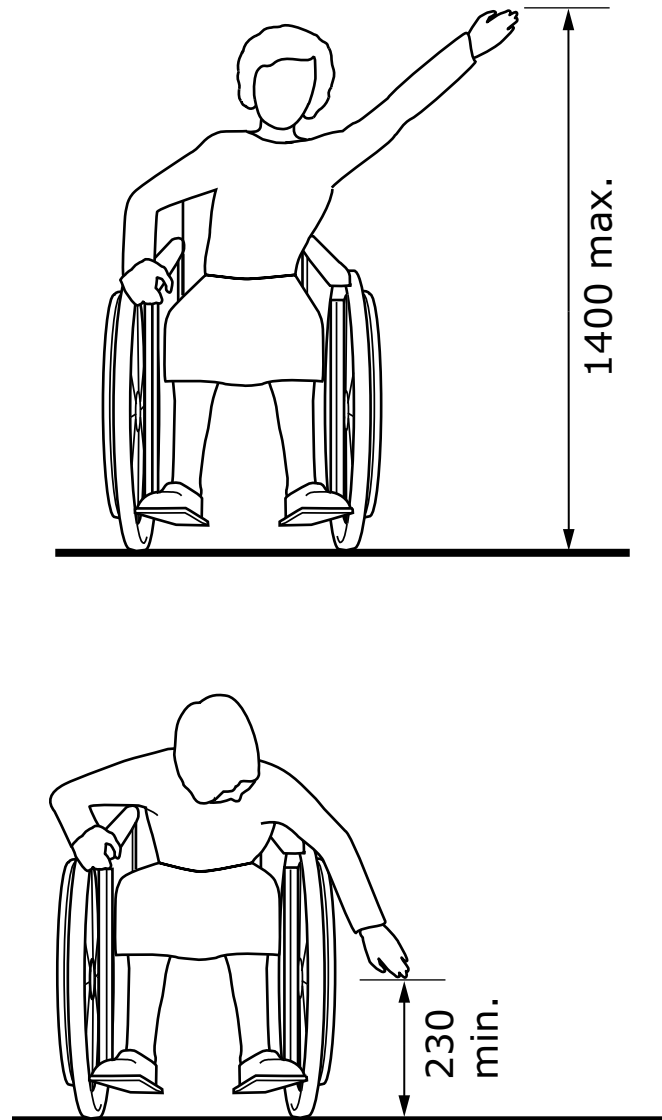
Note: All dimensions are in mm.

Figure A.2
Forward reach over obstruction
(See Clause A.2.2.)



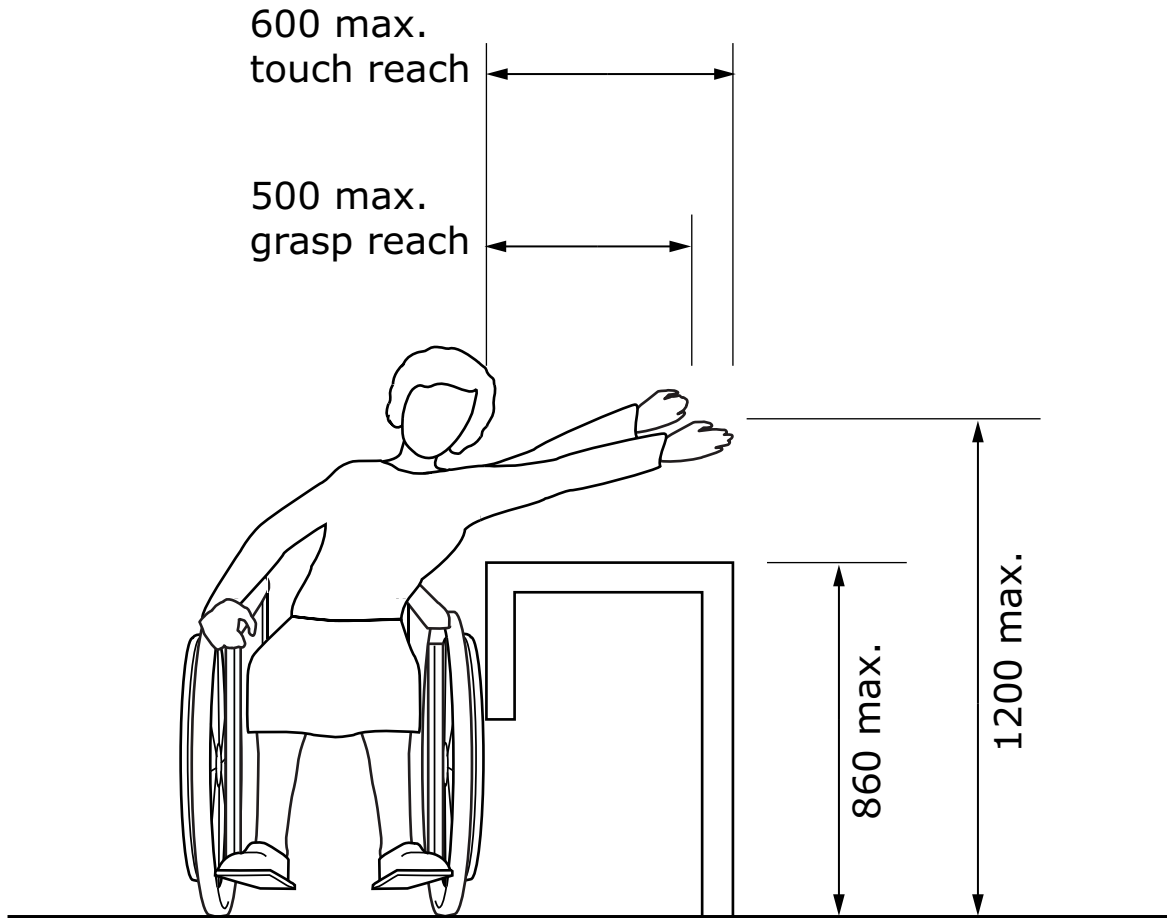
Note: All dimensions are in mm.

Figure A.3
Side reach without obstruction
(See Clause A.2.3.)



Note: All dimensions are in mm.

Figure A.4
Side reach over obstruction
 (See Clause A.2.4.)



