7 Circulation

7.1 Accessible Routes, Paths or Corridors

A barrier-free path of travel should be provided throughout all facilities. Although the minimum acceptable width is 1060 mm, wider routes allow for easier circulation.

The minimum clear width of every barrier-free route shall provide an unobstructed width of at least 1060 mm (OBC 3.7.1.3.(1)), (Figure 7.1) except
a) for a short indentation up to 600 mm in length, it shall be a minimum of 810 mm (Figure 7.1);
b) at doors it shall be 810 mm;
c) where additional manoeuvring space is required at doorways;
d) at U-turns around an obstacle less than 1200 mm wide, it shall be 1100 mm (Figure 7.2);
e) for exterior routes, it shall be 1800 mm; or
f) where space is required for two wheelchairs to pass, it shall be 1500 mm.
g) Panic hardware that does not interfere with passage through a doorway is available and should be used wherever possible.

7.1.1 Turnstiles cannot be used by persons in wheelchairs and can be hazardous to ambulant persons who use crutches or canes. Where turnstiles, controlled checkout lanes, or other restricted passageways are constructed to control the flow of pedestrian traffic, at least one route shall be no less than 920 mm wide should be provided beside a turnstile. **It is recommended that turnstiles not be used.** (See Figure 7.3)

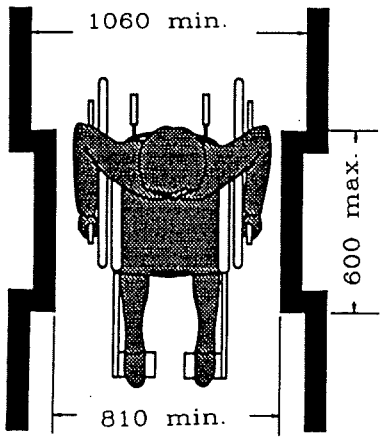
The minimum width recommended for checkout lanes is 920 mm. (See Figure 7.4)

7.1.2 Route Slopes
Accessible routes shall
a) have a running slope not steeper than 1:20;
b) have a cross slope not steeper than 1:50; or
c) be designed as a ramp if the slope is steeper than 1:20.

Long paths of travel should be avoided, and resting areas should be provided at frequent intervals (approximately 30 m).

7.2 Doors

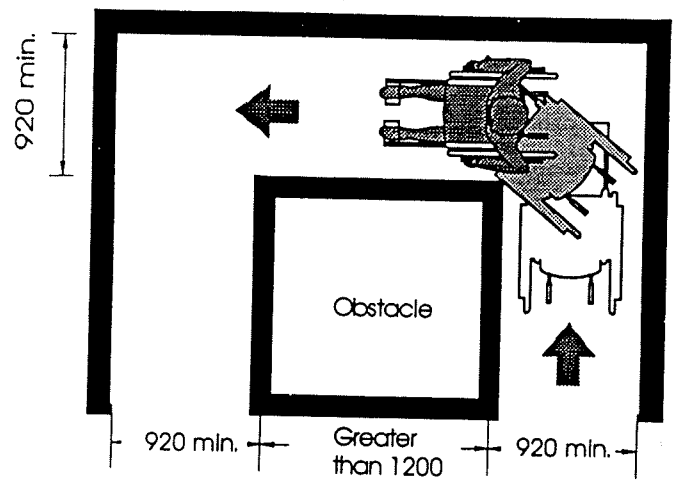
The minimum clear opening of doorways shall be 810 mm measured between the face of the door and the stop with the door open 90° (OBC 3.7.3.3.(1b)). (See Figure 7.5) *In existing buildings, swing-clear hinges can be used to increase the clear opening without changing the frame (See Figure 7.5).*



