



Department
for Transport

Guidance on the Use of Tactile Paving Surfaces

December 2021

Department for Transport
Great Minister House
33 Horseferry Road
London
SW1P 4DR



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1 Introduction

1.1 Why is this guidance important?

This document is a guide to best practice on the use of tactile paving surfaces.

The use of tactile paving surfaces is important because these surfaces convey vital information to vision impaired and other people about their environment, including hazard warning and directional guidance, thereby supporting independent mobility.

When moving around the public realm, vision impaired people will actively seek, and make use of, tactile information underfoot, in particular detectable contrasts in surface texture. It is therefore important that tactile paving is used correctly and consistently, so that conflicting and confusing information is not conveyed.

1.2 What is this guidance based on?

This document supersedes the Guidance on the Use of Tactile Paving Surfaces published by the Department of the Environment Transport and the Regions in 1998. It does not alter the principles set out in the original guidance document which explained the background and how it was developed.

This update includes responses to some recommendations of research carried out as a commitment in the Department for Transport's Inclusive Transport Strategy of 2018, and following engagement with disabled people, representative groups, and with practitioners. The research report is also available on the website of the Department for Transport.

The research behind the original guidance involved people with a wide range of other impairments. This identified the negative effects of tactile paving on the experience of wheelchair users and people with walking difficulties. This, in turn, highlighted the general desirability of minimising the amount of tactile paving used, subject to ensuring that it performs its vital functions for vision impaired people.

The guidance also recognised that the ability to detect contrasts in texture underfoot varies from one individual to another. For example, older vision impaired people, and people who have lost their sight through certain medical conditions, such as diabetes, can have reduced sensitivity in their feet. For this reason, the surface textures are rigorous enough to be detectable by most people. However, they are also designed to avoid constituting a trip hazard or causing undue discomfort to people with painful conditions such as arthritis, or to wheelchair and mobility scooter users.

1.3 What does the guidance cover?

This guidance describes six different types of tactile paving surface which are:

- Blister Surface for Pedestrian Crossing Points
- Corduroy Hazard Warning Surface
- Platform Edge (On-Street) Warning Surface
- Segregated Shared Cycle Track/Footway Surface and Central Delineator Strip (Ladder and Tramline)
- Guidance Path Surface
- Platform Edge (Off-Street) Warning Surface (only for use at the edge of railway and underground station platforms)

Sections 2 to 7 describe each of these surfaces in turn with information on their purpose, definition and application and common layouts.

With the exception of the delineator strip used in association with the Segregated Shared Cycle Track/Footway Surface, none of the tactile surfaces described in this guidance is regarded as a traffic sign. They are not, therefore, included in the Traffic Signs Regulations and General Directions (TSRGD) 2016 nor do they require authorisation from the Secretary of State.

This guidance is intended to be suitable for application to a wide range of common situations.

This update does not include the Information Surface, presented in the original guidance as a means to help people locate amenities such as a telephone box or a ticket office. This reflects the lack of use of this surface rather than its potential.

1.4 Who is this guidance for?

This guidance is for use by public or private bodies and individuals with a role in the provision, design, improvement and maintenance of the public realm.

The use of this guidance will support the processes of creating and maintaining an inclusive and accessible built environment, and activities carried out in compliance with the public sector Equality Duty set out in the Equality Act 2010. The guidance will also be of interest to those looking to make reasonable adjustments in response to the requirements set out in Section 20 of the Equalities Act.

This guidance is also intended to inform people about the different tactile paving surfaces they might encounter.

1.5 Key principles

The following principles apply to the use of this guidance.

1.5.1 Inclusive Design

Inclusive design considers the needs of all people, including disabled people. Inclusive Mobility, published by the Department for Transport, provides broader guidance on designing an inclusive public realm. The provision of tactile paving is an integral consideration alongside other design and management aspects of delivering an accessible built environment, including streets and spaces.

The use of tactile paving surfaces, and engagement in relation to this as described in section 1.6, should therefore be considered from the earliest stages of proposals and designs for streets and spaces, in new developments and built environment improvement schemes. This guidance should be referred to from the outset of any public realm design or maintenance scheme. The installation of tactile paving surfaces should be considered as part of a wider package of measures to assist vision impaired people. The installation process should involve an assessment of the surrounding environment and, in particular, the

condition of the surrounding footway should be examined. Hazards should be removed by, for example, the repair of uneven pavements and platforms and the removal or repositioning of obstacles, such as inappropriately sited street furniture.