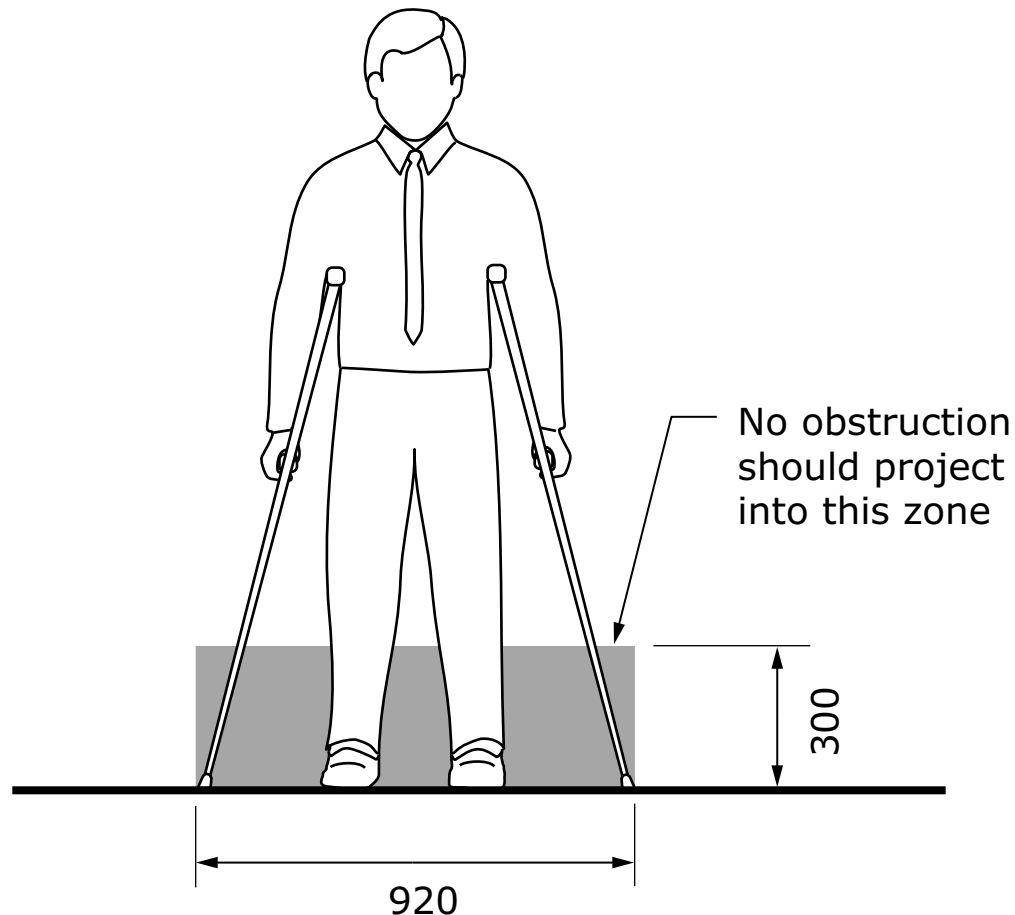
Note: All dimensions are in mm.

A.3 Walkway widths for persons using crutches

Although people who use walking aids can manoeuvre through door openings of 810 mm clear width, for comfortable gaits they require a walkway width of 920 mm (see Figure A.5). Crutch tips, which often extend down at a wide angle, are a hazard in narrow walkways where they might not be seen by other pedestrians.

Note: All dimensions are in mm.

Figure A.5
Walkway width for persons using crutches
 (See Clause A.3.)



Note: All dimensions are in mm.

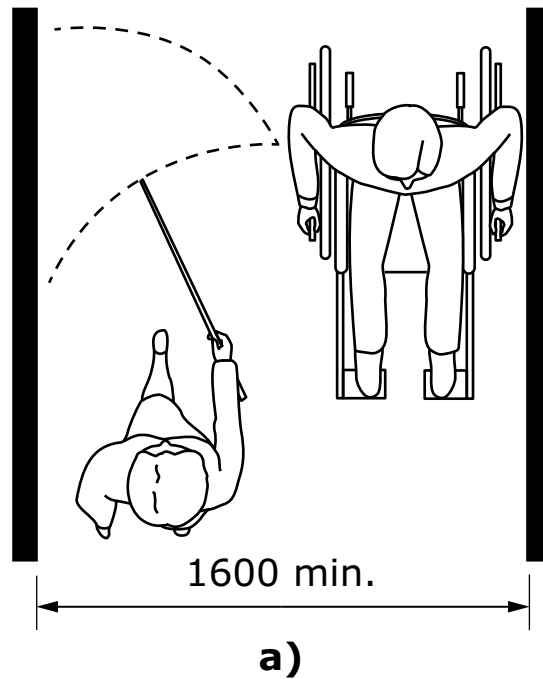
A.4 Detection space for persons using a long white cane

People who use a long white cane to help them manoeuvre can detect an obstruction within a height range of up to 685 mm from the floor. The forward detection range can vary between 900 and 1600 mm [see Figure A.6 a) and b)]. However, the detection distance is reduced by the same amount that the obstruction is above the floor.

A.5 Walkway width for a person with a service animal

A person who uses a service animal requires a comfortable clear walkway width of 1200 mm (see Figure [A.7](#)).

Figure A.6
Detection space for persons using a long white cane
(See Clause A.4.)



(Continued)

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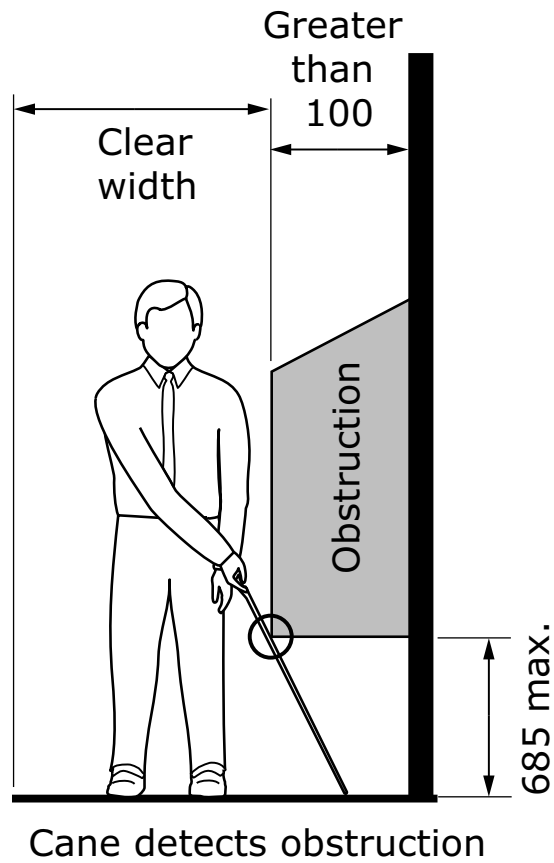
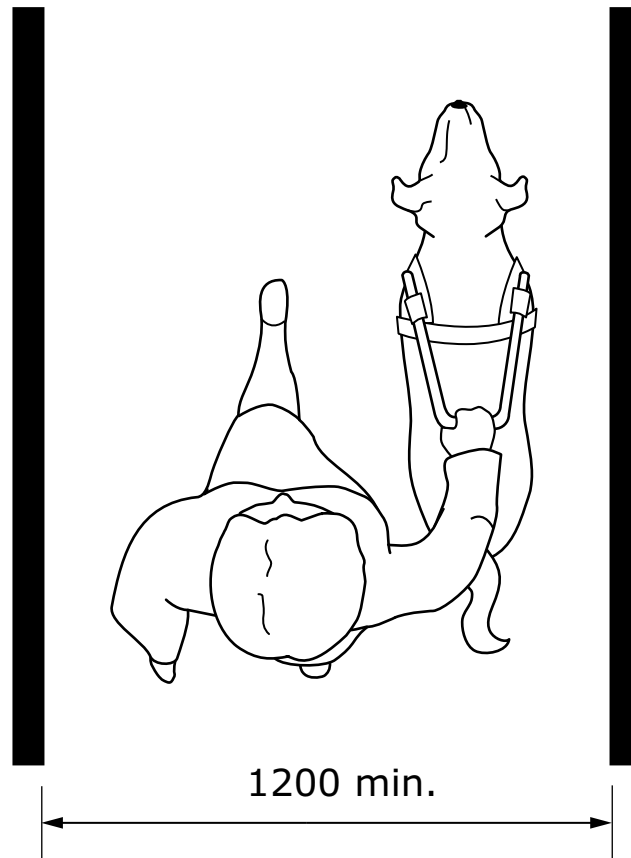
Figure A.6 (Concluded)**b)****Note:** All dimensions are in mm.

