



Chapter 12

**Footpaths and
Pedestrian
Facilities**



12 Footpaths & Pedestrian Facilities

12.1 Footpaths and Walkways Guidelines

It is essential that [AT's Footpaths and Walkways Guidelines](#) (PDF 119KB) are read before reading the rest of this chapter.

12.2 General

Approvals granted under the previous legacy council standards or guidelines will be permitted as exceptions for a transition period where Auckland Transport agrees that there is justifiable reason for this. Apart from such approved exceptions and Heritage Zone exceptions covered in *ATCOP Chapter 3 Section 3.4* the requirements within this chapter apply.

All references to reports, documents, standards, guidelines, Acts and Regulations are references to the latest versions complete with all amendments; unless specific exceptions are stated.

- Footpaths are those parts of a road or street that are intended for pedestrian use.
- Pedestrians include people on foot, in wheel chairs, on mobility scooters, or pushing a pram. It is therefore important that footpaths are wide enough for unhindered, unobstructed use by all user groups – including disabled users.
- Footpaths generally run parallel to the adjacent carriageway and may be separated by kerbs and cultivated or uncultivated road margins.
- Footpaths should be provided on at least one side of the road over the full length of urban roads. However, in areas with a significant number of pedestrians such as bus routes, commercial centres, school routes, and those with a high public profile, footpaths should be provided on both sides of the road. Similar selection criteria are applicable to determining the need for footpaths in rural areas. For further guidance on 'when to provide footpaths' refer to Section 14.1 of the Pedestrian Planning and Design Guide (NZTA, formerly LTNZ).
- Where the longitudinal gradient of the road is greater than the recommended limit for pedestrians, footpaths can often be grade separated.
- Besides being used primarily by pedestrians, footpaths are sometimes shared with cyclists (shared paths).
- There must be a functional pedestrian through-route on a footpath. Key to this is a careful consideration of the position of potential obstructions e.g. lighting poles, power boxes, sign posts and other street furniture. This aspect is covered in more detail in *ATCOP Chapter 6 Streetscape Amenities*. Refer also *ATCOP Chapter 19 Street Lighting (Section 19.10 Roadway Lighting Column Locations)*.



- Existing construction materials, methodology and workmanship must be considered when maintaining and renewing footpath components and pedestrian facilities.

The footpath standards contained in this chapter do not cover recreational walking tracks or shared paths. For standards relating to shared walking and cycling paths, refer to *ATCOP Chapter 13 Cycling Infrastructure Design*.

12.3 Footpath Design (including crossings)

Footpath design must comply with the following best practice standards and guidelines:

Austrroads Guide to Road Design – Part 4; Intersections and Crossings – General

Pedestrian Planning and Design Guide, NZTA (formerly LTNZ) (December 2007)

Guidelines for the selection of Pedestrian Facilities; LTNZ (2007)

Austrroads Guide to Road Design – Part 6A; Pedestrian and Cyclist Paths

RTS 14 Guidelines for facilities for blind and vision-impaired pedestrians 2nd edition 2007, LTNZ or later NZTA edition;

NZS 4121, Design for Access and Mobility - particularly, Footpaths, Ramps and Landings, Accessible Outdoor Public Areas;

Manual of Traffic Signs and Markings (MOTSAM), NZTA - Signs for Shared Paths;

AS/NZS 1428.4.1:2009 or later edition – Design for Access and Mobility – means to assist the orientation of people with vision impairment – Tactile Ground Surface Indicators;

AS/NZS 4586:2004 or later edition – Slip resistance classification of new pedestrian surface materials; and

Land Transport Rule: Traffic Control Devices 2004 (consolidated rule and subsequent updates).

Refer also to *ATCOP Chapter 19 Streetscape Amenities* and [AT's Street Amenities in the Road Corridor](#) (PDF 83KB).

12.4 Footpath Width

Generally, footpath width determination is based on the values given in Section 14 of the Pedestrian Planning and Design Guide (NZTA). The minimum footpath width is 1.8m and the maximum width is 3m. The reason for having a maximum width - except where pedestrian volumes require a greater width - is that the strong visual dominance of large uniform areas of hard surface should be avoided.



