



# **Design Aid for Barrier-Free Accessibility in Existing Buildings**

*July 9, 2004*

## Table of Contents

---

<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>References</b>	<b>2</b>
<b>3.</b>	<b>Access to the Building</b>	<b>2</b>
.1	Site Accessibility	2
<b>4.</b>	<b>Building Access</b>	<b>3</b>
.1	Building Entrance Accessibility	3
.2	Building Entrance	3
<b>5.</b>	<b>Accessibility of Path of Travel within Main Level</b>	<b>4</b>
.1	Access to Facilities	4
<b>6.</b>	<b>Personal Facilities</b>	<b>6</b>
.1	Hygienic Facilities	6
.2	Personal Use Facilities	7
<b>7.</b>	<b>Accessibility to Other Levels</b>	<b>7</b>
.1	Stairwells	7
.2	Chair Lifts	8
.3	Platform Lifts	9
.4	Enclosed Platform Lifts	9
.5	Elevators	9
<b>8.</b>	<b>Accessibility of Path of Travel Within Other Levels</b>	<b>10</b>
.1	Access to Facilities	10
.2	Personal Facilities	10
<b>9.</b>	<b>Emergency Services</b>	<b>10</b>
.1	Emergency/Exit Lighting	10
.2	Fire Alarm	10
<b>10.</b>	<b>Signage within the Barrier-Free Path of Travel</b>	<b>11</b>
.1	Minimum Requirements	11
<b>11.</b>	<b>Building Security</b>	<b>11</b>
.1	User Actuated Systems	11
.2	Remote Actuated Systems	11

# 1. Introduction

- .1 Barrier-free accessibility in existing buildings is a major concern for Alberta Infrastructure in addition to safety and usability. Consider all requirements of the latest edition of the Alberta Building Code (ABC) in addition to the barrier-free issues mentioned herein. Since safety is the primary concern, the safety of all building users should be addressed, not just users affected with disabilities. Other factors must also be considered to ensure functional usage of the building by all users. These factors are discussed later in this Section.
- .2 To determine what can be done to an existing building to address barrier-free accessibility, perform a comprehensive building code analysis of the particular building including building occupancy, occupant load, fire resistance rating requirements, corridor and stair widths, exit requirements, and required number of water closets and lavatories based on occupant load. Note that occupant load is based upon area available for people, not number of persons using the building. Optimally all concerns should be addressed.
- .3 This document provides items to be considered when addressing the issue of barrier-free accessibility for existing buildings for the persons with physical, sensory and developmental disabilities. These items are broken down so as to be readily accessible for consideration for individual small-scale project scope of work or combined as required to suit large-scale project scope of work
- .4 Observe Section 3.8 of the Alberta Building Code (ABC), which provides the minimum requirements for Barrier-Free Design, to the fullest extent possible in conjunction with the remainder of the ABC. In some cases major work may be required and in other cases minimal work may be required to provide the minimum acceptable level of barrier-free access depending on the scope of work for the individual project.
- .5 Reference the “Barrier-free Design Guide” for graphic and written examples to illustrate code requirements and elements of good barrier-free design.
- .6 Reference the CSA Standard B-651 to provide design assistance. It is advised that, wherever possible, the requirements of this standard be incorporated into the design within the scope of work of the individual project. Some of the requirements of this standard are beyond the requirements of the Alberta Building Code.
- .7 When applicable, where the ABC and CSA Standard B-651 address the same issues the more stringent recommendations shall govern.

- .8 Use Section 6.0 of “Technical Design Requirements for Alberta Infrastructure Facilities” (Red Book) to determine the level of accessibility required in the existing building and then use this design aid judiciously to meet the required level of accessibility for the building.
- .9 Requirements are described in a critical path method whereas the requirements should be provided in sequence. If the sequence is not followed, portions of the building may have been upgraded to barrier-free requirements but those portions are not accessible. For example, a washroom may have been upgraded, including all washroom items including door opening size, but if there is not the required space adjacent to the door to accommodate operation of the door by persons with disabilities the washroom is not barrier-free accessible.
- .10 A good source of additional information, complete with illustrations is the Access Handbook made available via Internet complete with hyperlinks, by the British Columbia Ministry of Community, Aboriginal and Women's Services, at  
<http://www.mcaws.gov.bc.ca/building/handbook/>

## 2. References

- .1 *Alberta Building Code*, latest edition
- .2 *Barrier-free Design Guide*, prepared by the Barrier-free Design Advisory Committee of the Safety Codes Council and with the assistance of Alberta Municipal Affairs
- .3 *CAN/CSA-B651-95, Barrier-Free Design*, Canadian Standards Association.