Figure A.7
Walkway width for a person with a service animal
(See Clause A.5.)

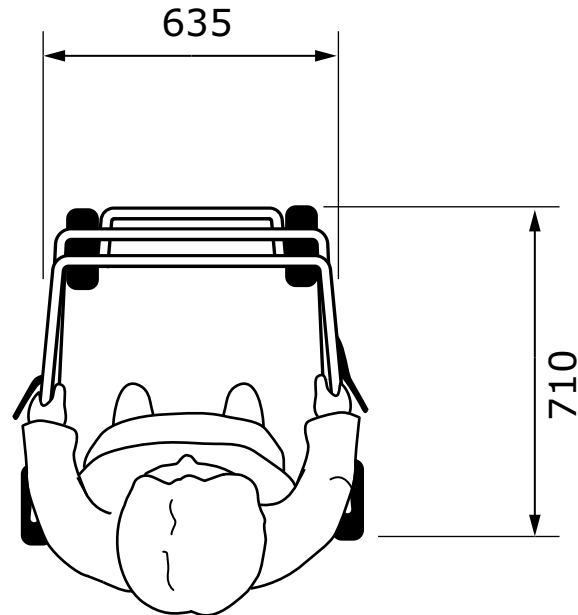


Note: All dimensions are in mm.

A.6 Dimensions for walkers

Figure A.8 shows typical dimensions for a person using a walker. These mobility aids, used especially by elderly persons, are lightweight and fold easily for storage or transport.

Figure A.8
Floor area for a person using a walker
 (See Clause A.6.)



Note: All dimensions are in mm.

A.7 Dimensions of wheeled manual mobility aids

Typical dimensions for manual wheelchairs are shown in Figure A.9 a) and b), though sport models tend to have a wider wheelbase. Manual wheelchairs are light in weight and may be folded, either along the long axis [as shown in the Figure A.9 b)] or by removing the wheels and folding the backrest against the seat.

The floor area for a person using a wheelchair, as shown in Figure A.10, includes the additional side space required to accommodate the hand motion that propels a manual wheelchair, as well as the additional toe space that extends beyond the footrest.

A.8 Dimensions of wheeled power mobility aids

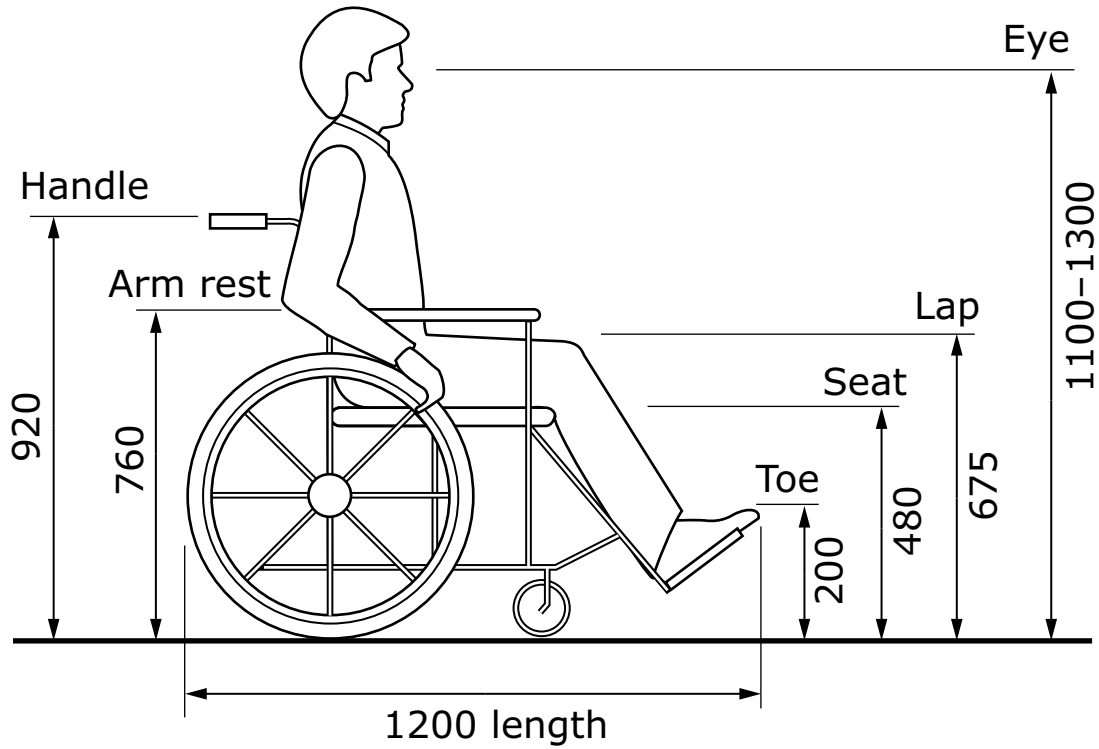
The footprints of powered wheelchairs currently in use tend to be longer than those of manual wheelchairs (see Figure A.11). Some may have extended footrests or a ventilator at the back

of the chair. Powered wheelchairs are heavy, carry a battery that requires recharging when stored, and cannot be folded.

Scooters also have a longer footprint, require recharging, are heavy, and cannot be folded. Some people who use wheeled mobility aids own several for different occasions, such as a manual chair for the home and a powered chair for exterior use.

To better accommodate all wheeled mobility aids, a suggested best practice is to use a footprint that is 1500 mm long. This dimension is important, for instance, in the design of platform lifts, which currently tend to be minimal in size and often do not accommodate a longer mobility aid.

Figure A.9
Typical dimensions of an adult in a manual wheelchair
 (See Clause A.7.)

