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COMMUNITY ACCESS PROGRAM

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What Can You Do to Make Your CAP Site Accessible?

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**What Can You Do to Make Your CAP Site
Accessible?**



Industry Canada
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Français au verso

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PREFACE

The concept of universal access is of prime importance when developing a Community Access Program (CAP) proposal. Universal access refers to building access considerations that include participation and accessibility for all individuals whether they are blind, using a wheelchair, hearing impaired, families with young children, temporarily using mobility aids (such as crutches), elderly individuals or otherwise.

According to Principle 5 from the Prime Minister's Declaration on the Decade of Disabled Persons:

Individuals with disabilities shall be assured access to fundamental elements of daily life that are generally available in the community. Wherever possible the effects of an impairment or disability on an individual's life shall not be determined by environmental factors (CSA, 1995).

Disability, as defined in the *National Building Code of Canada*, includes:

Persons with physical or sensory disabilities: mobility impairments such as reliance on crutches or a wheelchair; reaching and manipulation disabilities; hearing impairments; deafness; visual impairment and blindness (CSA, 1995).

Reference is made throughout this document to minimum standards of physical access by people with disabilities to the building or facility where a CAP site is situated, as well as access to interior spaces and amenities, and consideration of signage, floor finishes and glare. Ergonomic considerations for computer terminal access by people with various abilities are also discussed.

Refer to the appropriate federal, provincial and municipal building codes and by-laws when considering access to buildings by people with disabilities.

PHYSICAL ACCESS

This document provides the minimum standards necessary to give due consideration to universal access for CAP sites. The standards described have been selected from the publication Barrier-Free Design, Public Safety, A National Standard of Canada (CSA, 1995).

If you are designing for a specific individual who requires modified access, give due consideration to the particular abilities and preferences of that individual. Dimensions in this document are given in SI (metric) units. The measurements are based on adult dimensions. If you are designing for children, the dimensions should be suitably adapted.

Approach to the CAP Site

People will approach the CAP site by various means: by foot, wheelchair, vehicle or public transportation. It is necessary to ensure that all approaches to the site provide universal access features.

Parking: Accessible parking spots should be provided as near to the site entrance or entrance pathway as possible. The accessible parking area should have a firm, level surface. If paving exists, access aisles should be clearly marked with the international symbol of access and a vertically mounted uniform traffic control sign. These signs should be installed between 1.5 m and 2.5 m from the ground to the centre of the sign.

Car parking spaces should be at least 2.4 m wide and have an adjacent access aisle at least 1.5 m wide. Van parking spaces should be at least 4.6 m wide, except for parallel parking spaces, which should be at least 2.6 m wide by 7.4 m long. There should be a height clearance of 2.75 m at the parking space and along the vehicle access routes.

Passenger loading zones should have an access aisle at least 1.5 m wide and 6 m long, adjacent and parallel to the vehicle pull-up space. A curb ramp should be provided between the access aisle and the vehicle pull-up space.

ENTRANCE PATHWAYS TO THE CAP SITE

CAP site access routes should go up to the entrance and be directly connected to parking or drop-off/pickup areas. Make entrance paths 1.5 m wide, which is sufficient width for two people using mobility aids to pass on the path. Keep paths free of obstructions.

Approaches to the site should be level, with no undue changes in level, have a firm surface and be slip resistant. Gradients should not exceed 1:20, with a cross slope of no more than 1:50. Gradients of more than 1:20 are considered a ramp and should be provided with handrails. No gradient, including ramps, should exceed 1:12.

Outdoor Ramps: Outdoor ramps should be constructed so water does not collect on their surfaces. They should have a minimum clear width of 92 cm. All ramps should have colour- and texture-coded, slip-resistant strips that are no more than 1 mm above the surface to prevent tripping. There should be level landings of not less than 1.5 m by 1.5 m at the top and bottom of each ramp and where the ramp is located at a doorway. There should be edge protection for the ramp such as a curb or raised barrier with a minimum height of 7.5 cm.

