

## Site Design

### Design considerations

Most building codes do not address outdoor areas other than parking spaces and passenger loading zones. Developers, builders and designers of low-rise, multi-family housing should look to best practices when addressing renovations to site design and outdoor spaces for persons with disabilities. This fact sheet will focus on the following building features:

- Parking spaces
- Passenger loading zones
- Site layout
- Wayfinding
- Exterior walks
- Landscaping

### Parking spaces

Many people with mobility limitations drive standard or customized vehicles. Parking areas are often inconvenient for safe loading and unloading.

Size and location of parking stalls are the two major problems. Regular parking stalls are not wide enough: people who use wheelchairs require extra space beside their vehicles. Locate designated parking stalls near barrier-free entrances. This may interfere with parking lot layout and reduce the number of parking stalls; however, it is important in bad weather or in winter when ice and snow accumulate. To make a direct approachway from the parking area to the building entrance, you may have to modify the landscaping and sidewalks. Clearly identify designated parking stalls.

Locate special parking stalls for those with mobility limitations as close as possible to the entrance (preferably within 50 metres [164 feet]).

Make a direct barrier-free approach from the designated parking area to the entrance. Install sidewalks, curb ramps and ramps as needed. Design the approachway so that users in wheelchairs can avoid travelling in the driving lanes of the parking lot.

The redesign of the parking lot may mean reallocating all parking stalls. This should not be a problem unless electricity to the stalls is metered to individual suites. Electrical wiring may have to be rerouted or, alternatively, tenants may reach agreements regarding usage of parking stall electricity.

Designated parking stalls must be wide enough for the side and rear chair lifts that are common in customized vans and cars. As a minimum, make nose-in parking stalls for cars 2,400 mm (94 in.) wide with an adjacent aisle that is at least 1,525 mm (60 in.) wide, near a curb ramp (see figure 1). Similar parking stalls for vans should be at least 4,600 mm (181 in.) wide. Parallel parking spaces for vans can be narrower, at 2,600 mm (102 in.) wide, but may also need to be longer, at 7,400 mm (291 in.) long.

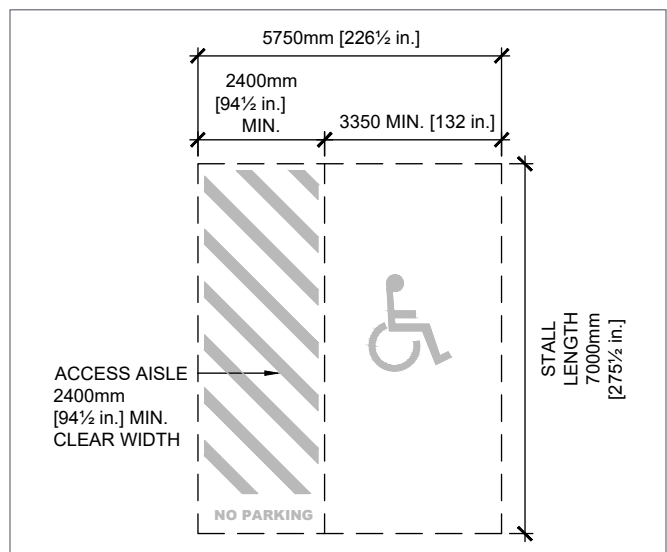


Figure 1: Accessible parking space (single)