## 3. Access to the Building

### .1 Site Accessibility

- .1 Barrier-Free Parking
  - .1 Parking stall size and location: size and construct parking stalls as required, with a slip resistant surface. Locate as close as possible to a barrier-free building entrance.
  - .2 Curb cuts/ramps: properly size and design curb cuts/ramps. Locate so as not to be blocked by parked vehicles.

- .2 Site Requirements
  - .1 Drop-off lane: if provided, meet the requirements of the ABC and CAN/CSA-B651.
  - .2 Sensory issues: finish curb ramps to provide both slip resistance and a tactile surface.
- .3 Lighting
  - .1 Provide lighting along the barrier-free path of travel to levels recommended by the Illuminating Engineering Society (IES) and to minimize shadows.
- .4 Signage
  - .1 Provide signage to clearly indicate barrier-free parking stalls, location of curb cuts/ramps, directions to barrier-free entrance.

## **4. Building Access**

### **.1 Building Entrance Accessibility**

- .1 Access To Building Entrance
  - .1 Ramp requirements: provide ramps for use by persons with wheeled devices and persons who are physically ambulatory with limited joint movement.
  - .2 Design ramp slope and surface to requirements of the ABC, and CAN/CSA-B651.
  - .3 Design ramp edges, raised or otherwise protected, to requirements of the ABC and CAN/CSA-B651.
  - .4 Design handrails and guardrails to be comfortable and usable by all users.

### **.2 Building Entrance**

- .1 Transition from exterior to building interior
  - .1 Difference in elevation between the exterior walk or landing and interior finish floor to be 13 mm maximum.
  - .2 Provide a level surface at the doorway, 1500 mm x 1500 mm minimum. Size may have to be increased depending upon the door location in relation to the level surface to provide the required distance adjacent to the pull side of the door.

- .2 Thresholds
  - .1 Thresholds to meet the requirement of the ABC, 13 mm in height maximum, without any type of vertical weather stop.
- .3 Powered Door Operators
  - .1 Provide powered door operators at barrier-free entrances.
  - .2 Mount door actuation devices in close proximity to the door at 1400 mm height .
  - .3 Provide guard rails where out swing doors open into the path of travel in accordance with CAN/CSA-B651 to protect the visually impaired.
- .4 Number of Barrier-Free Entrances
  - .1 The Alberta Building Code requires 50% of the pedestrian entrances to be barrier-free. Follow this requirement if possible but provide not less than one barrier-free entrance and wherever possible this should be the main entrance.

## **5. Accessibility of Path of Travel Within Main Level**

### **.1 Access to Facilities**

- .1 Width of Corridors and Exits
  - .1 Minimum corridor widths are established by the ABC. Restrict projection of objects into corridor width to comply with the restrictions of the ABC and the referenced documents. Platform lifts are acceptable only if minimum corridor width, stair width or exit width can be maintained and the platform lifts do not create traffic flow problems for the visually impaired.
  - .2 Maintain required exit width that is established by the ABC based upon occupant load.
- .2 Differing Elevations of Floor Levels
  - .1 When a floor of a building has differing floor elevations where steps are involved and the difference in elevation is 750 mm or less, wherever possible, remedy this condition using ramps conforming to barrier-free requirements. If this is not possible, use mechanical solutions without limiting the required corridor and exit widths.

- .3 Flooring Requirements
  - .1 Provide slip resistant flooring on ramps.
  - .2 Provide tactile warning strips at the top of a downward change in elevation. Refer to the ABC and CAN/CSA-B651.
  - .3 Where required, provide tactile warning surfaces at changes of direction in access to exits and exits to direct visually impaired users. This should be dealt with on a per project basis.
- .4 Door Width and Location Requirements
  - .1 Refer to the ABC for required door width and door location to accommodate persons with disabilities, especially those in wheelchairs. Where required, replace and relocate the door assemblies to provide required door opening size and adjacent distances.
- .5 Door Hardware Requirements
  - .1 Refer to the ABC for hardware requirements for barrier-free access including where exit devices are required.
  - .2 Change door hardware on existing doors if door opening size and adjacent distances meet the requirements of the ABC.
  - .3 Change existing hinges to clear swing hinges to meet barrier-free requirements, if existing door opening width, rebate to rebate, and if the required adjacent distances exist.
  - .4 Replace existing locksets and passage sets with similar hardware with levered designs.
  - .5 Adjust existing door closers to acceptable pressures.
  - .6 Provide levered handles that return toward the door to minimize the possibility of catching loose clothing.
  - .7 Provide ANSI grade 1 locksets and passage sets with solid levered handles to minimize damage and wear caused by the eccentric loads imposed on the devices.
- .6 Access To Personal Facilities
  - .1 Ensure access to personal facilities does not interfere with required minimum corridor width or exit widths required in part 3 or part 9 of the ABC.