An inclusive design approach should also be applied to relatively small, localised or routine public realm improvements. So, for example, if the blister surface is being installed at an upgraded crossing point, the condition of the surrounding footway should also be examined and any potential hazards dealt with. Similarly, if the footway on one side of a street is being renewed, and this involves upgrading a crossing point to make it fully accessible, the crossing point on the other side of the street must also be upgraded in the same way.

Good street lighting levels should be even, adequate and minimise glare. This will enable effective use to be made of residual vision, especially to detect contrasts in colour and tone.

The installation of tactile paving surfaces will also need to meet the standards of other relevant requirements, including the Building Regulations and equivalents such as the Scottish Building Standards, and the Design Standards for Accessible Railway Stations.

1.5.2 Simple-Logical-Consistent

For the benefit of all users, the layout of pedestrian areas should be simple, logical and consistent. Amongst other things, these qualities enable people to memorise environments that they use regularly and predict and interpret environments that they are encountering for the first time. This is especially important for vision impaired people and also helps people with other mobility impairments, and non-visible impairments.

This is a key inclusive design consideration.

1.5.3 The Equality Act and public sector Equality Duty

The Equality Act 2010 legally protects people from discrimination in the workplace and in wider society: information on the Act is available on GOV.UK and is summarised below. Discrimination can come in one of the following forms:

- direct discrimination - treating someone with a protected characteristic less favourably than others
- indirect discrimination - putting rules or arrangements in place that apply to everyone, but that put someone with a protected characteristic at an unfair disadvantage

It is against the law to discriminate against anyone because of the “protected characteristics” of:

- age
- gender reassignment
- being married or in a civil partnership
- being pregnant or on maternity leave
- disability
- race including colour, nationality, ethnic or national origin
- religion or belief
- sex
- sexual orientation

The public sector Equality Duty (section 149 of the Act) came into force on 5 April 2011. The Equality Duty applies to public bodies and others carrying out public functions. It supports good decision-making by ensuring public bodies consider how different people will be affected by their activities, helping them to deliver policies and services which are efficient and effective, accessible to all, and which meet different people’s needs. The Equality Duty is supported by specific duties, set out in regulations which came into force on 10 September 2011.

The Equality Duty requires public authorities, in carrying out their functions, to have due regard to the need to achieve the objectives set out under section 149 of the Equality Act 2010 to:

- eliminate discrimination, harassment, victimisation and any other conduct prohibited by the Act

- advance equality of opportunity between persons who share a protected characteristic and persons who do not share it
- foster good relations between persons who share a relevant protected characteristic and persons who do not share it

Similar obligations and duties are set out in legislation for Northern Ireland.

The provision of tactile paving, as described in this guidance, will show good practice in the creation and maintenance of an accessible and inclusive built environment and public realm. It will be an important part of the considerations of those seeking to produce an inclusive environment in compliance with the requirements of the Act, including the public sector Equality Duty, and other legislation.

1.5.4 Colour and tone contrast of tactile paving surfaces

Sight loss takes many forms. While only a small proportion of vision impaired people have no sight at all, many have sufficient residual vision to detect contrasts in tone and colour. Visual contrasts should therefore be used to accentuate the presence of certain key features including the presence of tactile paving. This will enable many people to use their residual vision to obtain information.

At controlled crossings the blister surface should be red (the colour that has been established for this application since 1981) to indicate to partially sighted people that the crossing is controlled. Red blister paving should not be used in any other circumstances.

It is best to avoid using any other red material in the vicinity of a controlled crossing. Where this is unavoidable it will be necessary to provide a border around the blister surface that contrasts in colour and tone. A border 150mm wide should provide sufficient contrast.

At uncontrolled crossings, the blister surface is usually buff, but any colour (other than red) can be used so long as it achieves effective colour or tone contrast with the surroundings (see also Section 2).

Some relaxation of the colour requirements may be acceptable in conservation areas or in the vicinity of a listed building. In these limited circumstances only,

the tactile surface may be provided in a colour that is in keeping with the surrounding material. This relaxation does not extend to the use of red at uncontrolled crossing points. Before any decision is taken (by the local authority), discussions should take place with local groups of vision impaired people and rehabilitation (or mobility) officers and the local conservation officer.