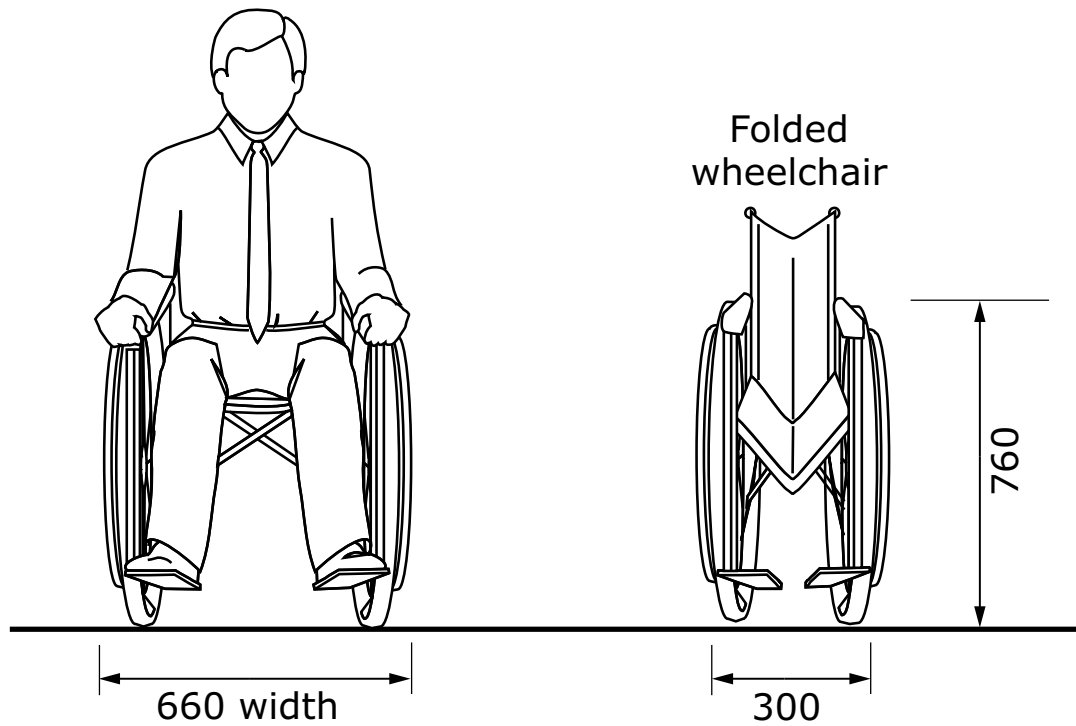


a)

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Figure A.9 (Concluded)

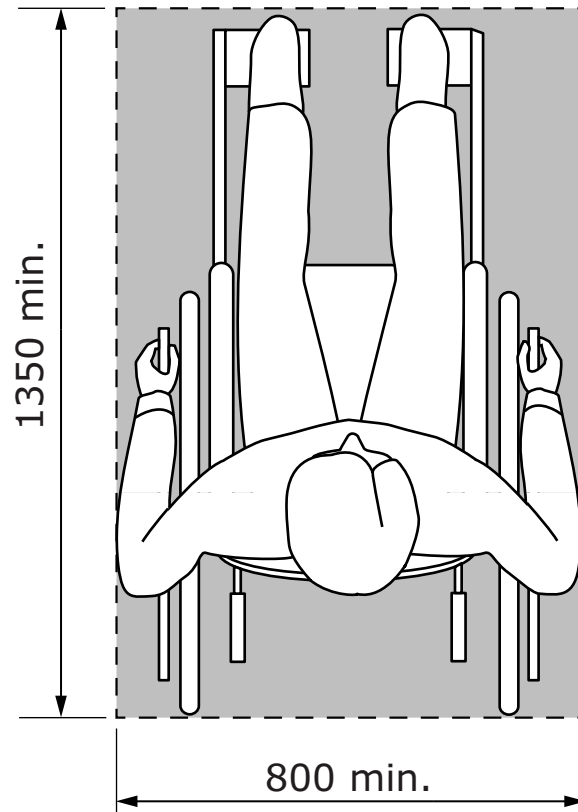


b)

Note: All dimensions are in mm.

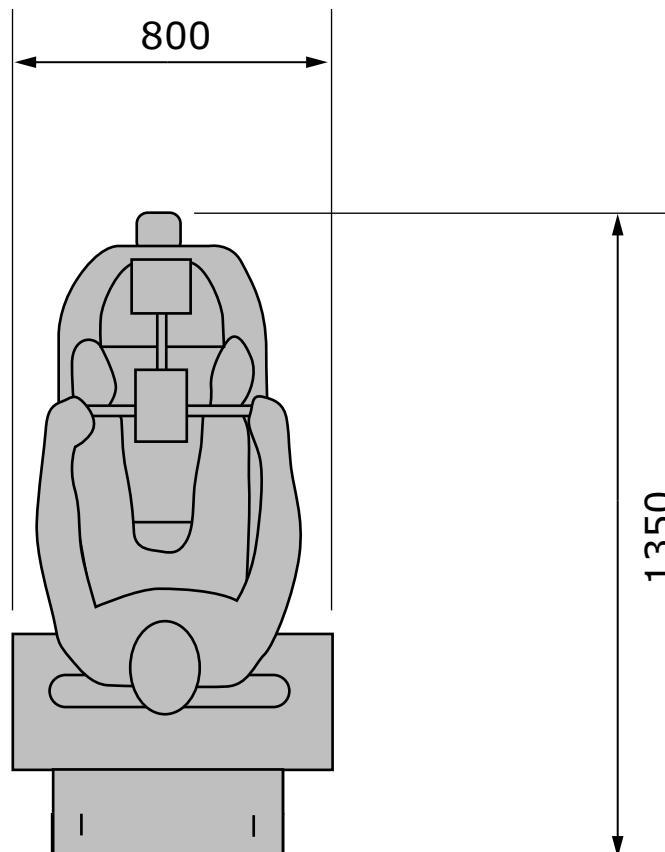
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Figure A.10
Minimum floor area for a person using a manual wheelchair
(See Clause [A.7.](#))



Note: All dimensions are in mm.

Figure A.11
Floor area for a person using a powered wheelchair or scooter
 (See Clause A.8.)



Note: All dimensions are in mm.

