

ADAPTABLE DWELLING UNITS

DISCUSSION

This STANDATA has been developed to clarify the requirements for adaptable dwelling units in residential projects that have received full or partial funding from the Government of Alberta. Sentence 3.8.1.1.(3) sets out the requirements for when a project is required to incorporate adaptable dwelling units. For the purposes of this STANDATA, “adaptable” means a dwelling unit that has been designed to allow it to be altered to make the dwelling unit consistent with the principles of barrier-free design.

The Appendix note to Sentence 3.8.1.1.(3) explains that there must be a certain amount of flexibility incorporated into the dwelling units at the time of construction. As an example, if a dwelling unit is inhabited by an able-bodied person as well as a person who uses a wheelchair, the heights at which the kitchen counters are to be installed become an issue. Flexibility must allow the height of different work stations to be raised or lowered so that the dwelling unit may be converted one way or the other to cater to the need of its current tenants.

Some of the items that are discussed in this STANDATA are seen to be required features of an adaptable dwelling unit in order to allow it to be altered to become barrier-free at some later date.

In addition to the items deemed to be required features, the following items should be taken into consideration, but are not mandatory, when designing and constructing a building with adaptable dwelling units:

- Lighting should be equipped to provide illumination to an average level not less than 50 lx at floor or tread level in all living spaces of the dwelling unit.
- Door frames and base boards should be contrasting in colour and texture with the surface to which they are applied.
- Windowsills should be located not more than 865 mm above the floor level and be equipped with opening devices of a design which does not require tight grasping and twisting of the wrist as the only means of operation.
- Controls for the operation of building services or safety devices, including electrical switches and outlets, thermostats and intercom switches should be

Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Building Code 2006.

accessible to a person in a wheelchair, operable with one hand, and mounted between 400 mm and 1 200 mm above the floor.

- Sinks and lavatories should be equipped with faucets that operate automatically or have lever-type handles that do not close under spring action.
- Bathrooms should be designed to allow for the installation of grab bars that conform with the requirements of Clause 3.8.3.8.(2)(b), (c) and (d).

Please refer to the following publications for additional information on barrier-free design principles in residential occupancies:

- “Barrier-free Design Guide”, published by the Safety Codes Council
- CAN/CSA B651-04, “Accessible Design for the Built Environment”
- “Accessible Kitchens & Bathrooms by Design: Universal Design Principles in Practice”, published by McGraw-Hill Companies (ISBN 0070499802)

CODE REFERENCES

1. Sentence 3.8.1.1.(3) states:

3) If a residential *project* is funded in whole or in part by the Government of Alberta, adaptable *dwelling units* which could be made to meet *barrier-free* design principles shall be provided as follows:

- a) 2 or more in a *project* of 10 to 25 *dwelling units*,
- b) 5 or more in a *project* of 26 to 50 *dwelling units*,
- c) 10 or more in a *project* of 51 to 100 *dwelling units*,
- d) 15 or more in a *project* of 101 to 200 *dwelling units*, and
- e) 20 or more in a *project* exceeding 200 *dwelling units*.

(See Appendix A.)

2. Appendix note A-3.8.1.1.(3) states:

A-3.8.1.1.(3) Adaptable Dwelling Units. Providing adaptable dwelling units which could be made to meet barrier-free design principles needs further clarification. In designing dwelling units, it is difficult to anticipate the specific needs of individuals. If a dwelling unit is inhabited by an able-bodied person as well as a person confined to a wheelchair, the height at which the kitchen counters are to be installed becomes an issue. Flexibility must allow the height of different work stations to be raised or lowered. Adaptable means that the dwelling unit can be adjusted to suit all occupants' needs. For this to happen, each occupant's physical limitations must be understood. As a general rule, the pathway from the street to the entrance of the dwelling unit must be well marked and free of curbs or steps. A person in a wheelchair must be able to turn into and turn around in any room. Work stations for persons in wheelchairs must be capable of being lowered to the person's height with allowance for their feet beneath. For persons who are blind or deaf, a common electric circuit must interconnect all rooms and be able to be connected to the fire alarm, intrusion alarm, intercom or phone system.