The choice of materials should reflect the fact that the extent of tonal contrast between the tactile paving surface and the adjacent footway or carriageway can be affected markedly by environmental factors such as light levels and weather conditions (e.g. whether the paving is dry or wet).

Further information on visual contrast is contained within ISO 23599: Assistive Products for Blind and Vision-Impaired Persons - Tactile Walking Surface Indicators.

1.6 Engagement

Authorities or other agencies should carry out appropriately diverse engagement when considering and introducing schemes likely to include tactile paving surfaces.

This engagement should take place with those having a good understanding of the ways in which tactile paving should be used. This and related consultation is likely, from early in the process, to include people with and organisations representing those with protected characteristics, including organisations of, or for, vision impaired people, and specialists such as rehabilitation officers or mobility officers. This should ensure that the information received reflects the needs of the population as a whole.

Whether national or local groups should be consulted will vary. National organisations should be contacted if technical solutions are being sought as they are more likely to be aware of solutions that have been successfully developed elsewhere. Local organisations should be consulted to prioritise where tactile paving is to be installed. This might identify routes that are frequently used by vision impaired people, or locations that are causing particular problems. It is especially important that local organisations are consulted prior to the installation of the guidance path surface, to ensure it is installed where it will be of real benefit.

Engagement should seek to resolve any discrepancy between the information given by different organisations.

Local people and organisations should always be notified in advance of any major changes that are proposed. This will help ensure that the views of local people are considered in advance of the changes, and then inform them of new facilities which may enhance accessibility and mobility.

1.7 Maintenance

1.7.1 Condition of surfaces

Good maintenance of tactile paving surfaces is crucial to their effectiveness. In addition, durability should be a key consideration in the choice of materials used for the surfaces. Post-implementation, as with all surfaces, it is vital to monitor the condition of tactile paving surfaces, and surrounding materials, and to plan for their replacement as part of maintenance programmes.

The profile of each surface is described in Sections 2.2 to 7.2, with a tolerance of $\pm 0.5\text{mm}$ given for the height of the tactile features. It is vital for their effectiveness that the required profile is maintained.

At 4.5mm (the lower tolerance) the blister surface will still be effective, but if the blisters fall below that height, the effectiveness of the surface will be significantly reduced: below 3mm, blisters are likely to be virtually undetectable. For the other five surfaces, the features will still be effective at the lower tolerance. However, if they fall below that height, the effectiveness of the surface will be reduced and will, ultimately, become undetectable (see each surface section for details.)

1.7.2 Reinstatement of tactile paving surfaces after street works

The Specification for the Reinstatement of Openings in Highways, statutory guidance published under Section 71 of the New Roads and Street Works Act 1991, outlines the standards for reinstating streets after completing street works by all utility company and other undertakers reinstating the highway

In relation to tactile paving surfaces, this statutory guidance states that:

- features such as tactile paving that have been removed to facilitate street works must be replaced in their original locations before opening the highway to traffic and pedestrians (S11.2.1)
- all tactile paving removed during the course of works should be replaced immediately following the completion of works (NG11.2)

Reinstatement of tactile paving surfaces after street works or similar disturbances, or reasonable adjustments carried at the same time, should be done with reference to the current Guidance on the Use of Tactile Paving Surfaces.

1.8 Module size

The diagrams in this guidance mainly show the commonly used tactile paving module of 400mm by 400mm. There is, however, no restriction on module size and larger slabs and smaller blocks are available. Careful selection of the best module size for each installation can reduce the need for cuts to the tactile units and adjacent paving and associated potential trip hazards.

2 Blister surface for pedestrian crossing points

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design, to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

2.1 Purpose

The blister surface is for use only at designated pedestrian crossing points, and its purpose is two-fold. Its general purpose is to provide a warning to vision impaired people who, in the absence of a kerb upstand greater than 25mm high, may otherwise find it difficult to differentiate between where the footway ends and the carriageway begins.