A.9 Turning areas

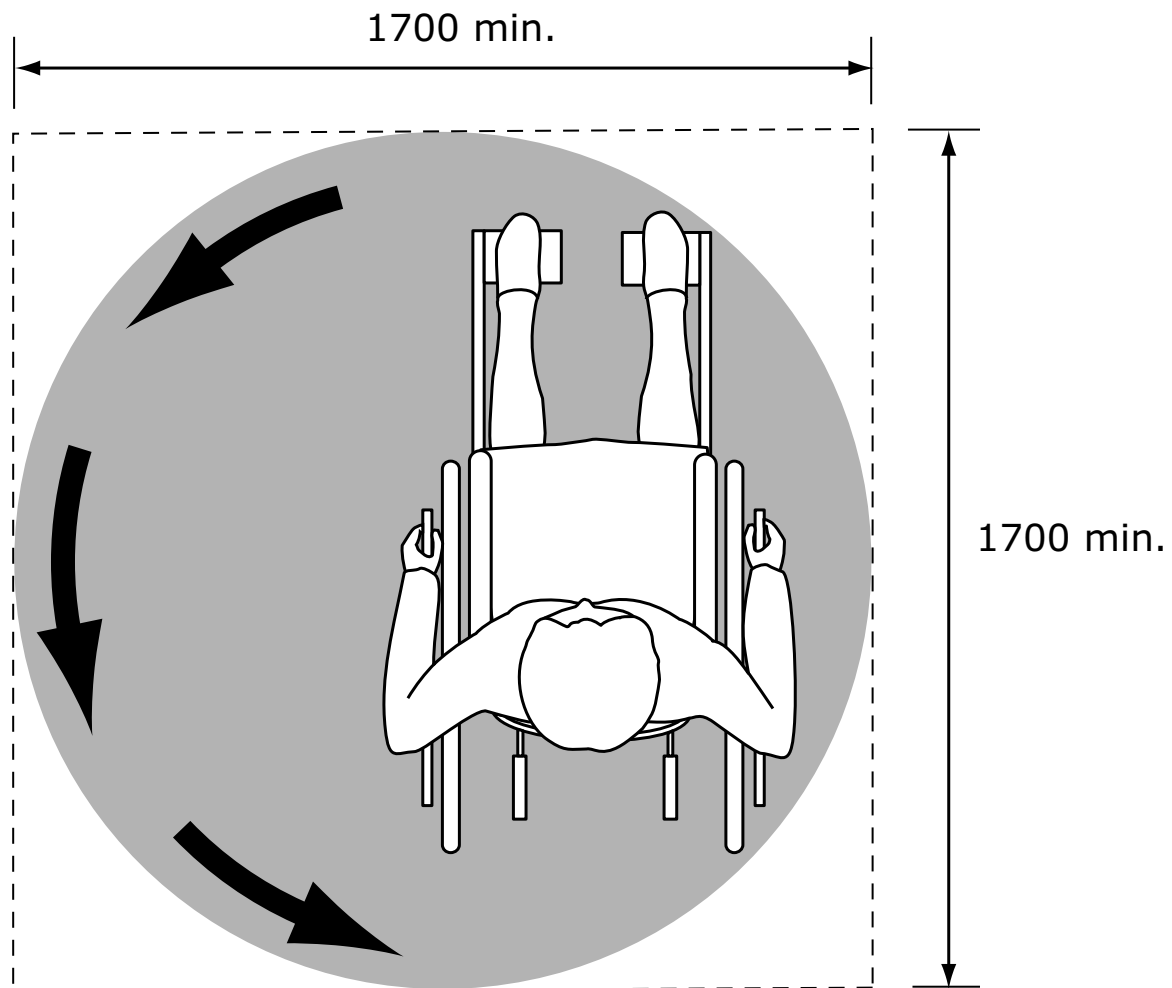
Manual wheelchairs require a turning area as shown in Figure A.12. Power aids, however, often do not have the same manoeuvrability. The diameter needed for a continuous turn of a powered wheelchair is shown in Figure A.13. Scooters, due to their design, turn differently than wheelchairs and can require even more space for a continuous turn, as shown in Figure A.14.

The turning space is important for areas such as landings, which must accommodate these wheeled mobility aids.

Starting with this edition, this Standard is addressing minimum space requirements for wheeled mobility devices as a group, rather than providing separate dimensions for manual wheelchairs and powered devices. The clear floor area requirement for a 180° turn of a wheeled mobility device has been increased to 1700 x 1700 mm, which research has indicated will accommodate 95% of manual and powered wheelchair users, and 90% of scooter users. Larger devices could need to use a series of smaller turns to perform this maneuver.

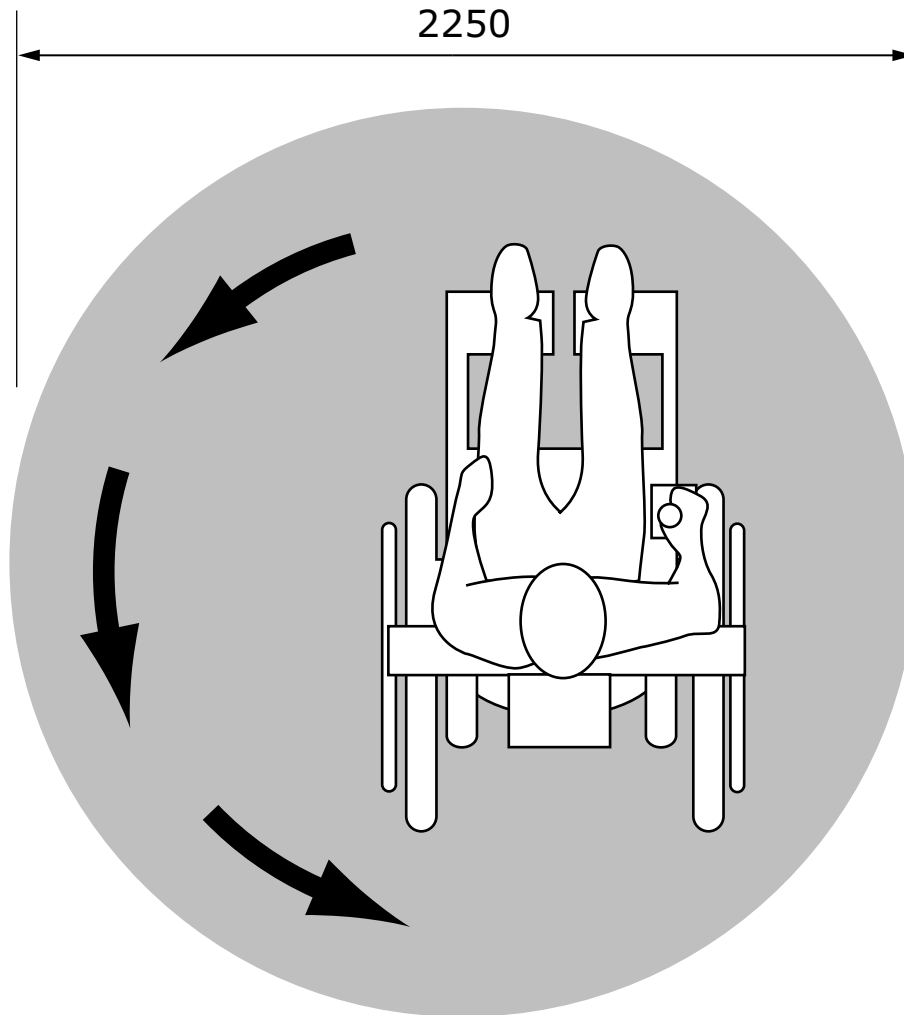
In various instances, equipment or items may be added to the back of a manual wheelchair, powered chair, or scooter (such as a ventilator or backpack) that extends the length of the mobility aid footprint. In this situation, the mobility aid might require an extended diameter to complete a 180° or 360° turn.