INTERPRETATION

Adaptable dwelling units required by Sentence 3.8.1.1.(3) shall incorporate the following features:

1. Entryways, kitchens, washrooms and laundry areas (if applicable) shall be designed to allow a person using a wheelchair to turn in an open space that has a diameter of not less than 1 500 mm.
2. Every doorway into rooms within the dwelling unit shall have a clear width not less than 800 mm when the door is in the open position. (See Appendix A).
3. A threshold for a doorway referred to in Sentence (2) shall be not more than 13 mm higher than the finished floor surface and shall be bevelled to facilitate the passage of wheelchairs.
4. At least one washroom in the dwelling unit shall be provided with a barrier-free shower that shall
 - a. be not less than 1 500 mm wide and 900 mm deep,
 - b. have a clear floor space at the entrance to the shower, not less than 900 mm deep and the same width as the shower, except that fixtures are permitted to project into that space provided they do not restrict access to the shower (see Appendix A),
 - c. have a slip-resistant floor surface,
 - d. have a bevelled threshold not more than 13 mm higher than the finished floor, and
 - e. have a pressure-equalizing or thermostatic mixing valve controlled by a lever or other device operable with a closed fist.
5. The washroom referred to in Sentence (4) shall be provided with a lavatory that
 - a. is located so that the distance between the centreline of the lavatory and the side wall is not less than 460 mm,
 - b. has a rim height not more than 865 mm above the floor,
 - c. has a clearance beneath the lavatory not less than
 - i. 760 mm wide,
 - ii. 735 mm high at the front edge,
 - iii. 685 mm high at a point 205 mm back from the front edge, and
 - iv. 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge(see Appendix A), and
 - d. has insulated pipes where they would otherwise present a burn hazard (see Appendix A).

6. The washroom referred to in Sentence (4) shall be provided with a water closet that shall
- a. be equipped with a seat located at not less than 400 mm and not more than 460 mm above the floor,
 - b. be equipped with hand-operated flushing controls that are easily accessible to a wheelchair user or be automatically operable,
 - c. be equipped with a seat lid or other back support,
 - d. not have a spring-actuated seat, and
 - e. have a clearance to the walls of
 - i. not less than 285 mm and not more than 305 mm on one side, and
 - ii. not less than 875 mm on the other side.

(See Appendix A).

7. The washroom referred to in Sentence (4) shall be designed to permit a wheelchair to back in alongside the water closet referred to in Sentence (6) in the space referred to in Subclause (6)(e)(ii).
8. Every kitchen counter shall have at least one barrier-free section not less than 760 mm long centred over a knee space conforming to Sentence (10). (See Appendix A).
9. The top surface of the barrier-free section referred to in Sentence (8) shall be not more than 865 mm above the finished floor level.
10. The knee space beneath the barrier-free section referred to in Sentence (8) shall be not less than
- a. 760 mm wide,
 - b. 685 mm high, and
 - c. 485 mm deep.
11. Counters intended for the installation of a kitchen sink or a range shall be provided with a means of adjusting their height so that the counter surface is
- a. not less than 710 mm above the finished floor level, and
 - b. not more than the height of the adjacent counter surface.

(See Appendix A).

12. The kitchen sink referred to in Sentence (11) shall be provided with a clearance beneath the sink not less than
- a. 760 mm wide,
 - b. 735 mm high at the front edge,
 - c. 685 mm high at a point 205 mm back from the front edge, and

- d. 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge
- 13.** Overhead kitchen cabinets shall be provided with a means of adjusting their height by not less than 500 mm, provided the minimum clearances for ranges specified in Subsection 9.10.22. are not reduced at the lowered height. (See A-BCI010.(11) in Appendix A).