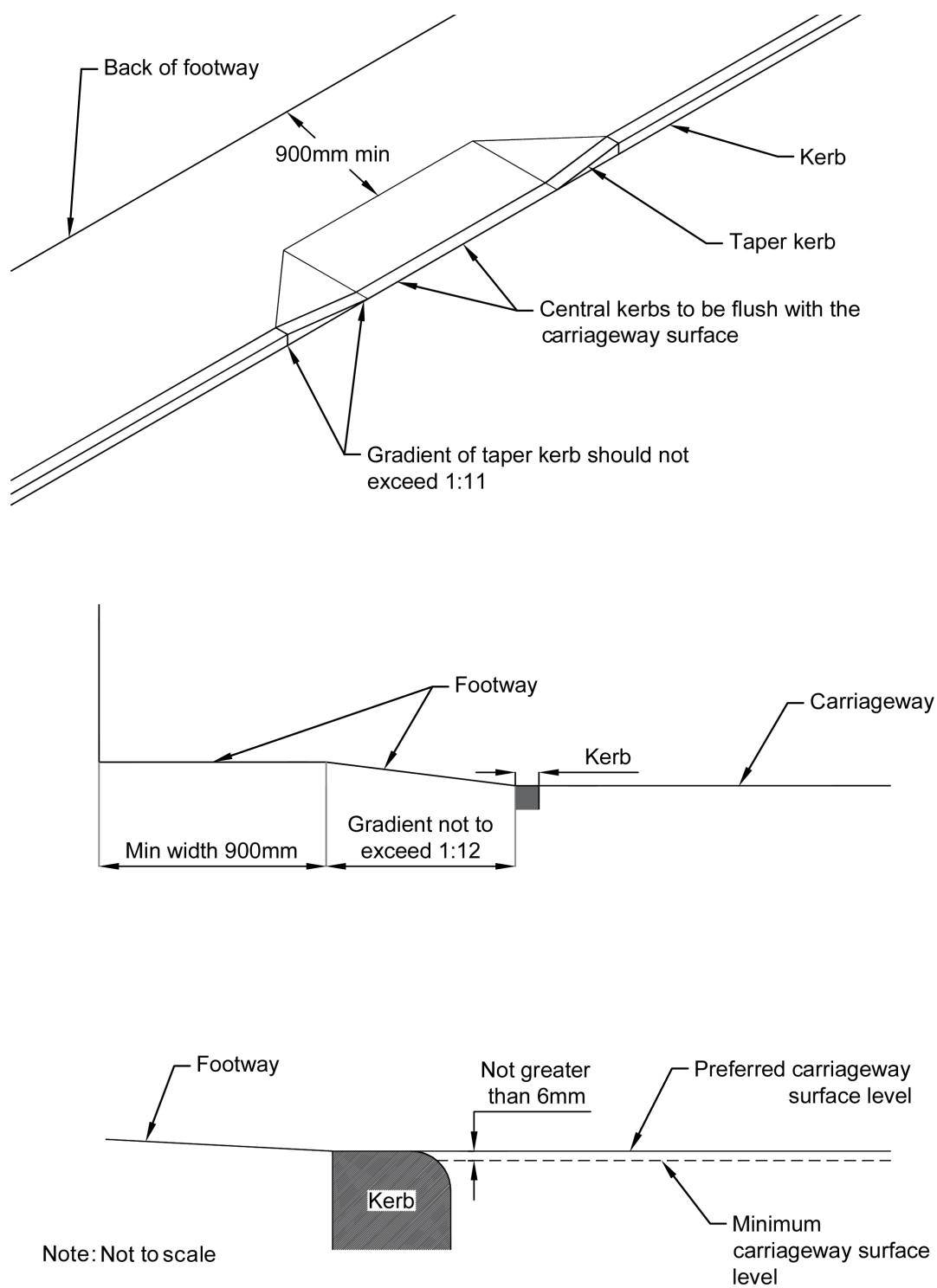
At controlled crossing points only (see description in Section 2.3), the blister surface is also used to act as a guide (usually referred to as a stem) that leads vision impaired people to the crossing point itself.

While the absence of a kerb upstand at crossings is essential for wheelchair users, some users of walking aids (e.g. rollators), and some people with buggies or trolleys, it is potentially hazardous for vision impaired people who generally rely on a kerb upstand as a warning that they have reached the edge of the footway. The surface is therefore an essential safety feature for vision impaired people at pedestrian crossing points, where the footway is flush with the carriageway.

Where level access at a crossing is achieved by means of a dropped kerb (rather than a raised crossing), the base of the dropped kerb should preferably be flush with the carriageway, but can have a maximum upstand of **6mm** provided that a rounded bullnose is provided at the interface with the carriageway. It is important that ramps are designed appropriately: the maximum gradient in the direct line of

travel should not exceed **1:12**, and where space allows, a gradient of 1:20 should be achieved. The gradient of the lateral taper (or dropper) kerbs on either side of the flush section should not exceed **1:11**. The flush section of the dropped kerb should have an absolute minimum width of **1200mm**, but the minimum width should be **3000mm** where there are heavy pedestrian flows. There should preferably be a level space of at least **900mm** to the rear of a dropped kerb to allow easy passage for wheelchair users and others who are not crossing the road. (Figure 1).

