Universal Design Checklist

Ramp Design

This checklist provides guidance for designing accessible, safe and convenient ramps. Ramps are necessary for people with mobility impairments that prevent them from using stairs safely or conveniently. They also provide easy access for caregivers with prams, people with goods or luggage and paramedics.

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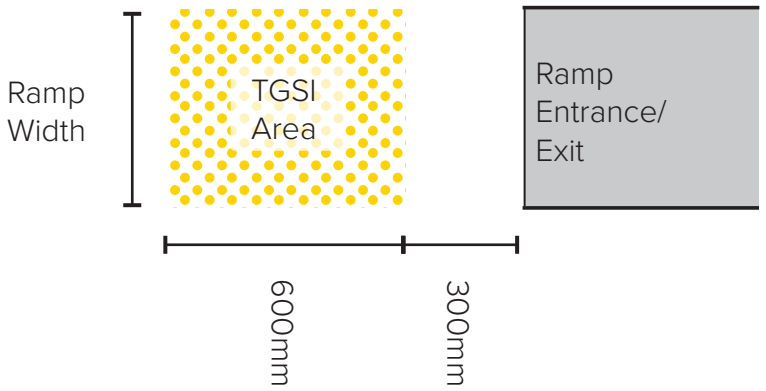
AUCKLAND DESIGN MANUAL
TE PUKA WHAKATAIRANGA I A TĀMAKI MAKAURAU

Auckland Council
Te Kaunihera o Tāmaki Makaurau

General Ramp Design

- ☐ Avoid the need to provide accessibility ramps wherever possible. Do this by creating level entryways into buildings and designing all access through sites to have a maximum 1:20 gradient.
- ☐ Integrate ramps with main accessways or locate them as close to main accessways as possible (MBIE). [1]
- ☐ Co-locate means of vertical movement together (i.e. locate stairs and ramps next to each other) (MBIE). [2]
- ☐ Use ramps instead of stairs if a stairway will only have 1-2 steps (Waka Kotahi).[3]
- ☐ Design ramps to have a continuous, even surface with a minimum slip resistance value of 47 (Building Code). [4]
- ☐ Design ramp edges to have a 75mm high upstand (NZS 4121). [5]
- ☐ Light ramps evenly to 200 lux (CEUD). [6]
- ☐ For safety install yellow Tactile Ground Surface Indicators (TGSI) at the bottom and top of ramps. Avoid using stainless steel tactiles. (NZS 4121) [7]



- TGSI areas should be the same width as the ramp.
- TGSI areas should begin 900mm and finish 300mm before a ramp (i.e. have a depth of 600mm).

Gradient and crossfall

- ☐ External ramps should have a maximum gradient of 1:14, with 1:20 preferred (NZS 4121).
- ☐ Internal ramps should have a maximum gradient of 1:12, with 1:14 preferred (NZS 4121).
- ☐ The crossfall of ramps should not exceed 1:50 (NZS 4121).
- ☐ Apart from landings, design ramps to have a consistent incline, with no steeper and shallower sections (CEUD).
- ☐ The design of ramps should account for construction tolerances to ensure completed ramps will meet the minimum gradients specified above (AT).

Length and width

- ☐ Ensure that approaches to ramps should have a minimum clear space of 1200mm x 1200mm, with 1800mm x 1800mm preferred (NZS 4121, CEUD). [8]
- ☐ Design ramps to have a minimum clear width of 1200mm, with 1800mm preferred (NZS 4121, CEUD). [9] If the ramp is the only means of access, the recommended minimum width is 3000mm (Waka Kotahi, 2022).
- ☐ Design landings to be level and at least 1200mm x 1200mm, with 1800mm x 1800mm preferred (NZS 4121, CEUD).[10]
- ☐ The rise between any two landings should not exceed 750mm and the travel distance between landings should be no more than 9m (NZS 4121) [11]
- ☐ Ramp landings must be clear of swinging doors and other protrusions (NZS 4121). [12]

Hand Rails

- ☐ Provide handrails on both sides of ramps, or provide a central double handrail. If a central handrail is provided, there should be at least 1200mm clear width on either side of the handrail. [13]
- ☐ Place handrails at 900-1000mm height and continue handrails 300mm beyond the top and bottom of ramps (NZS 4121, CEUD). [14]
- ☐ The ends of handrails should turn down 100mm or fully return to the end post or wall face (NZS 4121). [15]
- ☐ Handrail extensions should not create a hazard for those approaching the ramp at right angles. In particular, consider children for whom handrail extensions may be at head height.
- ☐ Handrails should be colour contrast to their background (AT).[16]

Endnotes

1 Integrating ramps with main access ways ensures people will have shorter travelling distances. This can be particularly important for those with mobility impairments.

2 Co-locating means of vertical movement provides people with choice, which can differ on different days. For example, someone walking with luggage may choose the ramp when on other days they would choose the stairs.

3 One or two steps pose a tripping hazard.

4 When choosing surface treatments consider the ramp gradient, exposure to the elements and surface cleaning requirements. These factors may result in a need to use higher slip resistance surfaces.

5 Upstands assist in limiting wheeled mobility devices from accidently rolling off the side of a ramp. They can also provide a tactile edge for long cane users.

6 Lighting is important for both Crime Prevention Through Environmental Design (CPTED) and for people who have low vision.

7 TGSIs provide important warnings to people who are blind or have low vision.

8 Providing sufficient space is important to enable people using mobility devices to safely approach the ramp at an appropriate angle when ascending or descending.

9 An 1800mm ramp width enables two wheelchair users to pass each other safely. A 3000mm ramp enables a variety of users including emergency services such as paramedics.

10 Larger landing areas on ramps better accommodate longer devices such as mobility scooters or single file double prams.

11 Level landing areas enables people the opportunity to rest when traversing a longer ramp.

12 Keeping ramp landings clear increases safety for ramp users.

13 Handrails on both sides of ramps (bilateral handrails) allow users to support themselves with either their left or right arm. This is particularly important when someone has one sided weakness, such as following a stroke.

14 Handrail projections assists people to get into a stable position before releasing a handrail. For locations where children are likely to be present, such as schools or public transport, consider an additional lower handrail at 760mm high.

15 Handrails must continue past the top and bottom of ramps so that people, particularly those who are blind or have low vision, are able to transfer to a firm flat surface before letting go of their support.

16 Colour contrasted handrails enables people to easily identify the handrail, this particularly important for those with low vision.

Reference List

1 Ministry of Business Innovation & Employment (2019). Buildings for everyone: Designing for access and usability. Wellington, NZ: MBIE. https://www.building.govt.nz/building-code-compliance/d-access/accessible-buildings

2 Waka Kotahi (2022). Pedestrian network guidance. https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/

3 Building Code (2017). D1 Access Routes. Wellington, NZ. https://www.building.govt.nz/building-code-compliance/d-access/d1-access-routes/

4 Standards New Zealand (2001). NZS: 4121 Design for access and mobility – Buildings and associated facilities. Wellington, NZ: SNZ https://www.standards.govt.nz/assets/Publication-files/NZS4121-2001.pdf

5 The Centre for Excellence in Universal Design (n.d.) Building for everyone. Dublin, Ireland: CEUD http://universaldesign.ie/Built-Environment/Building-forEveryone/

6 Auckland Transport (2019) Accessibility Audit Framework. Transport Design Manual. https://at.govt.nz/about-us/manuals-guidelines/roads-and-streets-framework-and-the-transport-design-manual/#tdm