## 6. Personal Facilities

### .1 Hygienic Facilities

#### .1 Public or Private Washrooms

- .1 Provide a separate uni-sex barrier-free washroom where it is not possible or too costly to renovate existing washrooms to accommodate barrier-free requirements and number of required fixtures.
- .2 Locate separate uni-sex barrier-free washroom in close proximity to the public washrooms and address all barrier-free requirements.

#### .2 Size of Washrooms and Water Closet Stalls

- .1 Required size of washrooms and water closet stalls is clearly described in the ABC.

#### .3 Fixture Requirements

- .1 Comply with the number of required fixtures described in part 7 of the ABC based upon occupant load in addition to the barrier-free requirements.

#### .4 Washroom Accessories

- .1 Install washroom accessories in public washrooms for use by general public with additional accessories installed for persons with disabilities. Consider combined usage only when such combined usage will not create discomfort for any users due to mounting heights.
- .2 Size mirrors in public washrooms to accommodate all users. Use tilted mirrors only in separate uni-sex barrier-free washrooms.
- .3 Provide grab bars to requirements of the ABC and CAN/CSA-B651.
- .4 Mount auxiliary door pull close to hinge side on the inside of door to the barrier-free water closet stall in accordance with the requirements of the ABC.

#### .5 Heights

- .1 Mount vanities, wash basins, water closets, mirrors and washroom accessories including grab bars to barrier-free requirements of the ABC and CAN/CSA-B651.
- .2 Mount previously mentioned items in combination with items mounted at regular heights to eliminate discomfort for any users.



.6 Signage

- .1 Provide signage that meets the requirements of the ABC and CAN/CSA-B651.

**.2 Personal Use Facilities**

.1 Drinking Fountains/Coolers

- .1 Provide a minimum of one barrier-free drinking fountain/cooler where drinking fountains/coolers are provided. Drinking fountains/coolers that contain two spouts at varying heights are available to accommodate the general public and persons with disabilities.
- .2 Install drinking fountains/coolers so as not to protrude into corridor by more than 100 mm.
- .3 Locate drinking fountains/coolers with easy access from the barrier-free path of travel.

.2 Public Phones

- .1 Provide a public phone to the requirements of the ABC and CAN/CSA-B651 where public phones are provided.
- .2 Install public phones so as not to reduce corridor or exit width by more than 100 mm.
- .3 Locate public phone within the barrier-free path of travel.

.3 Signage

- .1 Provide signage to meet the requirements of the ABC CAN/CSA-B651.

.4 Sensory Issues

- .1 Provide a telephone with built-in teletypewriter where required. Refer to the ABC and CAN/CSA-B651 to determine requirements.

**7. Accessibility to Other Levels**

**.1 Stairwells**

.1 Width of Stairs

- .1 Do not reduce the width of existing stairs to less than the required exit width by any equipment or chair lift in the operable position.

- .2 Landings
  - .1 Provide tactile strips on landings running the full width of the stair at start of each downward run in accordance with the ABC and recommendations in CAN/CSA-B651.
  - .2 Provide slip resistant finish on landings in accordance with the ABC.
- .3 Stair Surfaces and Nosings
  - .1 Provide slip resistant finish on stair surfaces in accordance with the ABC.
  - .2 Provide stair nosings of contrasting colour to tread and risers as to address the needs of the visually impaired as recommended in CAN/CSA-B651.
- .4 Handrails and Guardrails
  - .1 Design and modify handrails and guardrails to the requirements of the ABC to the fullest extent possible.
  - .2 Return handrails into the wall with the radius of the return in addition to the required 300 mm horizontal extension.
  - .3 Extend the sloped portion of the handrail one tread width beyond the last nosing at the stair bottom to provide the correct height of the horizontal extension.
  - .4 Provide intermediate handrails for stairs wider than 2200 mm. Refer to the ABC for width requirements.
- .5 Lighting
  - .1 Provide lighting to meet or exceed the requirements of the ABC.
- .6 Area of Refuge
  - .1 Landings of existing stairways can only be considered as an area of refuge if the size of the landing is acceptable for this use as defined and illustrated in CAN/CSA-B651.