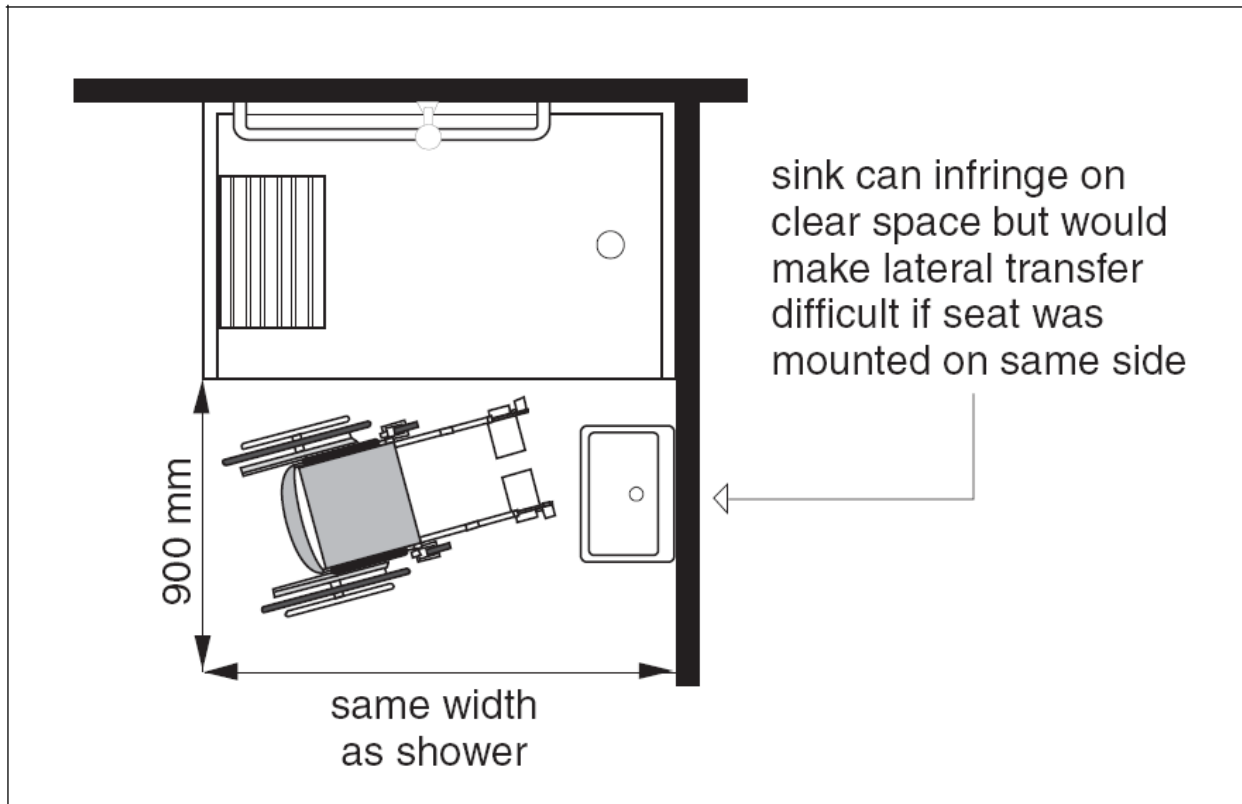
This INTERPRETATION is applicable throughout the province of Alberta.

APPENDIX A – EXPLANATORY MATERIAL

Note: This Appendix does not form a mandatory part of this STANDATA.

A-BCI010.(2) Residential Occupancies. This requirement ensures that the doorways in adaptable dwelling units are at least large enough to accommodate someone using a wheelchair. Residential suites must allow reasonable accessibility for persons in wheelchairs. Where a dwelling unit has more than one washroom, only one needs to be designed to be adaptable. It is relatively simple to make washrooms accessible through careful planning and positioning of fixtures and this can be achieved in an area not much larger than that of conventional washrooms.

A-BCI010.(4)(b) Clear Space at Entrances to Showers. The clear space at the entrance to a shower may be encroached upon by fixtures such as a wall hung sink which does not interfere with the leg rests of the wheelchair. However, this sink could restrict movement for persons who need to make a lateral transfer if it were installed at the seat end of the shower.



**Figure A-BCI010.(4)(b)
Shower design**

A-BCI010.(5)(c) Clearances Beneath a Lavatory.