Figure 1: Dropped kerb details (prior to installation of the blister surface)



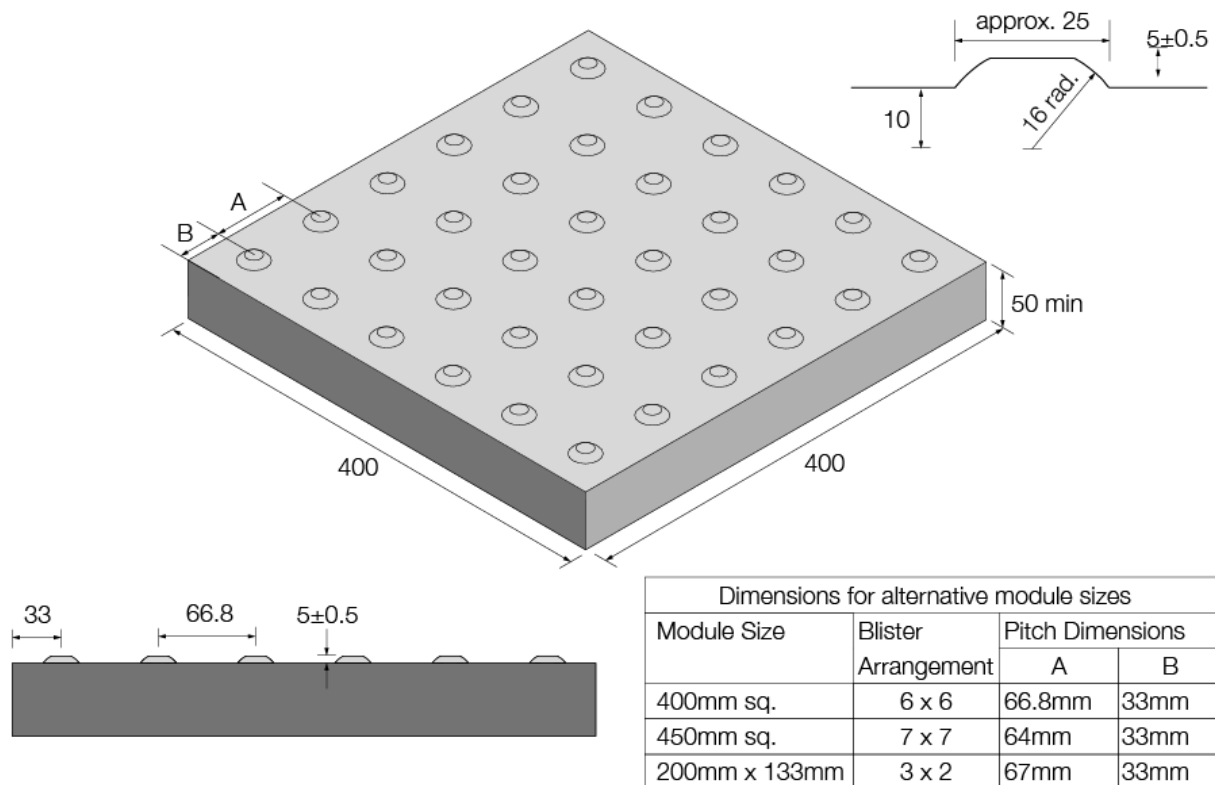
2.2 Definition

The profile of the blister surface comprises rows of flat-topped 'blisters', 5mm (± 0.5 mm) high, arranged in straight lines (Figure 2).

The blister surface can be made of any material suitable for and with slip resistance appropriate for footway use. It is most commonly supplied in 400mm sq. slabs but is also available in larger slabs and smaller block pavements. The arrangement of blisters on the 400mm sq. slab and common alternative unit sizes is shown in Figure 2.

Figure 2: Profile and plan of the blister surface

All dimensions in mm



The blister surface should be red at controlled crossings. The colour red should not be used for any other tactile paving surface, nor for the blister surface at uncontrolled crossings. The blister surface at uncontrolled crossings is usually buff but may be any colour (other than red) that provides a contrast with the surrounding surface. See Section 2.3 below for the definition of controlled and uncontrolled crossings.