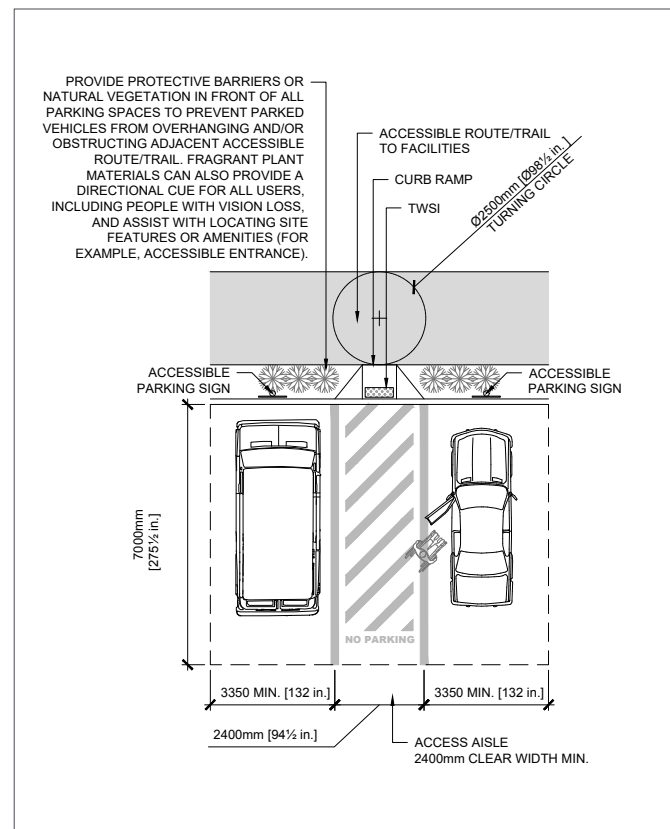
Diagram by: Alberta Parks

When you make wider stalls, the total number of parking spaces will be reduced. This could pose a problem, since space for additional stalls is usually at a premium around established buildings. You may have to redesign the entire parking lot and alter sidewalks and landscaping in order to provide accessible parking stalls (see figure 2).

Universally recognized signs for accessible parking should identify each designated parking stall (see figure 3).



**Figure 3: Accessible parking complete with signage**  
Photo by: Ron Wickman



**Figure 2: Accessible parking space complete with access aisle**  
Diagram by: Alberta Parks

## Passenger loading zones

Many people with mobility or visual limitations rely on special transportation services. There should be a dedicated area for the loading and unloading requirements of these people.

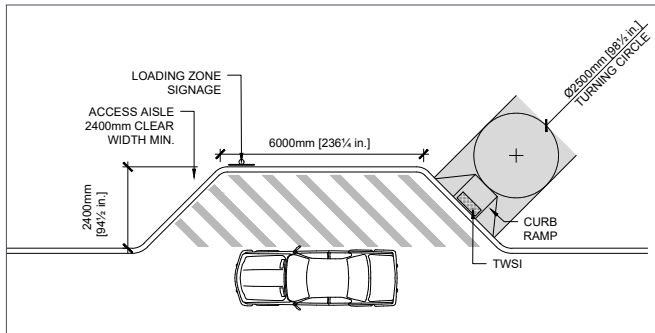
Arrange for a loading and unloading zone as close as possible to the barrier-free entrance. A covered area is better. Make sure that signage identifies the restricted use of the area.

Establish a loading zone near the barrier-free building entrance. Place it as close to the building as possible in order to reduce distances and exposure to traffic or bad weather. If you are intending to build a new barrier-free entrance, plan a designated loading and unloading area.

There may not be room for a loading and unloading zone, or vehicles may block traffic by parking in the loading and

unloading area. You may have to make some alterations to establish a new specific loading zone—for example, the rerouting of parking lot traffic or relocation of signage, light poles, bicycle racks and garbage containers. Plan to accommodate various types of vehicles including cars, vans and buses with lifts, and both side- and rear-loading vans and buses. Most vehicles that discharge passengers at sidewalk level have side operating lifts.

Allow for an access aisle parallel to the vehicle, 1,525×6,100 mm (60×240 in.) wide. Construct a discharge level with the approach to the building that slopes not more than 1 in 50. Where the wheelchair lift is located at the rear of the vehicle, provide a ramp or curb ramp for access to the sidewalk (see figure 4).



**Figure 4: Passenger loading zone**

Diagram by: Alberta Parks

Buses or vans need 9 metres (29.5 feet) or more of length, plus room for turning, and the loading zone must not extend into roadway. Consider changing existing pads or sidewalks.

Loading and unloading can take some time. Provide a canopy (or some form of cover) at the loading area to protect from bad weather. A minimum clearance of 2,750 mm (108 in.) will let vehicles stop directly under the canopy.

Identify the loading zone as a designated pickup and drop-off point. Signage should discourage others from using the area for general parking or other kinds of loading and unloading.