Curb Ramps: Curb ramps should have a width of no less than 92 cm or 1.2 m where exposed to snow. They should also have flared sides with a slope of no more than 1:10. Flared sides allow pedestrians to cross easily over curb ramps on sidewalks. Built-up curb ramps projecting into the parking lot are not permitted.

Handrails: Handrails should be 3 cm to 4 cm in diameter and be in a continuous line on both sides of the ramp. They are necessary if the ramp has a rise greater than 15 cm. If the handrails are not continuous, they should extend horizontally at least 30 cm beyond the top and bottom of the ramp and return to the wall, floor or post. Handrails should be between 80 cm and 92 cm from the ramp surface, and have 92 cm to 1 m between them.

Some people who walk with difficulty may find stairs easier to use than ramps.

ENTERING THE CAP SITE

Entrances: Clearly mark entrances. Entrance doors must provide sufficient space for people with wheelchairs or other mobility aids to pass through. This is generally 92 cm wide. Space should also be provided for persons using wheelchairs to position themselves by the door. There should also be clear space beside the door latch. The clear width when a door is in the open position must be 81 cm, measured between the face of the door and the stop with the door open at 90°. The minimum space between two doors in a series should be 1.2 m, plus the width of any door swinging into the space. This allows adequate room for wheelchair manoeuvrability.

Door Hardware: Hardware on the doors must be easy to use, with no fine motor control required. It should pass the closed fist test (i.e. operates easily with a clenched hand). Hardware should be operable with one hand, should not require fine motor control as the only means of operation, and should be mounted between 40 cm and 1.2 m from the floor. On sliding doors, the hardware should be usable and visible from both sides when the doors are fully open.

Ensure that doors have a clearance space beyond the latch side of no less than 60 cm where the door swings towards the approach side, and 30 cm when the door swings away from the approach side. On power-operated doors, the operating controls should be located outside the swing of the door. Adjust door closers so that from an open position of 90° the door will come to a semi-closed position of approximately 12° in not less than three seconds. If the door is not power operated, the maximum force to open a door should be 38 N for exterior hinged doors, and 22 N for interior hinged doors and sliding or folding doors. Power-assisted doors should take no more than three seconds to move from the closed position to the open position. They should require a force of no more than 66 N to stop the door movement.

Thresholds: Avoid thresholds or doorsills if possible as they pose a tripping hazard. If necessary, they should be no more than 13 mm above the surface of the floor. At exterior sliding doors, they should be no more than 19 mm high. If they are over 6 mm high, they should be bevelled on a slope of 1:2.

Signs: A consistent sign system should be used throughout the facility to assist with universal access. Ensure that signs include information in alphanumeric text, colour and pictographs. Characters and symbols should be glare-free and contrast with their background.

Signage information should be accessible both by sight and touch. Letters and symbols should be raised above the background by 0.8 mm and be between 16 mm and 5 cm high. They should be sans-serif, if wall mounted, and have a centre line at a height of 1.5 m, plus or minus 25 mm. Braille lettering could also supplement the information found on a sign. All signs should use high colour contrast to ensure legibility.

Mount door nameplates on the wall on the opening side of the door.

Sign shape can also play a role in transferring information.

Consider sign illumination and ensure it is appropriate for the area.

Floor Numbering: Mount floor numbers on the stair side of the wall or at the latch side of exit doors. The numbers should be no less than 25 mm high, raised approximately 0.8 mm above the surface. They should be located 1.5 m (plus or minus 25 mm) from the floor.

Floor Finishes: Floor finishes should be slip-resistant or low-pile carpeting. Use contrasting colour finishes to denote differences in area; walls and floors should also contrast, as should door frames.

Interior Floor Space: The minimum floor space required for manoeuvrability in a standard size wheelchair is 1.2 m by 1.2 m, which allows access for forward and side approaches. Minimum clear floor space to support a stationary wheelchair is 75 cm by 1.2 m. The minimum clear turning space from the toe for a wheelchair to make a full 180° turn is 1.5 m.

