

**DESIGN  
RIGHT**



**BY ALIDE ELKINK,**  
FREELANCE TECHNICAL  
WRITER, WELLINGTON

# Accessibility hardware

We continue our *Build* series on accessible house design by looking at the specifics of hardware that meets universal design criteria.

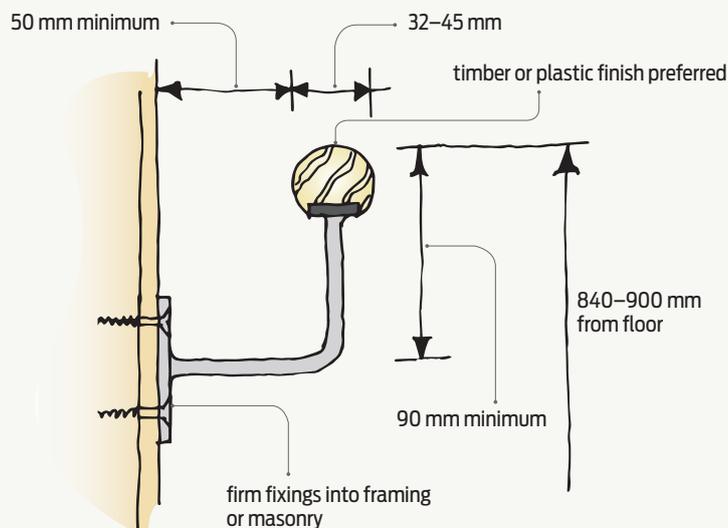
**EASILY USABLE HARDWARE** is an essential part of universal accessibility in homes. It includes handrails for stairs and ramps, grab rails for use with showers and WC pans, door handles, locks, window catches, tap and shower controls, shower seats and other bathroom fixtures.

### Handrails for stairs and ramps

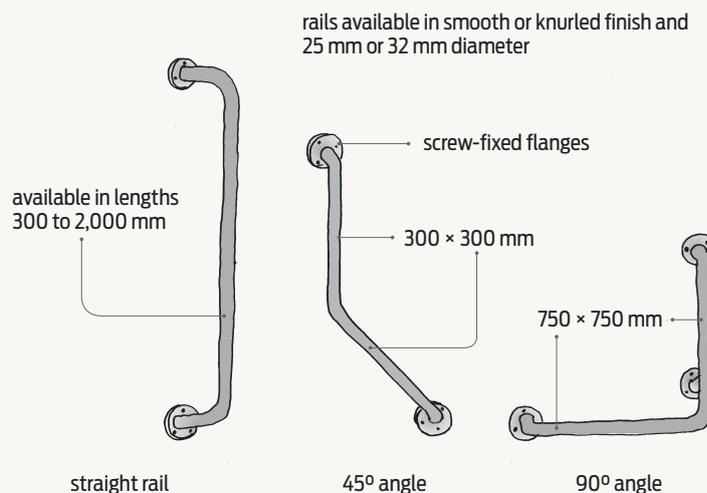
Handrails for accessible stairs and ramps that can be used by people with disabilities, are prescribed in Acceptable Solution D1/AS1 to New Zealand Building Code clause D1 *Access routes*. These provide good guidelines for handrail design for universal design generally (see Figure 1). They require handrails to:

- be continuous and the full length of the ramp or stair
- be the same slope as the ramp or stair pitchline
- be securely fixed to a wall or structure so they can support the full weight of an adult
- be 900–1,000 mm above the finished floor level
- have 45–60 mm uninterrupted clearance from a wall or structure so that a user can move their hand along the rail smoothly without striking obstructions such as fixing brackets
- be 32–50 mm in diameter.

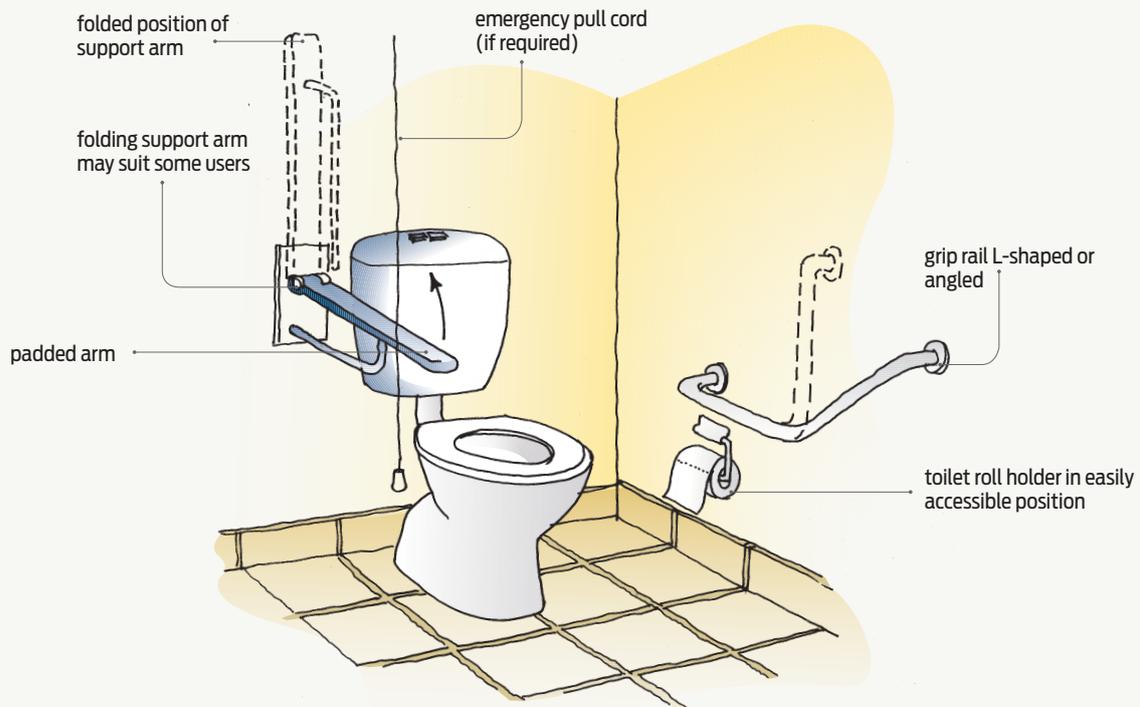
Accessible stairway and ramp handrails require a minimum 300 mm long horizontal extension beyond the last riser at each end to signal the termination of the rail to a visually impaired person. If there is sufficient space, this can also be a useful feature in residential stairs.