There are four distinct Footpath Spatial Zones within an urban footpath area. They are the Kerb Zone, Street Furniture Zone, Through-route (for pedestrian movement), and the Frontage Zone (against the property boundary). The purpose and position of these zones is shown in Figure 14-1 and Table 14-2 of the Pedestrian Planning and Design Guide (NZTA). These zones need to be identified in the road planning stage in order to ensure there is adequate width for the Through-route. Refer to *ATCOP Chapter 6 Streetscape Amenities* for layout details and *ATCOP Chapter 7 Road Layout and Geometric Design, Section 7.7* for kerb details.

Table 32 shows a simplified/amended version of the minimum Footpath Zone dimensions based on the Pedestrian Planning and Design Guide (NZTA) Table 14-2.

Table 32: Minimum Footpath Spatial Zone Dimensions

Location	Maximum pedestrian flow	Spatial Zone				Total
		Kerb	Street Furniture #	Through route	Frontage	
Arterial roads in pedestrian districts	80p/min	0.7m	1.5m	2.4m +	0.75m	5.35m +
City Centre, city fringe, metropolitan centre and town centres						
Alongside parks, schools and other major pedestrian generators						
Outside and around public transport hubs / interchanges / stations						
Collector roads and local roads in pedestrian districts	60p/min	0.7m	1.5m	1.8m	0.45m	4.45m
Commercial/industrial areas outside the CBD						
Local roads in residential areas	50p/min	0.15m	0.9m	1.8m	0.15m	3.0m

Consider increasing this distance where vehicle speeds are higher than 55km/h.

If the flow of pedestrians exceeds the flow per minute noted in , extra width may be required. All new and improved developments should comply with these widths.



More detailed guidance for pedestrian levels of service is contained in the Pedestrian Planning and Design Guide (NZTA).

In retrofitting situations, the dimensions shown above may not be achievable. The Frontage Zone should be provided only if the minimum Through-route width can be provided.

In suburban and rural areas the Street Furniture Zone is usually replaced by a Kerbside Berm Zone. Unkerbed roads in rural situations obviously do not have a Kerb Zone.

12.5 Footpath Longitudinal Gradients

Generally, the longitudinal gradient of a footpath should be the same as the adjacent road. It may not be physically possible to cater for the needs of people with disabilities or unaided wheelchair users in all situations. However, where possible the following gradients should be used:

Table 33: Footpath Gradients

1 in 33 maximum	Continuous grade
1 in 33 – 1 in 20	With a 1.2m level rest area provided every 15m
1 in 20 and steeper	Should be treated as a ramp. (Refer to NZS 4121 Design for Access and Mobility: Buildings and Associated Facilities)
Steeper than 1:6 or on stairs/steps	Handrail must be provided in compliance with NZS 4121 Clause 3.7.3.2. Refer also to <i>ATCOP Chapter 18 Structures</i>

The desirable gradient for a wheelchair ramp / pram crossing is 1 in 20 – refer to *Section 12.8 Pram Crossings*.

12.6 Footpath Cross Fall

Through-route cross-falls must be a minimum of 2% and a maximum of 3%.

Note: although a minimum of 2% is recommended on the through-route zone of the footpath, stormwater drainage issues also need to be considered. The footpath cross-fall should always be to the road or to a drainage device such as a swale. See also *ATCOP Chapter 7* Standard Plan No.GD012 for Round Dish Channel details.



12.7 Footpath Surface Types and Construction

General

- GAP 40 granular basecourse bedding must be placed and compacted. Under vehicle crossings, compaction must achieve a minimum Clegg Impact Value of 12 for concrete crossings, and a minimum CIV of 27 for asphalt crossings. Vibratory compaction is not permitted above buried services.
- All footpath edges must be constructed flush with the adjacent ground to avoid creating pedestrian trip hazards. Adjacent ground may need to be raised or lowered to achieve this. See Standard Plan No.FP008 for Footpath edging details.
- Berms adjacent to newly constructed or repaired footpaths must be formed with compacted soil (and grassed) to be level with the top surface of the footpath.
- Footpath construction and repair works must be undertaken in such a manner as to protect nearby trees/tree roots.

Concrete

See Standard Plan No.FP001 for Concrete Footpath details and Plan No.FP002 for Longitudinal Joint and Stitching Bar Details.