It is important that wherever a crossing is decommissioned or relocated the blister surface is removed.

2.3 Application

2.3.1 Controlled and uncontrolled crossings

The blister surface should be installed at designated controlled and uncontrolled crossing points:

- where the footway has been dropped flush with the carriageway
- where the carriageway has been raised to the level of the footway

Controlled crossings are those where motorised vehicles and cycles must stop at a red light or give way, so pedestrians have priority in law. For the purposes of this guidance, controlled crossings consist of give-way crossings and signal-controlled crossings, as listed below.

Give-way crossings:

- Zebra crossings, where drivers must give way to any pedestrian on the crossing
- Parallel crossings, consisting of parallel routes for pedestrians and cyclists. Drivers must give way to any cyclist or pedestrian on the crossing. Used where there is a need for cyclists to cross the road, as well as pedestrians, but a Toucan crossing is not justified

Signal-controlled crossings:

- Toucan crossings, which allow both pedestrians and cyclists to cross at the same time

- Pedex (signal-controlled) crossings, which are standalone crossings that use far-side signals
- Puffin crossings, which use near-side pedestrian demand units
- Equestrian crossings, which allow horses and their rider to cross the carriageway
- Traffic signal junctions with pedestrian phases

Pelican crossings can no longer be installed in England, Scotland or Wales but existing ones can remain in place. The advice in this guidance may therefore be relevant for maintenance purposes.

At uncontrolled crossings, pedestrians do not have priority in law over vehicular traffic and must make a decision about whether it is safe to cross. For the purposes of this advice the following are described as uncontrolled crossings:

- crossings over side streets at simple priority junctions
- crossings over the arms of unsignalised roundabouts
- crossings at signal-controlled junctions without pedestrian phases
- designated but informal crossings between junctions
- kerb-to-kerb flat top road humps, whether at or between junctions
- busy vehicle crossovers, e.g. from the main carriageway, over the footway, to a car park, service yard or forecourt

At controlled crossings only, the blister surface is also used to provide stems that lead vision impaired people to the crossing point.

It is vital that the design of all crossing points, whether controlled or uncontrolled, is undertaken according to the principles set out in Section 1.2. In particular, it is important that tactile paving surfaces are not used as a means of attempting to compensate for more basic flaws in street layouts.

2.3.2 Crossings at junctions

The importance of applying the principle of inclusive design is exemplified in the case of crossings at junctions. To make walking more attractive and easier for pedestrians including vision impaired people, crossings should be on the desire line as far as possible, i.e. in line with the natural direction of travel for people walking. However, it is important to avoid having flush crossing points on the radius kerb because a raised radius kerb gives positive guidance for drivers turning through the junction, minimising the risk of vehicles over-running the footway. In addition, a straight section of kerb upstand (**900mm-1000mm** long) beyond the radius helps pedestrians including vision impaired people to align themselves correctly before crossing the road.

Making junction radii smaller enables crossing points to be more **in-line** with the desire line, while still being away from the radius. Smaller junction radii generally also have the safety benefit of reducing the speed of turning traffic. (See also Manual for Streets, 2007, e.g. page 66.) Additionally, applying the inclusive design principle helps ensure that crossings are located where people waiting to cross are clearly visible to approaching drivers, and less likely to be blocked by parked cars.

At controlled crossings, where the back edge of the blister surface is not parallel to the kerb, the depth of the blister surface should be no less than **800mm** at any point (see Section 2.4.1 and Figure 4). However, this requirement only applies to situations where the crossing direction is not perpendicular to the kerb. It is not to be used as an accommodation for placing crossings on the radius kerb. In addition to putting vision impaired people at risk, applying the minimum **800mm** depth requirement to crossings on radius kerbs typically results in the creation of large wedges of the blister surface that can be confusing.

2.4 General layout

2.4.1 Controlled crossings

Figure 3A shows the layout at an inset controlled crossing and Figure 3B shows an in-line controlled crossing.

Where the dropped kerb at a controlled crossing is in the direct line of travel for people walking, e.g. at crossing points on junctions, the tactile surface should be laid to a depth of 1200mm. At all other controlled crossings, a depth of **800mm**

should be provided. This will ensure that vision impaired people detect the surface.