Figure A.12
Turning area for a person using a manual wheelchair
(continuous turn)
(See Clause [A.9.](#))



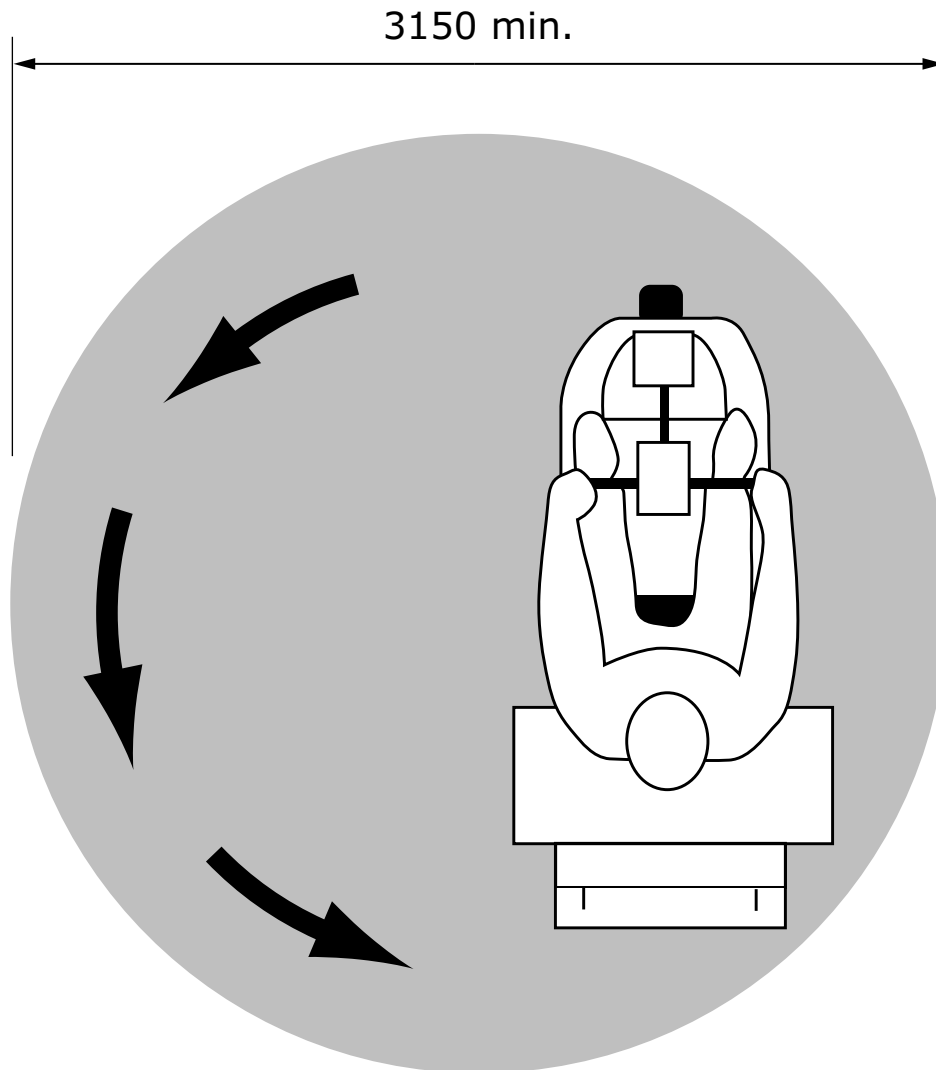
Note: All dimensions are in mm.

Figure A.13
Turning area for a person using a powered wheelchair (continuous turn)
(See Clause [A.9.](#))



Note: All dimensions are in mm.

Figure A.14
Turning area for a person using a large scooter
(continuous turn)
 (See Clause [A.9.](#))



Note: All dimensions are in mm.

A.10 References

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Steinfeld, E., Maisel, J., and Feathers, D. **Standards and Anthropometry for Wheeled Mobility.** Buffalo, N.Y.: Center for Inclusive Design and Environmental Access (IDEA), School of Architecture and Planning, University of Buffalo, The State University of New York, July 2005.

Annex B (informative)

Potential for slip of floor and tread finishes

Note: This Annex is not a mandatory part of this Standard.

Table B.1
Potential for slip of floor and tread finishes
 (See Clause 4.3.1.)

Material	Potential for slip		Remarks
	Dry and unpolished	Wet	
Carpet	Extremely low	Low	Loose or worn carpets can present a trip hazard
Cast iron	Low	Moderate to low	If open treads are used, the potential for slip can be low in wet conditions
Ceramic tiles (glazed or highly polished)	Low	High	—
Ceramic tiles (matte)	Low	Moderate to low	Wet slip potential is dependent on surface roughness. An Rz (din) value greater than 10 µm should be used for clean-water wet areas
Clay pavers	Extremely low	Low	Brick Development Association can advise*
Clay tiles	Low	Moderate to low	When surface is wet and polished, the potential for slip can be very high

(Continued)

Table B.1 (Continued)

Material	Potential for slip		
	Dry and unpolished	Wet	Remarks
Clay tiles (carborundum finish)	Extremely low	Extremely low	Might be suitable for external stairs
Clay tiles (textured)	Extremely low	Low	Might be suitable for external stairs
Concrete	Low	Moderate to low	If textured finish or a non-slip aggregate is used, potential for slip can be low
Concrete (powerfloat finish)	Low	Moderate	Surface dust can cause problems, particularly on new floors
Cork tiles	Extremely low	Low	—
Float glass	Extremely low	High	Various techniques can be used to modify the surface of float glass, thus improving the wet potential for slip. Expert advice should be sought
Granolithic	Low	Moderate to low	Slip-resistant inserts are necessary whenever granolithic is used for stair treads. Polished granolithic should not be used for stair treads
GRP, profiled (chequer plate)	—	Low	Class determined by ramp method, water-wet with shod feet. No dry value determined

(Continued)

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Table B.1 (Continued)

Material	Potential for slip		
	Dry and unpolished	Wet	Remarks
Linoleum	Low	Moderate to low	Edges of sheet liable to cause tripping if not fixed firmly to base. Linoleum when wet, is very slippery.
Mastic asphalt	Low	Low	—
Profiled ceramics	Low	Moderate to low	Profiled ceramics are suitable for use in barefoot areas. In shod-foot situations, the comment for matte ceramic tiles applies
PVC	Low	High to moderate	Ex-factory classes for PVC should be treated with caution. The installed floor is unlikely to be suitable for use in wet conditions
PVC, enhanced slip resistance	Low	Low	The anti-slip properties depend upon sufficient, uniformly distributed aggregate. Areas of reduced aggregate can present a serious slip hazard
Resin, enhanced slip resistance	Extremely low	Low	The anti-slip properties depend upon sufficient, uniformly distributed aggregate. Areas of reduced aggregate can

(Continued)

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Table B.1 (Continued)

Material	Potential for slip		Remarks
	Dry and unpolished	Wet	
			present a serious slip hazard
Resin, smooth, self-levelling	Extremely low	High to moderate	—
Rubber (sheets or tiles)	Extremely low	High	Not suitable near entrance doors or other foreseeable wet areas
Rubbers, smooth and ribbed	Low	High	—
Stainless steel	Low	High	Wet slip potential is highly dependent on surface finish. Quoted values for 0.5 µm Rz (din) surface roughness
Steel profiled (Diamond plate)	—	Moderate	Class determined by DIN ramp method. No dry value determined
Terrazzo	Low	High to moderate	Slip-resistant inserts are necessary whenever terrazzo is used for stair treads. Polished terrazzo (including resin based) should not be used for stair treads

(Continued)

Table B.1 (Concluded)

Material	Potential for slip		Remarks
	Dry and unpolished	Wet	
Timber (finished)	Extremely low	High	Applies to sealed, varnished, or polished timber
Timber (unfinished)	Low	Moderate	—

Source: BSI BS5395 Part 1.

* Brick Development Association, Woodside House, Winkfield, Windsor, Berkshire, S1A 2DX, England.