Width of Accessible Routes

FIGURE 7.1

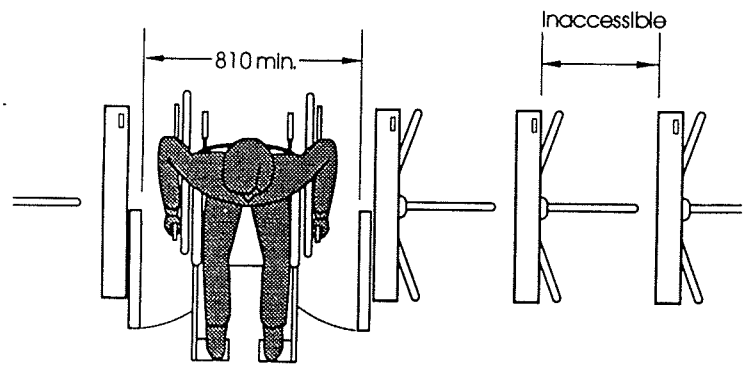
DRAWING BY:
CSA



Width of Accessible Route for a 90° Wheelchair Turn, and a Turn Around an Obstacle

FIGURE 7.2

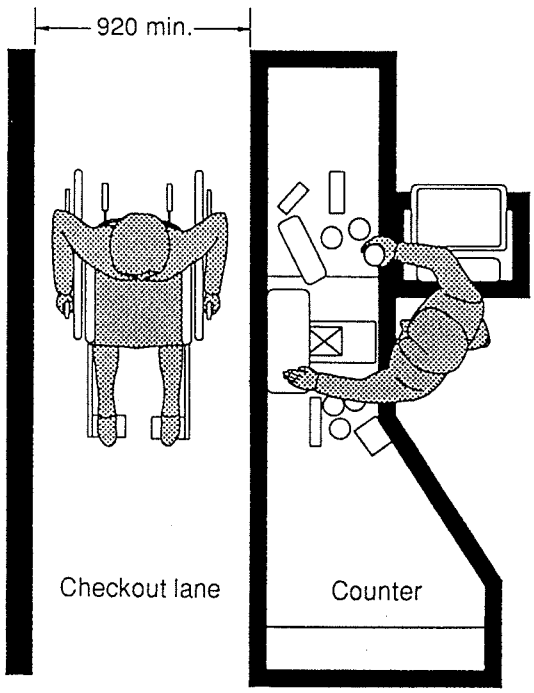
DRAWING BY:
CSA



Access Beside Turnstiles

FIGURE 7.3

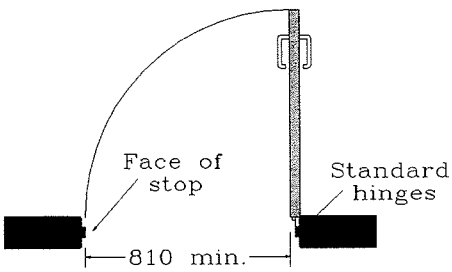
DRAWING BY:
CSA



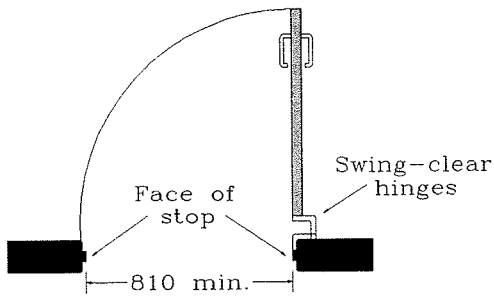
Width of Accessible Checkout Lanes

FIGURE 7.4

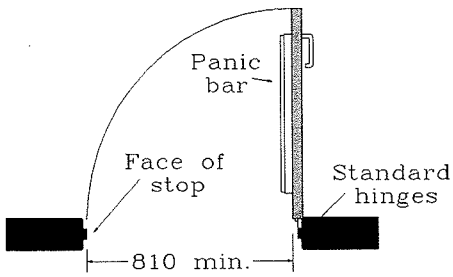
DRAWING BY:
CSA



(a)



(b)



(c)

Clear Opening at Doorway

FIGURE 7.5

DRAWING BY:
BETTY DION ENTERPRISES LTD.

7.2.1 If doorways have two independently operated door leaves, at least one active leaf shall comply with clear width and manoeuvring space requirements. Both doors shall be kept operational and unlocked.