Please note: Manual and electric wheelchairs have similar dimensions. However, electric wheelchairs are not always as manoeuvrable as a manual wheelchair. Manual wheelchairs can be folded into a fairly compact size whereas electric wheelchairs cannot.

The comfortable walking width for an individual using crutches is 92 cm.

Interior Changes of Level: Access corridors to the CAP site itself should be 92 cm wide except for short indentations up to 60 cm in length where they can be 81 cm wide. At doors, the openings can be 81 cm wide. Where two wheelchairs might be required to pass, the width must be no less than 1.5 m, clear of protrusions. Corridors should have a slope of no more than 1:20 and a cross slope no steeper than 1:50. If the slope is greater than 1:20, a ramp is required.

Ensure that objects that protrude into the access path between 68 cm and 198 cm from the floor, protrude no more than 10 cm. If the protrusion is less than 68 cm above the floor, it may protrude any amount.

Free-standing objects between 68 cm and 198 cm from the floor should not have an overhang of more than 30 cm.

Headroom in pedestrian areas must be 198 cm. Place a guardrail or other barrier at or below 68 cm in any area where the headroom is reduced to less than 198 cm (e.g. under a stairwell).

Stairs: If stairs are necessary, they should have uniform riser heights and tread depths. Risers should not be more than 18 cm high, and have treads not less than 28 cm deep, measured from riser to riser. There should be no open risers. The front of each step should have a tactile detectable surface strip that contrasts in colour and texture to the steps. Slip-resistant strips on treads and risers should be no higher than 1 mm above the surface. Stairs should not have protruding nosings (the moulded projecting edge of the tread of a step). Nosings are to project no more than 38 mm and have no abrupt undersides. The radius of the curvature at the leading edge of the tread should not be greater than 13 mm. Illuminate stairs appropriately. Give the horizontal face of the nosing a contrasting colour to the tread.

Install handrails on both sides of the stairs, 80 cm to 92 cm from the stair nosing. Handrails should be 3 cm to 4 cm in diameter and have a continuous gripping surface. There should be a clearance between the wall and handrail of 3.5 cm to 4.5 cm. If the wall surface is textured, the handrail should be 6 cm from the wall. Handrails should be continuous. If there must be a break, extend the handrails at the top of the stairs parallel with the floor surface for no less than 30 cm. Continue at the bottom of the stairs for a distance equal to the depth of one tread, and extend the handrails parallel to the floor surface for no less than 30 cm.

Elevators: Elevators and elevating devices (such as platform lifts) must comply with Appendix E of CSA Standard CAN/CSA-B44 and CSA Standard CAN/CSA-B355.

Washrooms: All facilities should incorporate easily accessible single or multi-cubicle washrooms. Clearly mark washrooms with the appropriate signage.

Stalls in a multi-use washroom should be at least 1.5 m by 1.5 m.

Stall doors should provide a clear opening of 81 cm with the door in an open position. The door should swing outward, unless additional space is provided in the stall for the swing of the door. Doors should have D-type pulls, at least 14 cm long, on the inside of an out-swinging door located so the centre line is between 20 cm and 30 cm from the hinged side of the door. There should be a similar latch on the outside near the latch side of the door. The user should be able to lock the door from the inside using a device that does not require fine motor control and that passes the closed fist test.

Single-use washrooms should have a floor area of no less than 3.5 m² with no dimension between opposite walls less than 1.7 m. There should be a clear space adjacent to the toilet of at least 90 cm. The toilet and sink requirements are the same as multi-use washrooms.

The toilet should be located between 46 cm and 48 cm from the centre line to the adjacent wall while the top of the seat should be located between 40 cm and 46 cm from the floor. These distances provide for easy access

to the toilet by people with wheelchairs. The top of the tank should be securely attached, and a back support provided if there is no tank. There should not be a spring-activated seat. If not electronic, the toilet controls should be hand operated and be located on the transfer side of the toilet.