Footpaths in residential areas must be constructed with 20 MPa concrete from a registered manufacturing plant, and at least 100mm thick with a 2% crossfall. They must be laid on a 100mm layer of compacted GAP 40 granular basecourse. This applies to footpath repairs as well as new footpaths. Any non-standard concrete or paving on driveways etc. must stop at the road reserve boundary. All concrete must be membrane or water cured for 5 days prior to usage. The footpath must be protected from vehicular wheel loads during the initial 28-day concrete curing period.

Control joints (transverse) must be established at a spacing of no greater than 3m intervals. Saw cut joints, if used, are to be to a depth of 1/3 of the thickness of the footpath. Saw cuts are to be made no later than two days after the concrete has been cast. In order to prevent trips/falls – there must be no lips/steps greater than 5mm at slab joints.

In order to prevent vertical misalignment, movement by roots or heaving of ground, longitudinal contraction / expansion joints are to be fitted with shear dowels, see Plan No.FP002. Chamber lids are to be re-levelled to suit the cross-fall. They should be flush with the surrounding surface area. A step of no more than 5mm is permissible.

To prevent cracking at re-entrant corners, at restraint caused by manhole chambers, at restraint caused by light poles etc. the slab must include diagonal 16mm diameter stitching bars at each corner. Bars are to be 900mm long fitted centrally into the slab depth.



Details for longitudinal joints “re-entrant corners” is shown on Plan No.FP002.

In cul-de-sac heads and non-residential areas the footpaths must be at least 150 mm thick laid on a 100mm layer of compacted GAP40 granular basecourse with 2% crossfall.

All new concrete footpath construction must have one layer of centrally placed 665 mesh installed, in the following locations:

- within 1.5 metres of any service cover or manhole located in the footpath
- within 3 metres of any vehicle crossing.

For high quality concrete footpaths in village centres, concrete slabs should receive specific structural design so that crack widths are kept to a maximum of 0.2 mm. This is an acceptable width that is just visible but is not unsightly. The cause of cracking can be due to some or all of poor joint spacing, joint arrangements and the prevention of the slab from freely shrinking. Certain engineering assets such as light poles, manholes, foundations, or large structures embedded in the slab also prevent free shrinkage. These assets cause high shrinkage stresses to develop and when these exceed the tensile strength of concrete, cracks occur. The addition of rebar can control cracking to reasonable widths, but this may require careful analysis to determine the tensile stresses involved.

Asphaltic Concrete

See Standard Plan No.FP003 for Asphalt Footpath Details.

For Asphalt Footpath and Vehicle Crossing Repair Details refer to Standard Plan No.FP007.

Where existing footpaths in residential areas are constructed using Asphaltic Concrete (Asphalt) these should be maintained as Asphaltic Concrete with NZTA Mix 10 constructed with a compacted depth of 20mm with a 2% crossfall. The mix must be laid on a 150mm layer of compacted GAP 40 granular basecourse.

In cul-de-sac heads and non-residential areas under the footpaths the compacted GAP 40 granular basecourse layer must be at least 200 mm thick.

The basecourse layer depth must be increased for weak subgrade (CBR < 3).

Edging must be a minimum of 100mm by 25mm H4 treated timber edge boards. These are to be staked at a maximum spacing of 500mm with 30mm by 30mm H4 pegs with a minimum length of 225mm. See Standard Plan No.FP008 for Footpath Edging details.

Asphalt / Paver Combination

See Standard Plan No.FP004 for Asphalt / Paver Combination Details.



Where existing footpaths in residential areas are constructed using Asphaltic Concrete / Paver Combination these should be maintained as Asphaltic Concrete / Paver Combination with NZTA Mix 10 constructed with a compacted depth of 20mm with a 2% crossfall. The mix must be laid on a 150mm layer of GAP 40 compacted granular basecourse. New pavers must match existing paving unless otherwise directed by the relevant AT Engineer.

In cul-de-sac heads and non-residential areas under the footpaths the GAP 40 granular basecourse layer must be at least 200 mm thick.

The basecourse layer depth must be increased for weak subgrade (CBR < 3).

Commercial Centre Concrete

See Standard Plan No.FP005 for Commercial Centre Concrete Footpath Details.

Where existing footpaths in Commercial Centres are constructed using Concrete or a Concrete/Paver combination these should be constructed at least 150mm thick laid on 100mm layer of GAP 40 compacted granular basecourse.