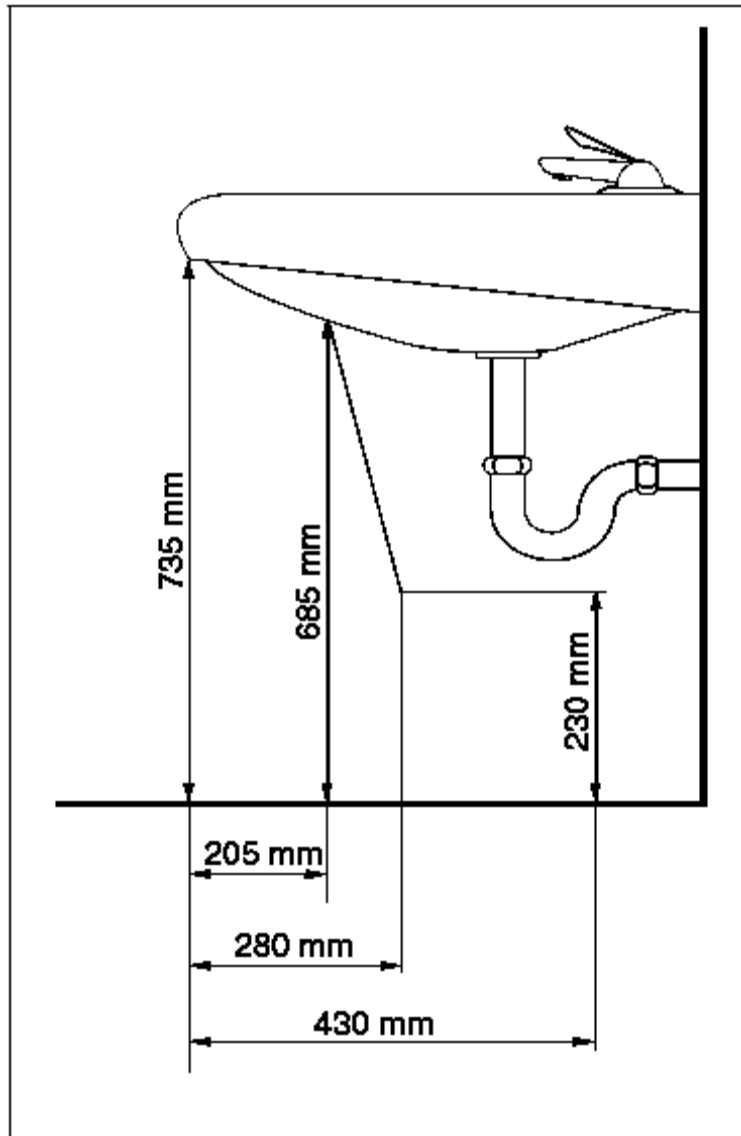
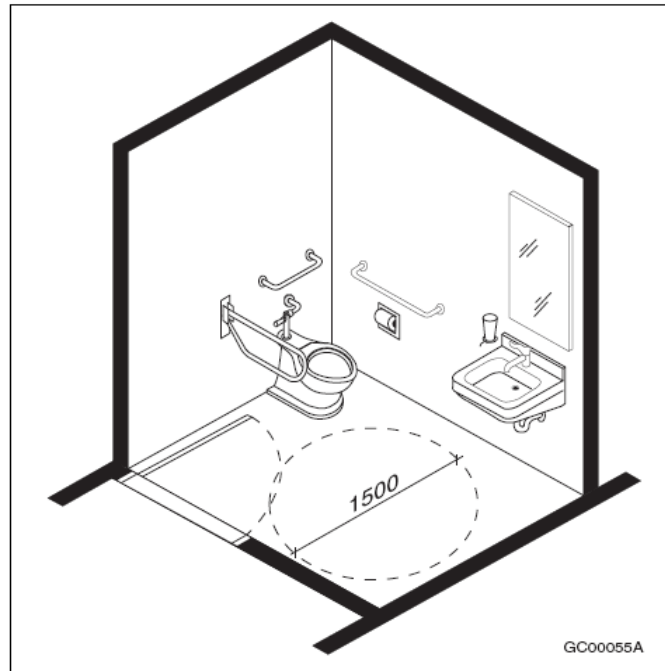


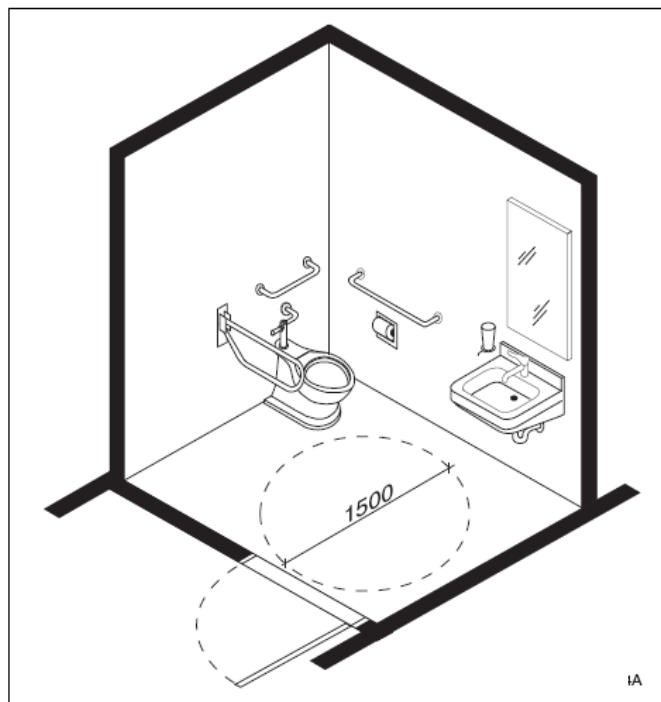
Figure A-BCI010.(4)(b)
Clearances beneath a lavatory

A-BCI010.(5)(d) Pipe Protection. Persons who have lost the sense of touch in their limbs cannot feel hot or cold and are susceptible to burns without knowing. The pipes referred to in Clause (5)(d) include both supply and waste pipes. The hazard can be prevented by insulating the pipes, by locating the pipes in enclosures, or avoided by limiting the temperature of the hot water to a maximum of 45°C.