7.2.2 The minimum space between two hinged or pivoted doors in series shall be 1200 mm plus the width of any door swinging into the space. (OBC 3.7.3.3.(11) (See Figure 7.6)

7.3 Manoeuvring Space

Doorways shall have wheelchair manoeuvring space on both sides of the door, and a clear space beside the latch as described in the table below, except where access is only required from one side, such as to a closet. (OBC 3.7.3.3.(10)) (See Figure 7.7.)

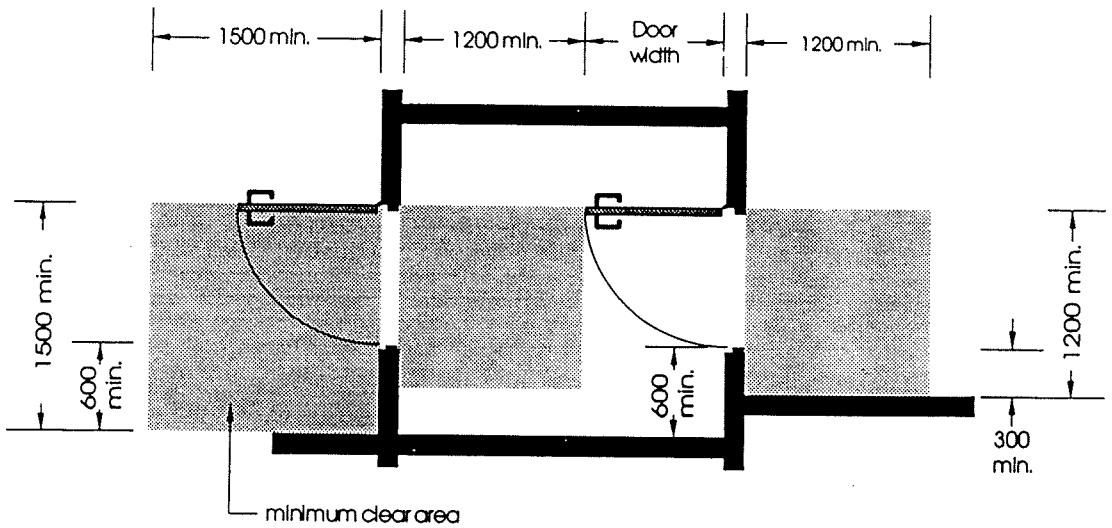
Table 7.1
Manoeuvring Space at Doors

	Floor space required, mm		
Context	**Depth**	**Width**	**Space beside latch, mm**
Side-hinged door			
Front approach			
Pull side	1500	1500	600
Push side	1200	1200	300
Latch side approach			
Pull side	1200	1500	600
Push side	1050	1500	600
Hinge side approach			
Pull side	1500	1500	600
Push side	1050	1350	450
Sliding door			
Front approach	1200	900	50
Side approach	1050	1350	540

Where a door leads to a ramp landing, additional space may be required. (See Section 8 Ramps.)

7.4 Thresholds

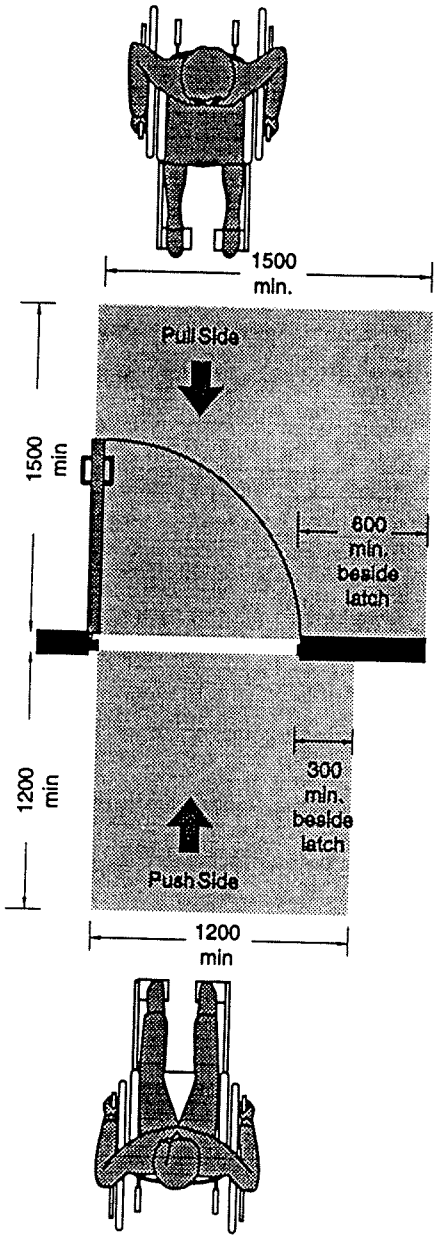
Where possible, raised thresholds should be avoided. They are a hazard to ambulant persons with disabilities and a particular inconvenience to persons in wheelchairs.