Control joints must be established at a spacing of no greater than 3m intervals. Saw cut joints, if used, are to be to a depth of 1/3 of the thickness of the footpath. Saw cuts are to be made no later than two days after the concrete has been cast. In order to prevent trips/falls – there must be no lips/steps greater than 5mm at slab joints.

In cul-de-sac heads and non-residential areas the footpaths must be at least 150 mm thick laid on 100mm layer of GAP40 granular basecourse with 2% crossfall.

All new concrete footpath construction must have installed one layer of centrally placed 665 mesh in the following locations:

- within 1.5 metres of any service cover or manhole located in the footpath,
- within 3 metres of any vehicle crossing.

Interlocking Pavers

See Standard Plan No.FP006 for Paver Type Footpath Details.

Note: This section applies specifically to pedestrian traffic. Any paved areas that could be subject to vehicle trafficking or loading of vehicles must be specifically designed. Refer to *Chapter 7 Road Layout and Geometric Design* and in particular Section 7.8 and the related Standard Drawings for details on vehicle crossings.

Where existing footpaths are constructed with Interlocking Pavers these should be constructed using Interlocking Pavers with a minimum thickness of 60mm for concrete pavers, constructed



on 30mm of compacted bedding sand with a 2% crossfall. The bedding sand must be laid on a 150mm layer of GAP 40 Compacted Granular Basecourse.

In non-residential areas the GAP 40 Compacted Granular Basecourse layer must be at least 200 mm thick.

The basecourse layer depth must be increased for weak subgrade (CBR < 3).

12.8 Pram Crossings

See Standard Plan No.FP009 for Pram Crossing details.

The term 'pram crossing' generally refers to some form of dropped kerb or at-grade arrangement to facilitate the safe movement of wheeled equipment e.g. prams, wheelchairs from a footpath to cross a carriageway and re-join a footpath. Pedestrian crossings are covered in Section 12.12 below.

Design and construction of pram crossings must be in accordance with the Pedestrian Planning and Design Guide (NZTA), Section 15 and Table 15.2.

Pram crossings must be provided at each kerb line at all intersections and also be provided at other locations to suit the logical and safe movement of pedestrians. Particularly on free left turns and where there is a large radius kerb line, pram crossings must be located to ensure adequate sight distances for both the pedestrian and the vehicle road user. Pram crossings should generally be placed to provide the minimum crossing distance, but also in a location where visibility is not restricted by buildings, walls, hedges or other obstructions, to allow pedestrians to assess gaps in traffic and not diminish a driver's ability to stop safely if required.

The desirable grade for pram crossings is 1:20, with a maximum grade of 1:12. In exceptionally tight situations an absolute minimum grade of 1:8 may be used with the approval of the relevant AT Engineer.

The kerb ramp design must be approved by the relevant AT Engineer and a minimum width of 1.5m must be allowed behind the kerb ramp. Kerb build-outs can be considered where this 1.5m width cannot be achieved. However, kerb build-outs do cause pinch points in the carriageway for cyclists. As such the use/investigation of alternative measures needs to be considered before recommending kerb build-outs.

All pram and pedestrian crossings at the edge of ramps must be finished flush with channels and other interfaces i.e. a common surface must be maintained with no lip. Tactile Ground Surface Indicators (TGSIs) must be installed as detailed in Section 12.9 below. See Standard Plan No. FP009 for Pram Crossing details. In exceptional situations where the provision of a lip is necessitated due to drainage issues reference should be made to *ATCOP Chapter 17 Road*



Drainage as well as the kerb and channel options in *ATCOP Chapter 7 Road Layout and Geometric Design, Section 7.7* (refer also to Drawing Set Plan No.GD000).

12.9 Tactile Ground Surface Indicators (TGSIs) and visual aids

Background

Tactile Ground Surface Indicators (TGSIs) are products made from various materials installed into the ground consisting of a series of raised studs or bars. They are installed in the form of laid textured paving units, tactile tiles, individual mushroom shaped tactile studs drilled and fixed into the ground or mats glued to the ground surface.

General

All new, modified or upgraded pram crossings must be in accordance with RTS 14 Guidelines for Facilities for Blind and Vision-impaired Pedestrians and NZS/AS 1428.4 and must comply with the details provided in AT's Standard Plan No.FP009.

Purpose of Tactile Ground Surface Indicators (TGSIs)

The purpose of TGSIs is to warn pedestrians who are blind or vision impaired of hazards and to provide directional information to aid navigation through the urban environment.