A-BCI010.(6) Water Closets. Wall-mounted water closets or floor models with receding bases are preferable because they provide the least amount of obstruction.



**Figure A-BCI010.(6)-A
Washroom with inward swinging door**



**Figure A-BCI010.(6)-B
Washroom with outward swinging door**

A-BCI010.(8) Kitchen Counters. It is not intended that the entire kitchen counters be barrier-free, but that sufficient barrier-free counter space be available. This allows persons with disabilities to be able to use the counters to prepare food, while still providing ample counter space at regular heights for persons that are not disabled.

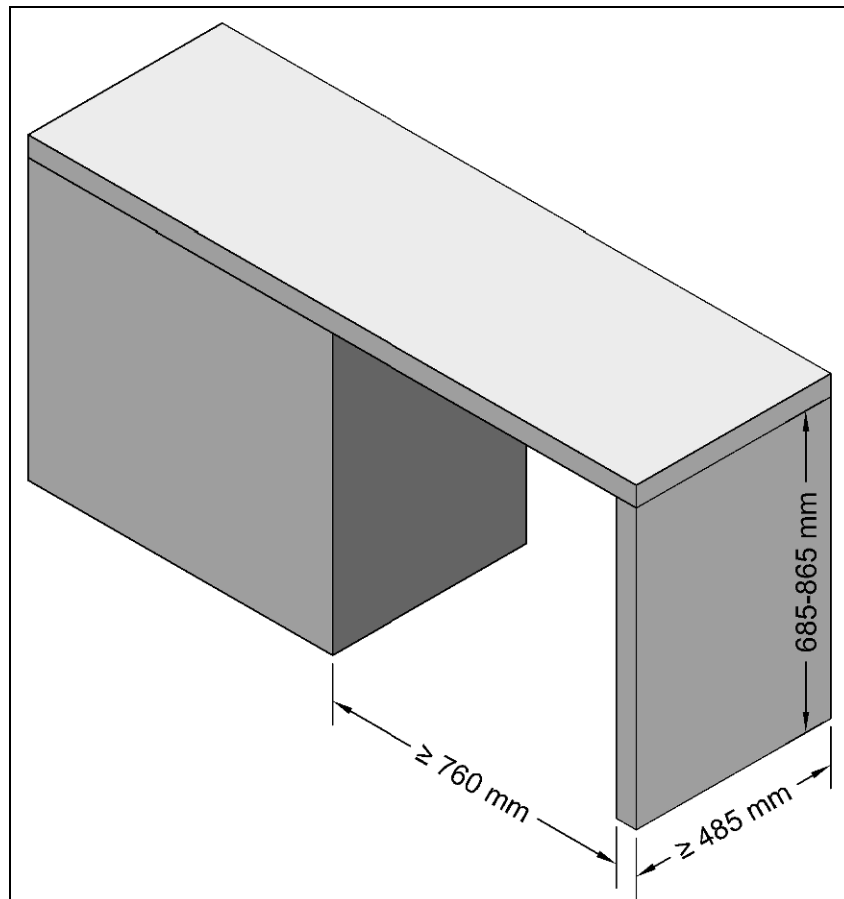


Figure A-BCI010.(8)
Barrier-free counters

A-BCI010.(11) Height Adjustable Counters and Cabinets. There are many different ways of providing for height adjustability in counters and cabinets in adaptable dwelling units, ranging in cost and complexity. The most cost effective way is to build into the supporting structure a series of support points so that the counters or cabinets can manually be removed and repositioned in a more accessible position. The most accessible method, in terms of persons with disabilities, would be to install some form of motorized guides that move the counters and cabinets up and down with the flip of a switch. The method of providing a means for adjusting the counters and cabinets is left to the designer.

Installation of a standard residential range does not allow for any flexibility in design in terms of the height of the burners or elements. As such, it is recommended that adaptable dwelling units be provided with standalone cooktop ranges with separate wall mounted ovens.