Manoeuvring Space at Doors in Series

FIGURE 7.6

DRAWING BY:
CSA



Manoeuvring Space at Doors

FIGURE 7.7

DRAWING BY:
CSA

Thresholds shall
a) be not more than 13 mm high;
b) where over 6 mm high, be bevelled at a slope of 1:2.
(OBC 3.7.3.3.(4))

7.5 Door Hardware

Knob handles do not provide for an adequate grip by persons with impaired hand functions. Lever handles should be used on latched doors. U-shaped door handles (Figure 7.8) reduce the risk of catching clothing on or injury from the exposed lever end. Push-pull mechanisms which do not require grasping are also easy to use.

Kickplates 250 mm high on doors should be considered in high use areas to protect the push side of doors from damage caused by wheelchair footrests and to make it easier for persons in wheelchairs to open doors.

Operating devices such as handles, pulls, latches and locks shall
a) be operable by one hand;
b) not require fine finger control, tight grasping, pinching or twisting of the wrist to operate (OBC 3.7.3.3.(3));
c) be mounted between 400 and 1200 mm from the floor; and
d) be of a colour contrasting to the door.

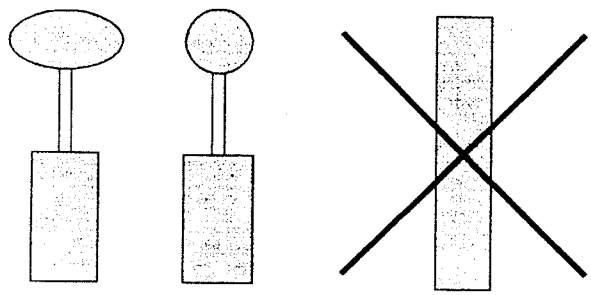
Operating hardware on sliding doors shall be exposed and usable from both sides when sliding doors are fully open. *If the door retracts fully into a wall pocket, an accessible handle is required on the exposed edge of the door.*

7.5.1 Panic door hardware which does not interfere with passage through a doorway is available and should be used where possible.

7.5.2 If transparent glazing is incorporated in a door, it should extend low enough (900 to 1000 mm above the floor) to permit persons in a wheelchair to see and be seen. *Transparent glazing in doors is appreciated by people who are deaf, hard of hearing and by others who rely on visual cues.*

7.6 Door Opening Forces

The maximum force for pushing or pulling open a door shall be
a) 38 N (8.5 lb) for exterior hinged doors;
b) 22 N (4.9 lb) for interior hinged doors; and
c) 22 N for sliding or folding doors.
(OBC 3.7.3.3.(7)).



Handles

FIGURE 7.8

DRAWING BY:
CSA

These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position.

7.7 Power-Assisted and Automatic doors

Security controls can sometimes interfere with access to secure facilities. Where secure doors are located, a security card or card access should be combined with an automatic door opener activator to ensure controlled access to the facility by all people.