This is achieved by aligning the raised stud or bar patten of the tactile indicators on the ground surface, enabling blind pedestrians to feel the textural changes through their feet or with a cane.

Pedestrians with limited vision use the luminance and colour contrast between the TGSIs and ground surface to detect the modules visually.

TGSIs are predominantly used to lead pedestrians to and identify public access facilities such as intersection kerb ramps (pram crossings), pedestrian crossings, stairs, lifts, ramps and escalators. They are also used at public transport facilities to alert pedestrians to platform edges at train stations, bus and tram stop areas and ferry wharves.

Types of Tactile Ground Surface Indicators

Directional Type C Tactile Ground Surface Indicators – also referred to as Leading Tactiles, consist of a series of raised truncated elongated bars installed to the walking surface, oriented in line with the prescribed direction of travel. They are installed to safely lead pedestrians along an intended pathway free of obstacles and will often terminate at a pad of Warning Tactile Indicators. Directional indicators are used where other tactile and environmental cues, such as the property line or kerb edge are absent or give insufficient guidance. They give directional orientation in open spaces and designate the continuous accessible route to be taken to avoid hazards. They also give directional orientation to a person who must deviate from the



continuous accessible path to gain access to a crossing point, public transport access point or point of entry to a significant public facility e.g. public toilet, information centre.

Warning Type B Tactile Ground Surface Indicators – are also referred to as Hazard Tactiles and sometimes Decision Tactiles. They are installed to the walking surface in a raised grid pattern of truncated domes, studs or “dots” and are used to warn blind and vision-impaired pedestrians of a nearby hazard. Warning indicators are intended to function much like a stop sign. They alert pedestrians who are blind or vision-impaired to hazards in their line of travel, indicating that they should stop to determine the nature of the hazard before proceeding further. They do not indicate what the hazard will be.

Both types of TGSIs come in the form of pavers (300 x 300mm tiles/slabs) or single indicators (studs requiring individual pre-drilled holes for glueing). They are also available in strips.

As the colour ‘safety yellow’ is so salient to the vision-impaired even when used in association with adjoining surfaces with an LVR differing by as little as 40% - AT has decided to adopt this as the standard colour for all TGSIs within the AT Network.

Directional TGSIs should not generally be used except where there is a valid reason for their provision. They should be provided at a controlled crossing; installation as per RTS 14 Section 4.5.2.

Sealed yellow pigmented 300mm x 300mm x 60mm Concrete Tile Warning Type B Tactile pavers should be used as the preferred option in external settings because of their proven better slip resistance properties in wet conditions. A one coat sealer with a UV stabiliser is recommended for maintenance and durability reasons including the fact that sealed yellow pavers discolour at a slower rate than unsealed pavers. The 300x300mm concrete TGSIs are to have a 100mm concrete slab under them.

To prevent over-stepping these paver tiles, no less than 2 tiles should be used in parallel thereby providing a continuous tactile surface of 600mm in the stepping direction. In special situations where no vehicle traffic (including service or delivery vehicles) is expected a 40mm thick paver may be considered, but only with the approval of the relevant AT Engineer.

As the AS/NZS 4586 stipulated BPN test method was designed for application to flat and not profiled surfaces, dual testing using the BPN test method as well as the Horizontal Dynamometer Pull Meter (ASTM C1028-07) is required as a comparative basis for determining the average CoF value of the 2 test methods. On this basis, all TGSIs used on slopes/ramps must have an average Coefficient of Friction (CoF) of no less than 0.6.

It is recognised that there may be situations where it may be more practical to use individual tactile indicator studs, for example, where tactiles are retrofitted and a better quality finish can be achieved by drilling and glueing. TGSIs used on slopes/ramps in such situations must have a

minimum average CoF of 0.6 for the aforementioned 2 required test methods. Such TGSi studs (or at least their centre cores) must be 'safety yellow'.

At crossing points (at intersections or mid-blocks), kerb build-outs/extensions have several benefits: reducing the crossing distance for pedestrians and increasing the visibility for both pedestrians and vehicle drivers. As the width of the footpath is increased at these particular points, they also allow for a gentler (flatter) cross-fall to the kerb, which is particularly beneficial to the mobility impaired.

12.10 Low Height Retaining Walls

Generally, footpath alignment should be selected to minimise the need for retaining walls. However, when this is impractical, low height retaining walls should be designed and constructed in accordance with Plan No.FP010.