## Site layout

Ideally, patios, terraces and seating areas should be accessible by a pathway and incorporate an appropriate turning space. People who use walkers, wheelchairs or scooters need wide pathways to access various areas of the garden. Pathways should be at least 1,070 mm (42 in.) wide but 1,220 mm (48 in.) is recommended. It should be noted that a 915-mm (36-in.) pathway is wide enough for one person in a wheelchair; while a 1,220-mm (48-in.) pathway is wide enough for one person in

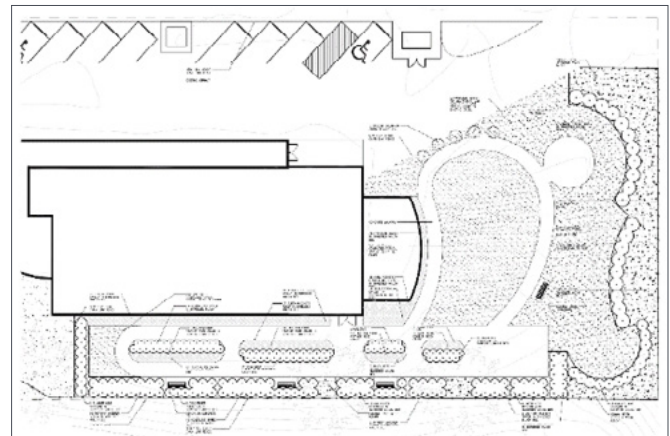
a wheelchair and an individual standing beside. Finally, a 1,525-mm (60-in.) pathway is wide enough for two persons in wheelchairs to pass by one another (see figure 5).

At locations where turning is required, such as at a seating area or a door, provide an area of at least 1,525×1,525 mm (60×60 in.) (see figure 6). If you can, provide a larger turning space of 2,100×2,100 mm (83×83 in.) to better accommodate scooters and larger wheelchairs.



**Figure 5: Exterior garden view**

Photo by: Ron Wickman



**Figure 6: Sample landscape plan with pathways and turning areas**

Diagram by: Ron Wickman Architect

## Wayfinding

Wayfinding refers to techniques used by people who are blind or have visual limitations as they move from place to place independently and safely. Wayfinding is typically divided into two categories: orientation and mobility. Orientation concerns the ability for a person to monitor his or her position in relation to the environment; mobility refers to a person's ability to travel safely, detecting and avoiding obstacles and other potential hazards. In general terms, wayfinding is the ability to know where you are, where you are headed and how best to get there; recognize when you have reached your destination; and find your way out—all accomplished in a safe and independent manner.

Wayfinding design makes the setting more efficient, safer in case of emergencies and accessible to a larger section of the population, and it can also bring about an architecture that is well articulated, rich in spatial experience and esthetically pleasing. Like colour coding or signs in a public building, wayfinding devices create a spatial language that we read with our senses.

Wayfinding features can be incorporated into buildings in ways that are subtle and effective. Changing the texture of walkway surfaces to differentiate edges or crosswalks promotes wayfinding for people who rely on a white cane to find their way through touch. Raised curbs beside a walkway also allow wayfinding for persons who are blind (see figure 7).

Any visual wayfinding system is more than just signs. It encompasses architecture, landscape architecture, lighting,



**Figure 7: Raised curbs on a walkway**

*Photo by: Ron Wickman*

landmarks and orientation points. For example, brightly coloured planting, plants with fragrance, and water features all help persons with low vision in their wayfinding. The design of spaces should assist users with spatial problem solving by providing consistent cues to:

- Confirm they are at the correct start and finish point of an individual journey.
- Identify their location within a building or an external space.
- Reinforce they are travelling in the right direction.
- Orient themselves within a building or an external space.
- Understand the location and any potential hazards.
- Identify their destination on arrival.
- Escape safely in an emergency.

## Exterior walks

People approach the building from either the parking lot or the loading zone. It can be challenging to provide a barrier-free path to the building, taking sidewalks, stairs, ramps and landings into consideration. Keep in mind that people with limited mobility or vision may have different needs. The goal is to satisfy everyone. Sometimes a ramp and stairs works best (see figure 8).

Design sidewalks to accommodate people with both mobility and visual impairments. Your first priority is sidewalk access to and from the parking lot and the loading zone.