The back edge of the section of tactile surface that extends across the dropped kerb should be at right angles to the direction of crossing (and therefore will sometimes not be parallel to the kerb). This is because some vision impaired people use the back edge of the tactile surface to align themselves correctly in the direction of crossing. Some may use the direction of the rows of blisters to provide that guidance.

Where the back edge is not parallel to the kerb and, as a result, the depth of the tactile surface varies, it should be no less than **800mm** at any point (Figure 4).

At controlled crossings only, a stem of the surface **1200mm** wide, should extend from the flush dropped kerb to the back of the footway, and preferably back to the building line or property boundary, where possible. Because the orientation of the stem may be used by some vision impaired people to align themselves correctly before crossing the road, the stem should be installed so that it is in line with the direction of travel across the road. It will be encountered by vision impaired people walking along the footway and followed to the push button box on a post adjacent to the right-hand side of the crossing point. Accordingly, the stem will form an L-shape arrangement with the blister surface at the crossing itself. It is recognised that, in some cases, this could result in a very long stem. If this is considered undesirable, local authorities should engage and consult, as described in Section 1.6, to establish whether a shorter stem is acceptable. In most cases a **5 metre** long stem should be sufficient.

In one-way streets, and on staggered crossings, where the traffic is approaching from the left, the stem should lead to a push button on the right hand side. A second push button should also be provided on the left hand side.