12.11 Pedestrian Access Ways

Refer to *ATCOP Chapter 4 Section 4.4 Pedestrian Access Ways* and *ATCOP Chapter 7 Section 7.9 Designing for pedestrian access*, including Standard Plan Nos. SR002 and SR003.

12.12 Pedestrian Crossings

Design and construction of pedestrian crossings must be in accordance with the Pedestrian Planning and Design Guide (NZTA), Section 15; and Austroads – Guide to Road Design, Part 4 – Intersections and Crossings – General.

All pavement markings and signs including delineation (e.g. 'marker' posts) on the approaches and at the crossing itself, must be in accordance with the Land Transport Rule: Traffic Control Devices 2004 (consolidated rule and subsequent updates). There are specific guidelines for selecting the appropriate pedestrian crossing facilities (refer to the Pedestrian Planning and Design Guide (NZTA), Section 6.5 and to Guidelines for the Selection of Pedestrian Facilities).

12.12.1 Controlled Pedestrian Crossings

Controlled Pedestrian Crossings are used on busy roads to allow pedestrians to safely and conveniently cross the road.

Controlled Pedestrian Crossings are easily identifiable to approaching drivers as concentrated pedestrian crossing points.

Special care is required when locating pedestrian crossings so that they are at a desirable location for both pedestrians and drivers and should not normally be sited:

- within 100 m of:
- – any other pedestrian crossing point on the same route



- – a major intersection unless located at the intersection
- – a signalised pedestrian crossing
- near speed humps, unless they are combined with the speed hump (as a platform)
- where the speed limit exceeds 50 km/h, without specific approval from NZTA.

Controlled Pedestrian Crossings require specific design, as noted earlier.

Types of Controlled Pedestrian Crossing include:

- Signalised pedestrian crossings
 - Pedestrian signals are usually installed only where there are enough pedestrians to ensure the signals are activated regularly. If the signals are not activated regularly, drivers can develop the expectation that pedestrians will not be crossing, leading to safety issues.
- Zebra Crossings
 - Zebra crossings are the most familiar type and are marked by black and white painted strips across the road and flashing amber beacons or reflective discs mounted on black and white poles. A white limit line must, if practicable, be marked to show motorists where to stop. White diamonds are generally painted on the road before the crossing.
 - The use of side islands in conjunction with Zebra Crossings help to reduce carriageway width. See Plan No. FP011 for layout details and also refer to *ATCOP Chapter 8 Traffic Calming/LATM* and the related TC Drawing Set Plan No.TC000 for additional details.
 - See also Plan No. FP012 for layout details of a Pedestrian Crossing with a centre island.
- Kea School Crossings
 - School crossings, also known as Kea crossings, provide a safe place for children to safely cross the road and generally only operate before and after school.
 - Pedestrians and traffic are always under the control of a school patrol while the Kea crossing is operating. Motorists are less likely to assume no one will be crossing the road, and pedestrians are less likely to cross the road while it is unsafe to do so.
 - Kea Crossings must be installed as per the Pedestrian Planning and Design Guide (NZTA), Chapter 17 Crossings, Section 17.8 Crossing Assistance for School Children. The Guide can be found on the NZTA website - <http://www.nzta.govt.nz/resources/pedestrian-planning-guide/>. **The directional tactiles shown in Figure 17.19 should, however, be omitted.**

12.12.2 Uncontrolled Pedestrian Crossings

Design and construction of uncontrolled pedestrian crossings must be in accordance with “Austroads – Guide to Road Design, Part 4”.



Platforms

Uncontrolled Pedestrian Crossings are generally platforms raised above the level of the surrounding road. Platforms on their own do not confer give-way priority unless they are also marked as a Zebra crossing. Their exact design depends on several factors - the number of (crossing) pedestrians, the number of vehicles, the street function, the street width, whether the crossing is controlled or uncontrolled, landscape/streetscape factors, the types of vehicles, vehicle speed and the roadway surface slope and drainage.

'Platform' type pedestrian crossings must include platform/footpath ramping transitions for the smooth passage of prams, wheel-chairs and mobility scooters.