Cut and slope sidewalk curbs to allow users in wheelchairs to pass. The minimum width of a curb ramp should be 915 mm (36 in.), or 1,220 mm (48 in.) if the ramp will be exposed to snow. The slope should not exceed 1 in 12. Place a colour-contrasting tactile warning strip at the top of the slope.



**Figure 8: Exterior walks leading to a building entrance complete with a ramp and stairs**

*Photo by: Ron Wickman*



The sidewalk should have a minimum width of 1,220 mm (48 in.); however, a width of 1,525 mm (60 in.) will permit two wheelchairs to pass each other.

The surface of the sidewalk should be slip resistant, firm and even. Broom finish freshly poured concrete surfaces to give them a rough texture. If the surface is made of precast materials (such as concrete paving stones), check the joints for smoothness; allow a maximum lip of 6 mm (¼ in.).

If the drop from the surface of the sidewalk to the surrounding grade exceeds 75 mm (3 in.), install edge protection to prevent wheelchairs from going over the edge and to guide persons with visual limitations. If the drop exceeds 610 mm (24 in.), install a guardrail.

Grates are found where sidewalks or entranceways run over drainage pipes or vents. To prevent canes and wheelchairs from catching in grates, make sure the gaps do not exceed 13 mm (½ in.).

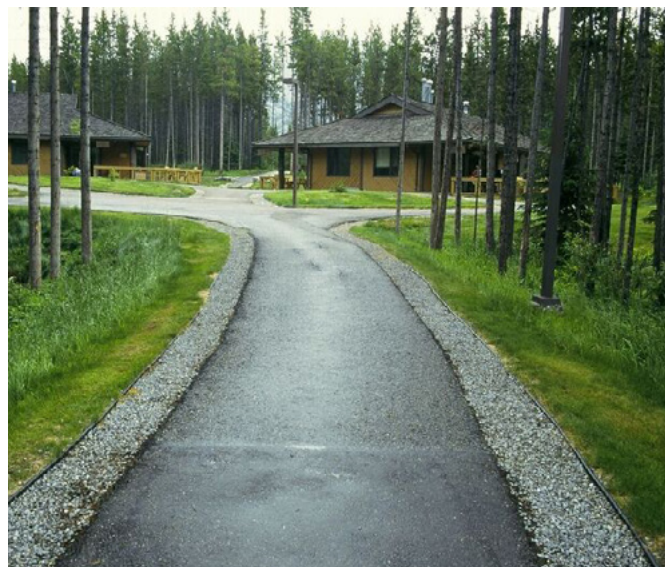
Curb ramps are easy to install; the challenge is locating them to provide the shortest possible route to the barrier-free entrance. You may need to modify a grass median or move a parking stall.

Where a sidewalk is installed level with an existing curb, the drop can be 100 mm (4 in.) or more to the surrounding grade. If you install edge protection—as recommended—you may restrict other access to the sidewalk.

Ideally, a clear path of travel for pedestrians should be a minimum of 1,525 mm (60 in.), free of obstructions, and provide a firm, even, non-slip and glare-free surface (such as broom concrete finish). In addition, an elevation change of 13 mm (½ in.) or more should be considered a trip hazard and should not be permitted in the clear path of travel. The obvious difficulty is to provide a pedestrian environment that is suitable for everyone. For example, brick pavers provide a nostalgic esthetic, but they rarely remain even and can prove to be a trip hazard for those who move slowly and a bumpy ride for those who use wheelchairs. One positive recommendation to resolve this specific problem is to use concrete—a firm, non-slip and non-glare surface good for those persons in wheelchairs and those who move slowly—for the clear path of travel and to put brick pavers as esthetic accents and as tactile cues for those persons with visual limitations.

Maintaining a clear space around and above pathways and walkways is important to ensure that people are able to navigate safely and easily. Remember to trim overhead branches so that people who are tall or have a visual limitation do not inadvertently get scratched or bump their heads on branches that extend over the route.