At least one power-assisted or automatic door should be provided at all main entrance(s) and doorways along the barrier-free path of travel. **Service entrances are not acceptable.**

Power-assisted swinging doors shall
a) take not less than 3 s to move from the closed to the fully open position;
b) require a force of not more than 66 N to stop door movement;
c) have a clear level floor area at least 750 X 1200 mm on the pull side; and
d) have a device (mat or sensor) on the swing side to prevent the door from opening if someone is standing in the swing area.
(OBC A-3.7.3.3.(5))

7.7.1 Doors equipped with a power operator shall be activated by a sensor or a manual activating device identified with the international symbol for accessibility or, where security is required, by a key, card or radio transmitter. The location of these activating devices should ensure that a wheelchair does not interfere with the operation of the door once activated. (OBC A-3.7.3.3.(5))

Buttons or pads to open automatic doors must be well located, visible, and easily operable. The best location is determined by ensuring that the button or pad is
a) seen clearly before reaching the door;
b) at a height that can be operated from a standing or seated position; and
c) well clear of the door swing and any other fixtures. Visibility is enhanced by size, colour contrast, and lighting. Buttons or pads are easily operable when they
(i) are operated by touch on any part of its surface;
(ii) required little force to activate the door; and
(iii) do not require finger movement but can be opened by touching with a closed hand or arm."

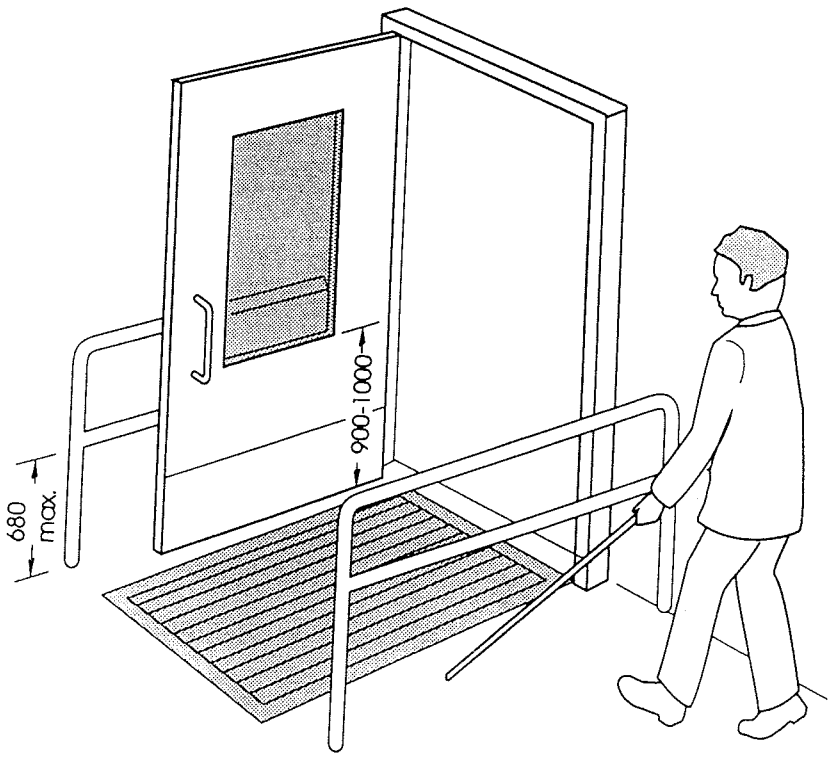
7.7.2 A 750 X 1200 mm clear, level area must be provided at any manual activating device location.

7.7.3 Manual activating devices must be mounted 600 to 1200 mm above the floor or ground level.

Where doors swing into a path of travel, it is desirable to have guardrails provided at a cane-detectable height extending at right angles to the wall containing the door. (Figure 7.9) Sliding automatic doors do not need guard rails for protection and are more convenient for persons in wheelchairs and people with visual impairments.

7.8 **Door Closers**

The sweep period of door closers in a barrier-free path of travel shall be adjusted to have a closing period of not less than 3 seconds measured from when the door is in an open position of 70° to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door. (OBC 3.7.3.3.(9)).



Guards at Out-Swinging Automatic Doors

FIGURE 7.9

DRAWING BY:
CSA