Notes:

- 1) The information in this Table has been drawn from the previous edition of this Standard and from more recent research by Great Britain's Health and Safety Executive.
- 2) The Table is intended only as a guide. Depending on the precise nature of the wearing surface, seemingly similar products made from the same material can be totally different in terms of their slip-potential characteristics. It is especially important that specifiers are aware that many products will change significantly merely on installation. Wear, usage, contamination, cleaning, and maintenance regimes will all affect the performance of the product over its lifetime.

Annex C (informative)

References for residential accommodation

Note: This Annex is not a mandatory part of this Standard. The following publications provide detailed information on various design issues for building accessible housing.

Canada Mortgage and Housing Corporation, **Socio-economic series 08-011: Understanding the Status of Visitability in Canada**. Ottawa: 2008.

————, 63909: **Design Options for Barrier-free and Adaptable Housing**. Ottawa: 1996.

————, 65023: **Accessible Housing by Design — Ramps**. Ottawa: 2016.

————, 65686: **Accessible Housing by Design — Bathrooms**. Ottawa: 2016.

————, 65588: **Accessible Housing by Design — Kitchens**. Ottawa: 2016.

————, 65080: **Accessible Housing by Design — Appliances**. Ottawa: 2016.

————, 65542: **Accessible Housing by Design — Lifts and Residential Elevators**. Ottawa: 2016.

————, 65544: **Accessible Housing by Design — Residential Hoists and Ceiling Lifts**. Ottawa: 2016.

————, **Housing Observer — Automation in the Home**. Ottawa: 2016.

————, 61943: **FlexHousing™ Checklist — Homes that Adapt to Life's Changes**. Ottawa: 2009.

—, 65011: **Housing for Adults with Intellectual Disabilities**. Ottawa: 2006.

Manitoba Housing and Renewal Corporation: **Visitable Housing — Community Building Through VISIBLE and Adaptable Housing**. Winnipeg: 2006.

Annex D (informative)

Trails and beach access routes

Note: This informative Annex has been written in mandatory language to facilitate adoption by anyone wishing to do so.

D.1 General

This Annex applies to trails that are designed, designated, and constructed as pedestrian routes for recreational use, for people travelling by foot or users of mobility aids.

D.2 Ground surfaces

Ground surfaces shall be in compliance with Clauses 4.3.1, 4.3.2, 4.3.4, and 4.3.5.

D.3 Edge protection

Edge protection on trails shall comply with Clause 8.2.5.

D.4 Designated trailhead

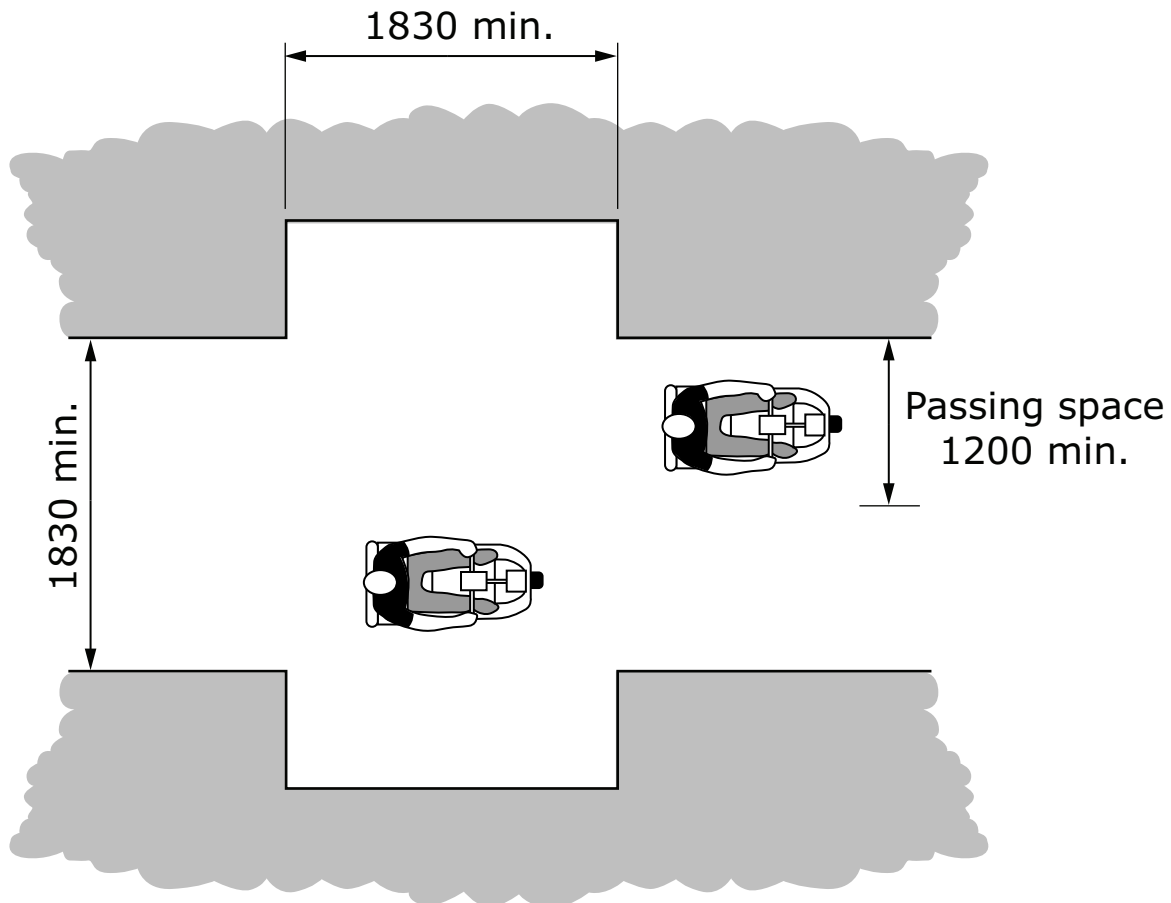
Designated trailheads shall be integrated as part of the trail design at key entrance and exit points along the trail, intermediate areas on lengthy trails, and decision points (e.g., changes in elevation or offers choice to go in multiple directions) where required. Trailheads shall have accessible information signage (see Clause 4.5).

D.5 Trail clear width and height

Trails shall

- a) have a clear opening complying with Clause 5.1.1;
- b) have a width complying with Clauses 8.2.2 and 5.1.1;
- c) provide at least 1200 mm (minimum) width at locations with site constraints;
- d) include passing space of 1830 mm (minimum) wide x 1830 mm (minimum) long, at intervals of 50 m or less (Figure D.1); and
- e) maintain headroom in accordance with Clause 4.4.

Figure D.1
Passing space
 (See Clause D.5.)



Note: All dimensions are in mm.

D.6 Trail running slope

D.6.1

Unless exception criteria apply, trails shall comply with the following limits on gradients:

- i) 5% or less for any distance;
- ii) 5.1% to 8.33% for a maximum distance of 61 m;
- iii) 8.34% to 10% for a maximum distance of 9 m; and
- iv) 10% to 12% for a maximum distance of 3 m.

D.6.2

Trails shall be designed to provide the minimum gradient permitted by the terrain.