Exterior walks can provide colour and texture contrast at walkway intersections and walkway edges to help make them more identifiable to persons with visual limitations. Walkway edges that have colour and texture contrast are called “shorelines,” and they serve the same purpose as highway rumble strips. Shorelines warn pedestrians that they are moving off the pathway (see figure 9). Caution should be used for those persons with cognitive limitations, who may interpret a shadow or dark colour as a hole in the walking surface; even illumination and consistent colouring help to eliminate this issue. For those persons with hearing loss, walkways should have clear sightlines at corners and where vehicles are manoeuvring.



**Figure 9: Asphalt pathway complete with gravel shorelines**

*Photo by: Ron Wickman*

## Landscaping

In exterior environments, design should focus on separating people from automobiles. Grading and drainage must also be carefully planned to avoid puddles that can also ice over in colder weather.

Safety issues should be taken into consideration in the selection of landscape materials, including plants and trees. Plants and trees that drop a lot of debris should be avoided.

Cleanliness and ease of collection of debris is another safety issue to consider. People with environmental sensitivities should carefully consider landscape materials and vegetation, including the types of pollens. Remember to avoid creating environments that might release mould or irritants.

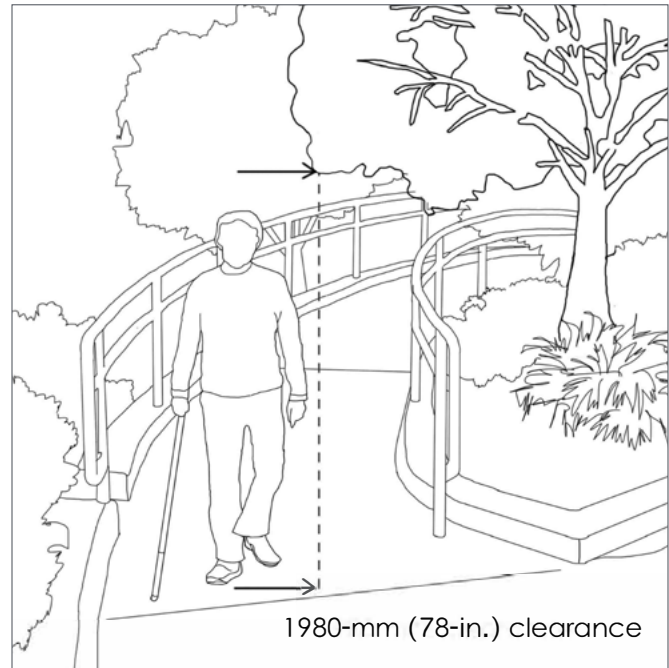
Protruding and overhanging objects could be dangerous, especially to people who have reduced vision (see figure 10).

Maintenance issues such as pruning and trimming should be carefully considered when selecting landscape features, especially if you are not able to undertake these chores yourself. Select plant species whose mature size is not too large for the available space and that require little or no maintenance.

The design of your exterior space should consider a number of weather-related issues. Placement of seating areas should maximize protection from the sun and the prevailing wind. The building itself could be used as a wind screen, which may be advantageous during cool weather, but during warmer weather, an alternate seating area that allows for cooling breezes should also be considered.

Design elements such as fencing or landscape screening can contribute to wind protection. Similarly, shade can be maximized using deciduous or evergreen trees, trellises, umbrellas and other landscape features, including shade from the building itself.

In Canada, protection from snow and cold winds is important. Snow will accumulate below roofs and on ramps and stairs, especially if the prevailing wind brings the drifting snow onto the ramp. Again, fencing and landscape screening features can reduce snow accumulation. It is a good idea to plan where snow will be piled and what will happen as the snow melts.



**Figure 10: Overhanging objects**

Diagram by Ron Wickman Architect

To maximize the amount of time you can use your exterior space, it is important to ensure that stormwater drains away from the building and outdoor areas you access (such as patios). Careful thought should be given to ensuring that drainage does not compromise the use of access routes. Pooling water at the base of ramps and stairs can create a serious hazard.

There is an interesting range of options for exterior illumination. Illumination can enhance safety and visibility, and it can be used to create atmosphere, help people find their way and increase security.

Additionally, energy-efficient options such as solar lighting, motion activators and timers are available. A universal design approach to exterior lighting systems considers adjustability, adaptability and sustainability.



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