## **.2 Chair Lifts**

- .1 Usage
  - .1 Use chair lifts only where the required exit width can be maintained when the chair lift is in operation. Generally chair lifts encroach upon the required exit width and hamper stair traffic.

### **.3 Platform Lifts**

#### **.1 Usage**

- .1 Use platform lifts only for a limited travel distance within a floor level. Refer to the manufacturer's literature to determine suitability.

#### **.2 Location**

- .1 Locate platform lift in an area for easy accessibility for the persons with disabilities while following the requirements of the ABC and CAN/CSA-B651.

### **.4 Enclosed Platform Lifts**

#### **.1 Usage**

- .1 Enclosed platform lifts have limited travel distance that must be considered to determine suitability.
- .2 Enclosed platform lifts usually require a shallow pit, a shaft and a machine room similar to an elevator but has restrictions as to equipment use that should be considered.
- .3 Provide a fire resistance rating equal to the rating required between floors for the shaft and machine room.

#### **.2 Location**

- .1 Locate enclosed platform lifts in areas convenient for persons with disabilities in close proximity to barrier-free entrances. Consider the lift entrance, which is an out swing door, when determining suitable locations.

#### **.3 Standards**

- .1 Comply with the latest edition of CAN/CSA-B355, Lifts for Persons with Physical Disabilities for enclosed platform lifts.

### **.5 Elevators**

#### **.1 Location**

- .1 Locate elevators in close proximity to the main entrance, which should meet the barrier-free requirements.
- .2 Provide an elevator lobby wherever possible.

#### **.2 Standards**

- .1 Comply with the ABC, CAN/CSA-B44 and features described in Appendix E of that standard for the elevators.

- .3 Sensory Issues
  - .1 Incorporate recommendations concerning sensory issues described in the ABC and CAN/CSA-B651 into the design and construction of the elevator.

## **8. Accessibility of Path of Travel Within Other Levels**

### **.1 Access to Facilities**

- .1 Minimum Requirements
  - .1 When accessibility is provided to other floors, provide the requirements of Article 5 for each accessible floor to provide at least the same level of barrier-free accessibility provided on the first barrier-free level.

### **.2 Personal Facilities**

- .1 Minimum Requirements
  - .1 When accessibility is provided to other floors, provide the requirements of Article 6 for each accessible floor to provide at least the same level of barrier-free accessibility provided on the first barrier-free level with the exception of public phones

## **9. Emergency Services**

### **.1 Emergency / Exit Lighting**

- .1 Minimum Requirements
  - .1 Upgrade emergency and exit lighting to the requirements of the ABC.

### **.2 Fire Alarm**

- .1 Minimum Requirements
  - .1 Upgrade fire alarm to current requirements of the ABC and CAN/CSA-B651.
- .2 Mounting Height of Pull Stations
  - .1 Mount pull stations with the operating device at 1400 mm above the finish floor to comfortably accommodate persons with disabilities as well as the general public and meet the requirements of the referenced documents.

- .3 Sensory Issues
  - .1 Incorporate visual signals into the fire alarm system to address the needs of the hearing impaired. Locate these visual signals as described in the ABC and CAN/CSA-B651.

## **10. Signage Within the Barrier-Free Path of Travel**

### **.1 Minimum Requirements**

- .1 Comply with the requirements and recommendations of the referenced documents with regard to size, colouring, lettering and construction for signage.
- .2 Locate signage consistently throughout the accessible levels in accordance with CAN/CSA-B651.

## **11. Building Security**

### **.1 User Actuated Systems**

- .1 Mounting Height of Actuation Devices
  - .1 Mount actuation devices with the top of device at 1400 mm above the finished floor to accommodate all required building users.
- .2 Alerting Signals
  - .1 Provide both visual and audible signals for doors secured with electromagnetic locks or other types of electronic hardware to indicate when door lock is released.

### **.2 Remote Actuated Systems**

- .1 Mounting Height of Call Devices
  - .1 Mount call devices with the top of call device at 1400 mm above the finished floor to accommodate all required building users.
- .2 Alerting Signals
  - .1 Provide both visual and audible signals for doors secured with remote actuated electromagnetic locks or other types of electronic hardware to indicate when door lock is released.