It is important that pedestrians do not falsely perceive the platform as a continuation of the footpath. This especially applies where there are concentrations of pedestrians who may lack experience or understanding, such as children or the elderly. To avoid misunderstanding:

- the material on top of the platform should be significantly different in colour
- and/or texture from the paved footpath
- there should be a clear demarcation between the platform and the footpath.
- **Warning tactiles, but not directional tactiles should be used.**

There are a number of ways to follow these design criteria and indicate who has priority. These include:

- using different surfacing materials
- maintaining a significant height difference between the top of the platform and the footpath
- using a white concrete beam between the edge of the platform and the footpath
- using colour contrasted tactile warning indicator paving along the footpath at the boundary with the platform
- using bollards or other street furniture.

Drivers must be made aware of a pedestrian platform in good time so they can reduce their speed. An approved warning sign (PW-39) should be installed. Markings are also required on the approach ramps as a driver's view of the top of the platform is restricted.

12.13 Pedestrian Refuge Islands

Typical Pedestrian Refuge Island details are shown on Standard Plan No.FP013.

Pedestrian refuge islands provide a location where pedestrians can stop part way across a wide two way or multi-lane road. Design and construction of pedestrian refuge islands must be in accordance with the following general requirements:



Pedestrian islands should have a minimum island depth of 1.8m (minimum depth of 1.4m) and a minimum 'passage' width of 2.0m.

Pedestrian islands must be built as kerbed islands (0.15 m to 0.18 m above the road surface) and be a different colour to the road. If they are large enough, low plants that do not obscure children or signage may be planted. Refer to *ATCOP Chapter 14 Landscaping* for acceptable plant heights and types.

On over-dimensional vehicle routes the island kerb height should be restricted to 100mm.

The three pedestrian island layouts commonly used are straight (90°), diagonal and chicane. Of these, **the straight cut-through is preferred for a 'stand-alone' pedestrian island**. The diagonal cut-through is often appropriate in specific road environments and particularly for larger, wider islands where the diagonal cut-through with its benefit that pedestrians are turned to face oncoming traffic. However, the diagonal cut-through option is not generally encouraged as the 'points' on each side of the cut-through are potential trip hazards.

The chicane design is considered a 'last resort' solution. This type of design needs to incorporate safety fencing. The fencing can itself present a safety hazard under vehicle impact. Also, the fencing increases maintenance demands.

Pram crossings (refer to Section 10.8 above) on the adjacent footpaths must be used where pedestrian islands are provided.

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12.14 Pedestrian Railings

A railing is a fence-like barrier composed of one or more horizontal rails supported by widely spaced (vertical) uprights. Pedestrian Railings are provided for the safety and/or the controlled movement of pedestrians. They are not a Road Restraint Device – refer to *ATCOP Chapter 9 Road Restraint Devices*. They are not a fall prevention device.

Historically, pedestrian railings were generally installed for the following reasons:

- Guiding pedestrians toward a desirable route or towards a preferred crossing location
- Assisting safe people movement or ‘containment’ e.g. on pedestrian refuge islands
- Deterring pedestrian movement in unsafe locations
- Provide for secure and safe at-grade crossing of railway tracks. (Such railings would usually be designed for both cyclist and pedestrian usage).

However, as streetscapes have become increasingly cluttered and aesthetic values have gained prominence, it is now considered that only the latter two reasons above, are valid.

Pedestrian Railings must be designed, constructed and maintained in accordance with the general requirements listed below:

- Pedestrian railings must comply with urban design requirements of the surrounding area – refer to *ATCOP Chapter 6 Streetscape Amenities*.
- The construction of the railing must be frangible and must not create hazards (e.g. spearing risk, flying debris such as splintered timber) when impacted by a vehicle.
- All timber materials must be treated to H4.
- For ease of replacement of damaged railing, the construction form must comprise a series of relatively short (max. 2.5m) sections (panels).
- Pedestrian railings for at-grade railway track crossing points must comply with Section 5.5 of the publication “Cycle Trail Design Guide”, prepared for Ministry of Economic Development, August 2011 (2nd Edition).

12.15 Handrails

Handrails on bridges and elevated structures, handrails along retaining walls, handrails on stairs, handrails on elevated walkways have the primary purpose of preventing falls and providing assistance for the safe movement of people.

Refer to *ATCOP Chapter 18 Structures* (in particular handrails/parapets on bridges and other structures).

Refer also to Clause D1 Handrails on Stairs – New Zealand Building Code (NZBC).