Provide grab bars next to toilets to provide assistance with support and stability. Horizontal grab bars should have a diameter of 3 cm to 4 cm and be mounted at a height between 75 cm and 85 cm from the floor on the side wall closest to the toilet. Locate grab bars no more than 30 cm from the rear wall and run to at least 45 cm in front of the toilet seat. Mount a second bar that is at least 60 cm long behind the toilet.

Urinals should be the stall or wall-hung type with a rim no more than 43 cm from the floor. There should be a minimum clear floor space of 75 cm wide by 1.2 m deep without steps in front of the urinal. If not electronic, flush controls need to be hand operated and no more than 1.2 m from the floor. The control mechanism should pass the closed fist test.

Sinks should provide adequate space for use either from a standing or seated position. The minimum distance between the centre line of the fixture and the side wall should be 46 cm with the top located between 82 cm and 86 cm from the floor. Knee clearance should be provided below the sink for use from a seated position. This space should be, at a minimum, 75 cm wide, 20 cm deep and 68 cm high, with an additional toe space at least 75 cm wide, 23 cm deep and 23 cm high.

Provide a minimum clear floor space around the sink 75 cm wide and 1.2 m deep, of which a maximum depth of 48 cm can be under the sink. Waste and hot water lines should be insulated to prevent direct contact with legs.

Faucets should be the lever type, operable with a closed fist or electronically controlled.

Accessories, such as soap dispensers, paper towel dispensers and hand dryers, should be no more than 1.2 m from the floor. Ensure that the front apron of the vanity has a minimum clearance of 75 cm wide and 72 cm high. Mirrors, if available, should be mounted with the bottom edge no more than 1 m from the floor.

Other Amenities: These include items such as drinking fountains and public telephones. They should be easy to reach, but not intrude into areas of circulation. All amenities should pass the closed fist test.

Safety: Alarm systems should incorporate both auditory and visual warnings. Alarm lights should flash at a speed of about 1 Hz in conjunction with the audible emergency alarm. The lights should be visible throughout the floor area in which they are installed and be located at exits and exit stairs for each floor.

ACCESS TO WORKSTATIONS

Several aspects of computer access must be considered before using a computer for extended periods. These aspects include:

seating;

- desk space, height and angle;
- lighting of the workstation environment;
- keyboard type, height and angle;
- monitor height, angle, screen output, etc.; and
- accessories including wrist rests, footrests, filters and document holders.

The essence of universal access to computers, while following ergonomic principles, generally involves the capability to adjust the workstation at all levels including desk and chair heights, lighting, monitor angle and keyboard tilt.

Incorporating ergonomic principles into the design of computer support furniture increases productivity, enhances user comfort and ensures safety. For individuals with disabilities, appropriate ergonomic application is critical when using the computer at any time.

Workstation Access: The workstation must be situated on a clear floor area of at least 85 cm by 1.2 m for wheelchair access. Minimal height of the workstation desk should be 68 cm. Specialized work surfaces may have different specifications for knee and height clearances.

Seating and Posture: Recurrent physical problems identified when seated for extended periods at a computer include lower back discomfort and pain, thigh pressure, feet and ankle throbbing, and shoulder and arm discomfort.

Assuming a neutral posture while accessing the computer workstation can reduce the number of stress-related injuries resulting from poor seating and posture. A neutral posture involves holding the upper arms tucked close to the body and hanging relaxed, not held out to the side, extended forward or backward, raised up or hunched. Hold elbows so they don't force shoulder or elbow positions from neutral positioning. The wrists

should not be bent upward or forced downward to the thumb. Computer chairs are most comfortable when they provide lower back support.

The surface height of the seat should have adjustable options allowing the individual to sit comfortably while working. To accommodate every user, consider the seat surface size, depth and width. The slope of the seat should also be adjustable to allow forward or backward sloping while the seat front should be rounded to ensure that pressure on the back of the legs is relieved.

The back of the seat should offer height adjustment capabilities, and angle and depth modifications.

