Step by step

Supporting healthy and active communities in transport design

Our transport infrastructure design should always support, and encourage, people to travel as independently as possible. Walking is a transport choice that everybody can undertake and is key to supporting healthy and active lifstyles now, and into the future.

The purpose of this document is to outline the key principles outlined in '*RTS14: Guidelines for facilities for blind and vision impaired pedestrians*' and provides practical examples of how to implement the design techniques within the transport environment.

The role of transport planners and engineers is to create an environment that best supports people being able to walk for as long as possible, particularly our most vulnerable users.

Why are we doing this?

Vulnerable road users include not just the 1 in 4 New Zealanders who have some form of recognised disability, but also the young and old, and we need to provide a safe and attractive walking environment. With an increasingly ageing population, the proportion of the population with some of disability is also likely to increase.

It is estimated that1 in 7 people over 50 will get macular degeneration and this will increase as people age. Typically, this means that people will have some visual loss not complete blindness.

While the focus of the RTS14 guidelines is to improve facilities for the blind or visually impaired, a clear consistent layout with good design principles assists all people with a disability and the wider community.

Key design principles

There are three simple principles for the design of transport layouts in the RTS14 document.

Provide simple, logical and consistent layouts.

Use non-visual features (e.g. audible and tactile devices)

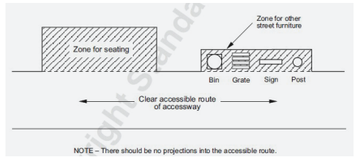
Visual contrast is important to accentuate the presence of certain key features.

Provide simple, logical and consistent layouts

The continuous accessible path of travel defines the area where the pedestrian route is safe and convenient for people with impaired mobility, along with people who are blind or have low vision. It has even surfaces, gentle slopes and is kept free of permanent and temporary obstacles at all times. The ideal layout for accessible routes as advised in the Pedestrian Planning Design Guide (NZTA, 2009). The minimum width is 1.5m, and preferably 1.8m wide, but it can be wider in central city settings.

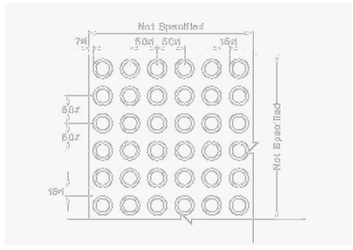
The objective is to ensure that blind and partially sighted users can use the building line or well-designed outdoor seating area to navigate a safe route. Some good examples of how this can be achieved are provided below.

The Pedestrian Planning Design Guide also has good guidance on gradients and crossfall so that users are able to use a facility without risk of falls.



Use non-visual features

Tactile Ground Surface Indicator (TGSI) paving is the most common form of non-visual dedicated infrastructure aimed at guiding people with an impairment. Executed well, these facilities also provide a safer and legible environment for all users of the pedestrian environment. RTS14 recognises two types of tactile paving:

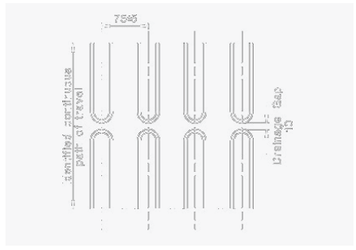


Warning tactiles

Tactile paving shall be installed in the following locations:

- All formal and informal pedestrian crossing points
- Approaches to stairs, ramps, escalators and moving walkways
- Where there are life threatening hazards where serious falls may occur e.g. railway platforms
- At level railway crossings
- At bus stop boarding locations.

They can also be installed at busy vehicle crossing points where street furniture has been installed on the continuous path of travel and cannot be detected by blind or partially sighted users.



Directional indicators

Where no other visual cues are present, directional pavers should be used when there is a deviation from the continuous accessible path of travel to:

- A road crossing point
- Public transport access point
- Significant public facility e.g. public toilets or information centre.

They can also be used to direct users across an open space or around obstacles in the continuous path of travel (where warning tactiles are not sufficient).

Provide visual contrast

High visual contrast between the walking surface and the surrounding environment is especially important for people who have limited vision. It helps users distinguish the limits of the footpath and recognise hazards as well as provides information as to the direction of travel.

The example images show how high contrast tactiles can enhance visibility. In the second image, white markers have been used that provide reduced contrast due to the surrounding pavement colouring.

Hints and Tips for Good Design

The RTS14 guidance is in place to provide a consistent and simple approach to inclusive design for all. There are challenges and it is not always easy, particularly on retro-fit projects. To assist you in delivering good outcomes, here are some hints and tips so that it is more likely that you can use the standard layouts provided in RTS14.

- **Always consider the crossing location and tactile design at the beginning of a project to allow the use of standard layouts set out in RTS14 or local guidance.**
- **When developing design drawings, specify details for tactile paving and/ or consider magnifying the detail for tactile paving on scheme drawings. This will assist contractors to install the tactile arrangements correctly.**
- **Work with your local advocacy groups to develop scheme designs – they are often an extremely knowledgeable and helpful group of people.**
- **Increase awareness and knowledge of staff within your organisation on the key design principles and why tactile paving is not just an add on.**
- **Work proactively with contractors installing tactile paving, sometimes this can mean meeting on site to agree locations and provide informal training on the basic design principles.**

Useful References

NZS 4121: 2001 Design for Access and Mobility – Buildings and Associated Facilities.