**Figure 1** Handrail design.



**Figure 2** Grab rail design.



**Figure 3** Grab rail and support arm beside a WC.

### Grab rails for safety

Safety grab rails provide essential support in bathrooms for toilet and shower use for people with disabilities. A range of proprietary grab rails in different shapes with either smooth or knurled finishes are available (see Figure 2).

Grab rails for general use may be vertical, horizontal, 45° angled or L-shaped. All grab rails need to:

- be securely fixed to the wall so they can support the full weight of an adult
- be 25–40 mm in diameter
- have 50–60 mm finger clearance from the wall.

In addition, the grab rail beside a WC pan (see Figure 3), should:

- be L-shaped or angled
- have the vertical section fitted between 150–250 mm in front of the pan with the horizontal section alongside the pan
- have the horizontal section fixed approximately 700 mm above the finished floor level
- be 30–40 mm in diameter.

Urinals and showers should be fitted with a grab rail similar to a WC pan grab rail but:

- for a urinal, the horizontal section should be fixed 1,200 mm above the finished floor level
- for a shower, the horizontal section should be fixed 900 mm above the finished floor level.

### Shower controls and taps

Lever-controlled mixers are preferable for wash hand basins, baths and showers as they are easier to operate. Extended lever taps are available for people with a weak grip (see Figure 4). Avoid knob-type taps, as these can be very difficult for some people to grip.

The shower mixer should be 1,000 mm above the finished shower floor level. A hand-held showerhead with a flexible, 1,500 mm long hose on a vertical sliding rail can be used easily by a person showering themselves or by a caregiver. The sliding rail must be securely attached, as it is likely to be used as another grab rail.

### Other bathroom fixtures

Other bathroom fixtures include toilet roll holders, soap holders and towel rails. A toilet roll holder should be fixed at least 300 mm in front of the WC pan (but no more than

500 mm) and 600–1,100 mm above the finished floor level. It needs to be within reach of the person using the toilet. Soap holders and towels rails should be positioned to provide a clear manoeuvring space and be approximately 1,000–1,200 mm above the finished floor level.

A shower seat aids showering for a person with a disability. Shower seats should be made from a slip-resistant material, be approximately 800 mm long by 450 mm deep and be fixed 550 mm above the floor.

If the shower seat is hinged, it can be folded out of the way when not required. Shower seats must support the full weight of an adult so fix securely to the wall, and orient appropriately for the showerhead, controls and grab rail.

### Door and window controls

Where possible, door and window controls should be operable with one hand. As with taps, lever door handles are the easiest type to use and should be mounted for easy reach between 900–1,200 mm above the finished floor level (see Figure 5). Window controls should also be lever-operated if possible. ➤

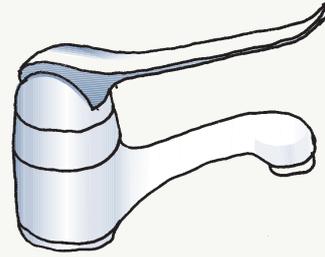
Locks should operate independently from door latches, as a simultaneous operation often requires the use of two hands. Bathroom door locks should be able to be unlocked from the outside in an emergency. Proprietary dual-swing hinges and latches are available for bathroom doors for emergency use.

Cupboard doors should generally be D handles for easy use and be fitted with magnetic closers or self-closing hinges.

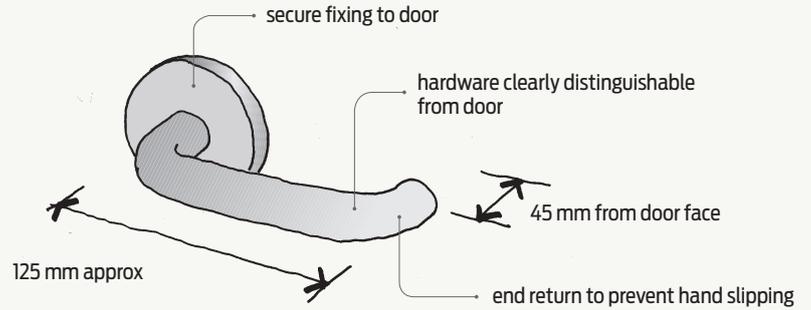
### Light switches

Light switches should have a switching mechanism that projects forward from the faceplate and be mounted at the same height as the door handle if adjacent to a door. ◀

**For more** See [www.branz.co.nz/universal\\_design](http://www.branz.co.nz/universal_design) or NZS 4121:2001 *Design for access and mobility: Buildings and associated facilities* available at [www.standards.co.nz](http://www.standards.co.nz).



**Figure 4** Extended lever mixer tap.



**Figure 5** Lever door handle.