To address the potential of stress to the lower extremities, the user should have feet resting on the floor comfortably, be sitting with knees in a comfortable position and have his or her legs free from pressure points and any obstructions under the workstation.

Supporting the upper extremities involves:

- holding the head in a vertical orientation to reduce neck stress;
- maintaining the head facing forward of the plane of the upper body most of the time;
- minimizing repetitive or long duration head rotation; and
- placing objects within reach on the workstation without excessive extension where reach might be held for a long time or require trunk/torso rotation or deviation.

Work Surface: Work surface considerations include access to a comfortable work space height, and an appropriate work surface width and depth. The computer and keyboard are most easily accessed when placed directly in front of the person, with the work orientation parallel to the plane of the upper body.

Lighting: Physical problems resulting from improper lighting of the computer workstation include eye strain, headaches, eye fatigue, blurred vision, and burning, dry, aching eyes.

Consider:

- lighting levels;
- the position of the workstation in the room to limit glare from windows and overhead lighting;
- the use of antiglare screens or glare-reducing methods, diffusers on overhead lights, work surfaces with matte finishes, windows with curtains or blinds; and
- the availability of desk lights.

Temperature: Temperature level in the CAP site should be monitored and adjustable. Often in a lab setting, ambient temperatures are increased dramatically by having large numbers of computers running. The comfortable temperature level of touch surfaces of various technologies should also be considered.

Vibration: Individual users have varying responses to building, equipment and even keyboard vibrations. This should be considered when teaching, using the computer or working in the setting for long periods.

Noise: Of concern in a lab setting or when a computer workstation is placed in a high traffic zone are the comfort levels of sound permitting conversation, active listening in a training situation and auditory access to sound files. Individuals also have varying auditory perceptions of internal sounds emitted by the computer.

Ventilation: When establishing efficient workstation air circulation, the air quality and humidity or dryness levels should be monitored to ensure optimal working circumstances. Maintaining a scent-free environment in a CAP site is wise when multiple users will be using the facility.

Keyboards: Inappropriate keyboard levels can result in undue stress on wrists, shoulders, arms and neck. Set the keyboard at the appropriate height to reduce unnatural positions. To offer a wrist-neutral position, place the keyboard in a negative-angle-tilt keyboard tray, adjusting the height to an appropriate level for the individual. Ensure keystroke sensitivity is appropriate for each user. Keyboard sensitivity can be altered by going to “Filter Keys” under “Accessibility Options” in Windows 95 and Windows 98

and under “Slow Keys” in the “Easy Access Folder” within the “Control Panel” of Macintosh computers.

Mouse Access: Inappropriate mouse access and usage will result in upper arm and shoulder problems. The mouse should be accessible to the user and easy to operate. The user should be able to reach and operate the mouse without extended, long duration or repetitive reaching, and with shoulders, arms and wrists in a neutral position. Place the mouse within an immediate reach zone on an adjustable platform (individual measures for each user).

Monitors: The height, angle and distance of the monitor on a computer affects user efficiency. A poor set-up can result in neck and shoulder tightness, and possibly injury and visual difficulties. To alleviate user stress at the CAP site, consider:

- installing a monitor lift system at each workstation;
- making sure users are able to adjust the fore-and-aft distance of the monitor; and
- including monitor tilt options, left/right rotation and monitor risers in workstation design.

Accessories: Assess computer workstation accessories for optimal user access. Wrist rests, footrests, monitor filters, hand and arm supports and document holders are all considered accessories.

Place a footrest under the workstation so the position of the feet and legs are neutral, with feet flat on the floor, offering height and angle adjustment capabilities.

Employ screen filters that reduce glare and reflections up to 99 percent, enhance data contrast and eliminate static electricity.

When planning for the placement of document holders for source documents, consider height, distance and angle. Other potential problems stemming from document holders include vibration and visual access. Document holders should be placed so physical access is possible without twisting the head or neck back and forth extensively and for long periods.

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