D.7 Trail cross slope

Trail cross slope shall

- a) comply with Clause 5.5.2;
- b) ensure gradient does not exceed 1:20 (5%), unless criteria for exceptions are applicable; and
- c) be the minimum gradient permitted by the terrain.

D.8 Trail ramps

Trail ramps shall be in compliance with Clause 8.2.7.

D.9 Trail signage

Trail signage shall

- a) comply with Clause 8.6.9;
- b) comply with applicable requirements;
- c) provide the necessary directional information at appropriate places along the trail;
- d) provide trail information at strategic locations, including entrances, exits, decision points, and trailheads, in order to objectively describe typical trail conditions, including
 - i) length;
 - ii) average and minimum trail width;
 - iii) average and maximum running and cross-slopes;
 - iv) surface type;
 - v) extreme or unique conditions (e.g., steep slopes, obstacles or narrow widths); and
 - vi) features and amenities along the trail;
- e) be highly colour-contrasted against its background in all seasons, and present information in solid characters; and
- f) provide the same information where other media is used to provide information about a trail, such as websites and brochures.

D.10 Beach access routes

Beach access routes shall

- a) have a width in compliance with Clause 8.2.2;
- b) where the surface of the route is constructed (e.g., not natural),
 - i) have a 1:2 bevel at changes in level between 6 and 13 mm;
 - ii) provide a cross slope complying with Clause 5.5.2;
 - iii) provide a running slope complying with Clause 5.5.1;
 - iv) provide a ramp where changes in level are greater than 200 mm; and
 - v) ensure no gaps in the route larger than 13 mm with any elongated openings oriented perpendicular to the direction of travel;
- c) provide a cross slope to allow drainage complying with Clause 8.2.4; and
- d) provide a clear opening of 850 to 1000 mm at beach access route entrances.

D.11 Boardwalks

Where a recreational trail or beach access route is equipped with a boardwalk, the boardwalk shall

- a) provide a width complying with Clause 8.2.2;
- b) contain no gaps in the route larger than 13 mm;
- c) include edge protection complying with Clause 8.2.5; and
- d) provide a ramp where running slopes are greater than 1:20 (5%).

D.12 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 trail 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 define 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.

Annex E (informative)

References for accessible outdoor recreational environments

Note: This Annex is not a mandatory part of this Standard.

E.1 Standards

CAN/CSA-Z614-14, **Children’s playspaces and equipment**

E.2 Online resources

Accessible Trail Index for Wheelers and Slow Walkers — www.accessibletrails.com

Accessible Trails in the Olympic Peninsula — www.accessibletrails.com/olympictrails

National Trails Training Partnership — www.americantrails.org

Accessibility for All — Park Trails — www.dnr.state.md.us

Accessible playgrounds — www.ksldesign.ca

Recreational Trails Program Accessibility Guidance — https://www.fhwa.dot.gov/environment/recreational_trails/guidance/accessibility_guidance/index.cfm

National Alliance for Accessible Golf — <http://www.accessgolf.org/>

E.3 Publications

Axelson, P., Longmuir, P., Mispagel, K., and Passo, M. 2003. **Universal Trail Assessment Process Trainer Manual**. Minden, NV: PAX Press.

Axelson, P., Longmuir, P., Mispagel, K., and Passo, M. 2003. **Universal Trail Assessment Process Trainer Resource Manual**. Minden, NV: PAX Press.

Axelson, P., Longmuir, P., Mispagel, K., and Passo, M. 2003. **Universal Trail Assessment Process Master Trainer Manual**. Minden, NV: PAX Press.

Axelson, P., Kelley, W., Longmuir, P., Mispagel, K., Passo, M., Pasternak M., Pratt, T., Tuohy, J., Wong, K., Wright, W., and

Yamada, D.A. 2002. **Universal Trail Assessment Process training guide: Assessing outdoor paths, access routes, and trails to collect access, mapping, and maintenance information.** Minden, NV: PAX Press.

Axelson, P.W., Chesney, D.A., Galvan, D.V., Kirschbaum, J.B., Longmuir, P.E., Lyons, C., and Wong, K.M. 1999. **Designing sidewalks and trails for access – Part I of II: Review of existing guidelines and practices.** Washington, D.C.: Federal Highway Administration.

Axelson, P.W., Yamada, D.A., Longmuir, P., Coutts, K., Rose, S., Smith, J., and Ysselstein, J. 1999. **Accessible exterior surfaces: Technical report.** Washington, DC: U.S. Architectural and Transportation Barriers Compliance Board.

Axelson, P.W., Kirschbaum, J., Yamada, D., Siekman, A., Kambitsch, K., Longmuir, P., McCambridge, M., and Mispagel, K. 1999. **Recommendations for addressing accessibility in amusement parks.** Alexandria, VA: International Association of Amusement Parks and Attractions.

Axelson, P.W., Yamada Chesney, D., Longmuir, P.E., and Wright, W. 1998. **Computerized mapping of outdoor trails for accessibility. Phase II final report.** Bethesda, MD: National Institute of Child Health and Human development, National Institutes of Health.

Bhambhani, Y., Coutts, K., Longmuir, P. E., Lyons, R., Seidl, C., and Wheeler, G. 2002. **Inclusive fitness and lifestyle services for all disabilities.** Ottawa, ON: Canadian Society for Exercise Physiology.

Kirschbaum, J.B., Axelson, P.W., Longmuir, P.E., Mispagel, K.M., Stein, J.A., and Yamada, D.A. 2001. **Designing sidewalks and trails for access – Part II of II: Best practices design guide.** Washington, DC: U.S. Department of Transportation.

Longmuir, P.E., and Axelson P.W. 1996. **Assistive technology for recreation.** In J.C. Galvin and M.J. Scherer (Eds.). **Evaluating, selecting and using appropriate assistive technology.** Gaithersburg, MD: Aspen Publishers, Inc., pp. 162–191.

Longmuir, P.E., and Axelson, P.W. (In review). **Sport equipment**. In S. Gavron and K. DePauw (Eds.), **Disability and Sport**. Champaign, IL: Human Kinetics.

Longmuir, P.E., Finney, D., & Conrad, J. (In review). **Canadian Trail PAQ Inventory Process training manual**. Ottawa, ON: Go for Green.

Longmuir, P.E. 2003. **Creating inclusive physical activity opportunities: An abilities-based approach**. In R.D. Steadward.

Watkinson, E.J. and Wheeler, G.D. (Eds.), **Adapted Physical Activity**. Edmonton, AB: University of Alberta Press, pp. 363–382.

Annex F (informative)

Additional national and international resources

Note: This Annex is not a mandatory part of this Standard.
ANSI/ASHRAE 62.1: **Ventilation for Acceptable Indoor Air Quality**. Atlanta: American Society of Heating, Refrigeration and Air Conditioning Engineers, 2016.

CMHC 61089: **Building Materials for the Environmentally Hypersensitive**. Ottawa: Canada Mortgage and Housing Corporation, 1998.

CSA Z204: **Guidelines for Managing Indoor Air Quality in Office Buildings**. Toronto: Canadian Standards Association, 1994 (R1999).

ISO 21542:2011, **Building construction – Accessibility and usability of the built environment**

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