AS/NZS 1428:4.1: 2009 Means to assist the orientation of people with vision impairment – Tactile ground surface indicators.

AS 1428.5-2010 Design for Access and Mobility – Communication for people who are deaf or hearing impaired.

NZ Transport Agency, 2009, Pedestrian Planning and Design Guide

NZ Transport Agency, 2015, Road Traffic Standard 14 (RTS14) – Guidelines for Facilities for Blind and Vision Impaired Pedestrians

How should tactile indicators be installed?

Standard signalised intersection tactile design

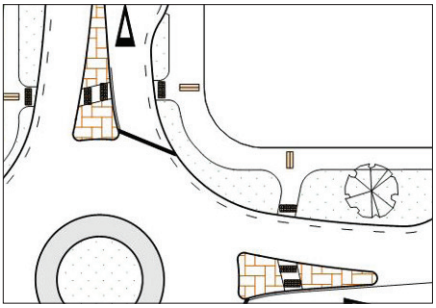
The basic design principles for installing tactile paving at a signalised intersection is presented in RTS14 and the principles can also be adapted for unsignalized intersections.

Key design considerations include the kerb set back, depth of warning indicators as well as crosswalk and kerb ramp widths.

Use of directional paving at signalised intersections

Examples of how this design has been achieved in different ways are provided above. Note in the first photograph that directional indicators are not required because the landscaping provides adequate visual cues.

In the second photograph the directional pavers lead users to the signal pole instead of the middle of the crossing point.



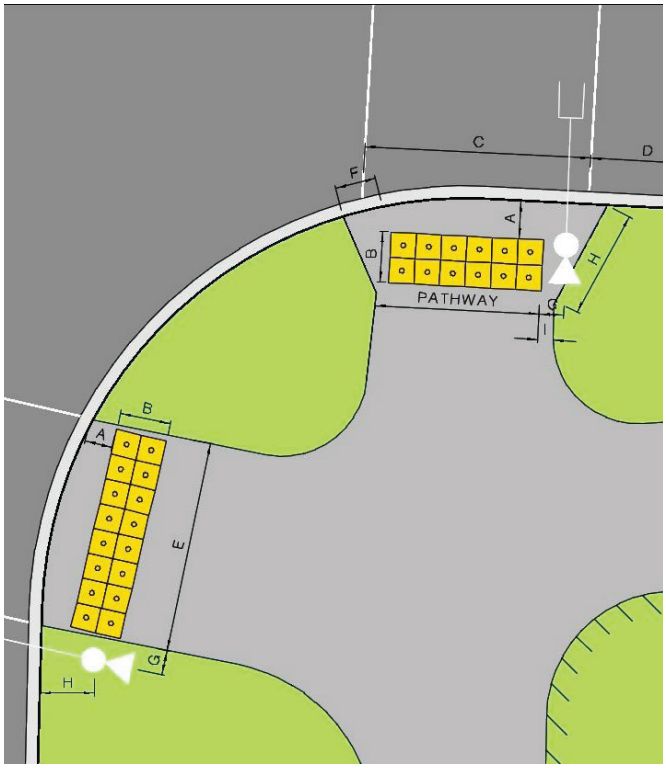
Roundabouts

The use of directional indicators is often required because the crossing point is located off the accessible path of travel. Consideration should be given to providing facilities with a central refuge that will permit an audible judgement of approaching traffic and minimise the distance and complexity for vulnerable users.

The standard layout of a roundabout and how this is may be implemented is shown in the image above.

Traffic signal layouts

Design principles as contained in RTS14.



ID	DESCRIPTION	DIMENSION
A *	Set back distance of warning indicators to front of kerb	Minimum 300 mm Maximum 1000 mm **
B	Depth of warning indicators	Minimum 600 mm
C	Width of pedestrian crosswalk	Recommended 2.5 m (Minimum 2.0 m)
D	Distance between crosswalk line and limit lines	1.0 m
E	Width of kerb ramp	Recommended 1.5m (Minimum 1.0m)
F	Haunching width of kerb located outside the extent of the accessible path (slope 1:6)	600 mm
G	Clearance between push-button pole and edge of kerb ramp	Maximum 300 mm
H	Pedestrian push-button set back from kerb	Minimum 600mm Normally 1.0 m
I	Distance between nearest dome (on warning indicators) to edge of ramp	Maximum 50 mm ***

Notes *Dimension A is measured along the path of pedestrian travel, not perpendicular to the kerb. **Where the kerb is not perpendicular with the crossing direction, a suitable TGSI arrangement will result in a variable Dimension A. It is important that Dimension A does not exceed 1m – a staggered TSGI arrangement can overcome this (refer to section 5.7.4). ***Dimension I is required to ensure that a person will receive underfoot tactile warning and not accidentally bypass the warning indicators.

Contact

If you wish to discuss any of the concepts or you have some more challenging locations which you would like assistance with, please contact:

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