Figure 3A: Layout of the blister surface at an inset controlled crossing point

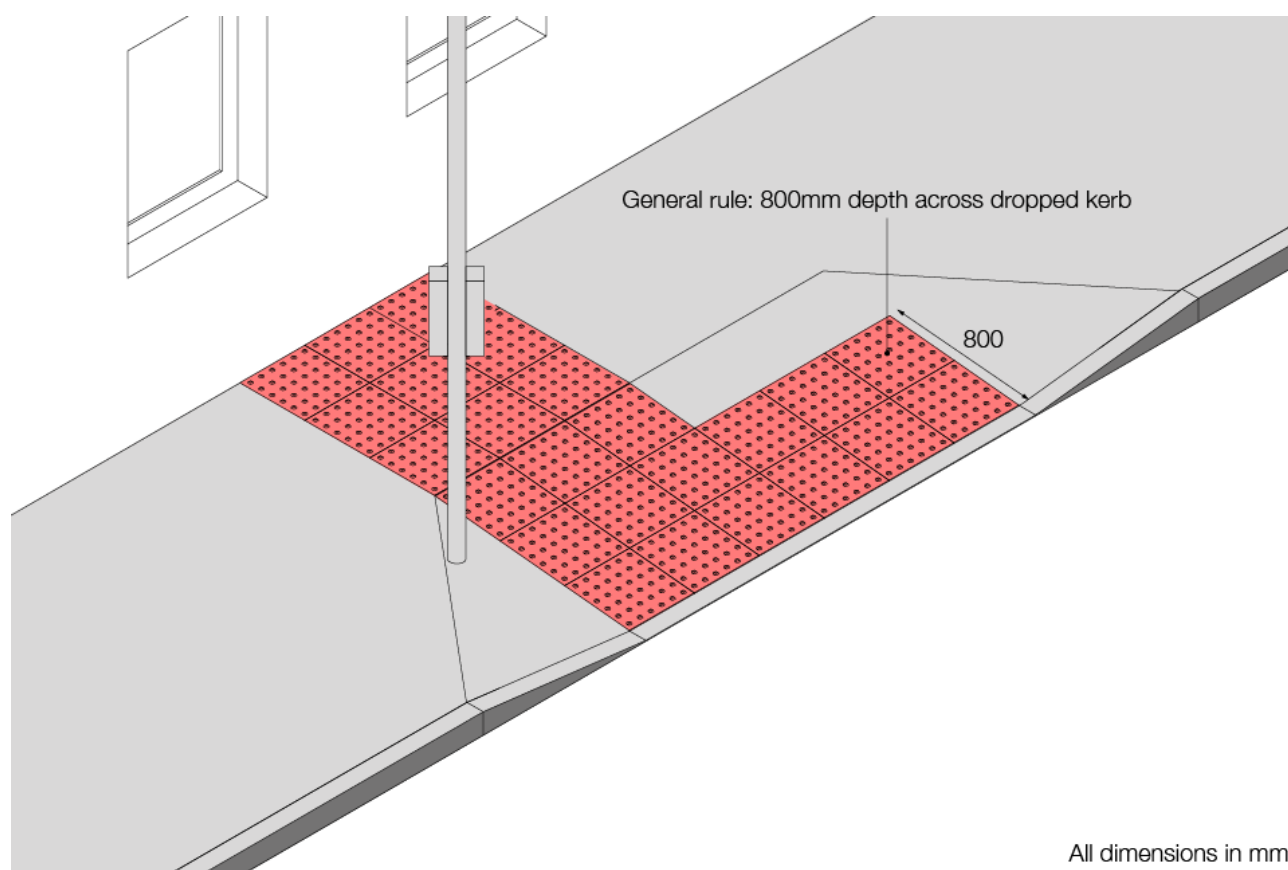


Figure 3B: Layout of the blister surface at an in-line controlled crossing point

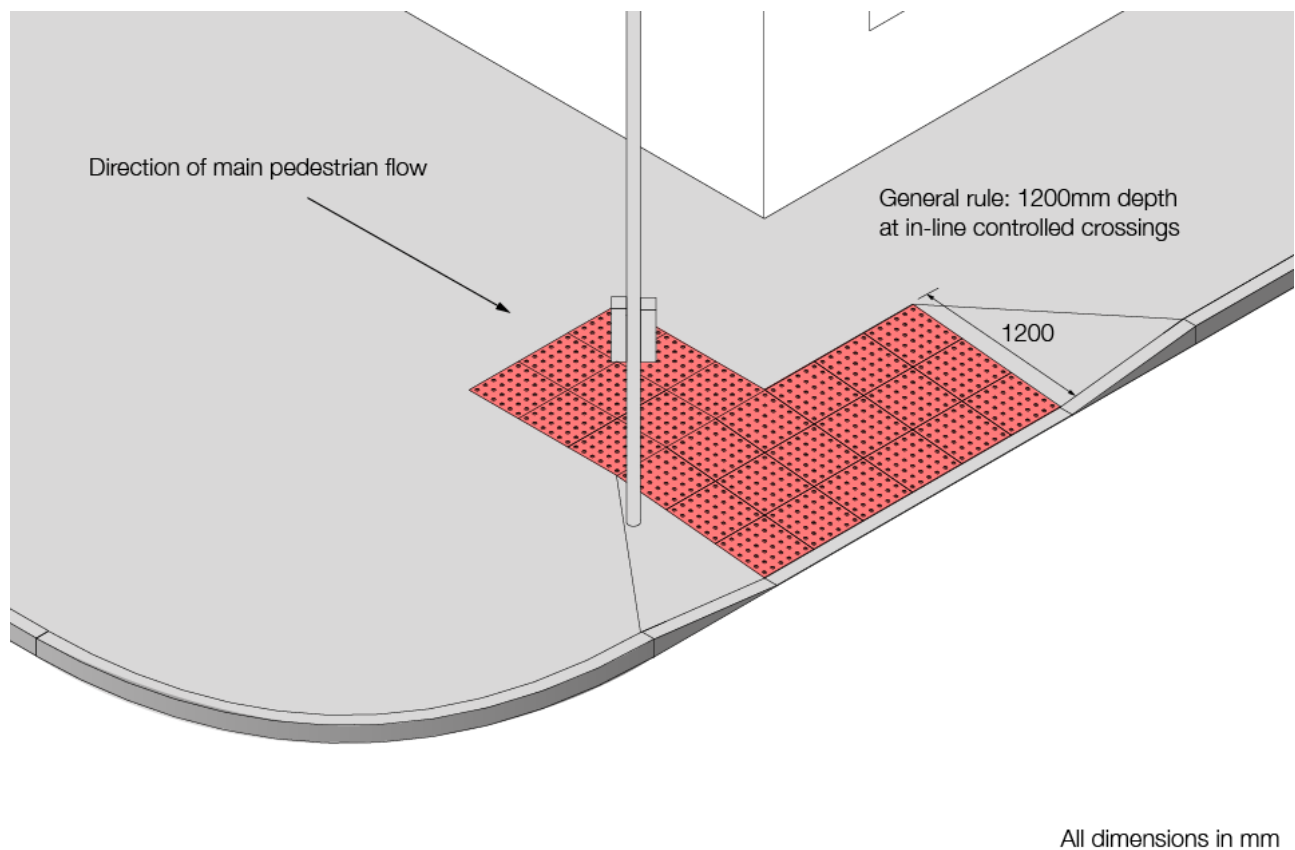
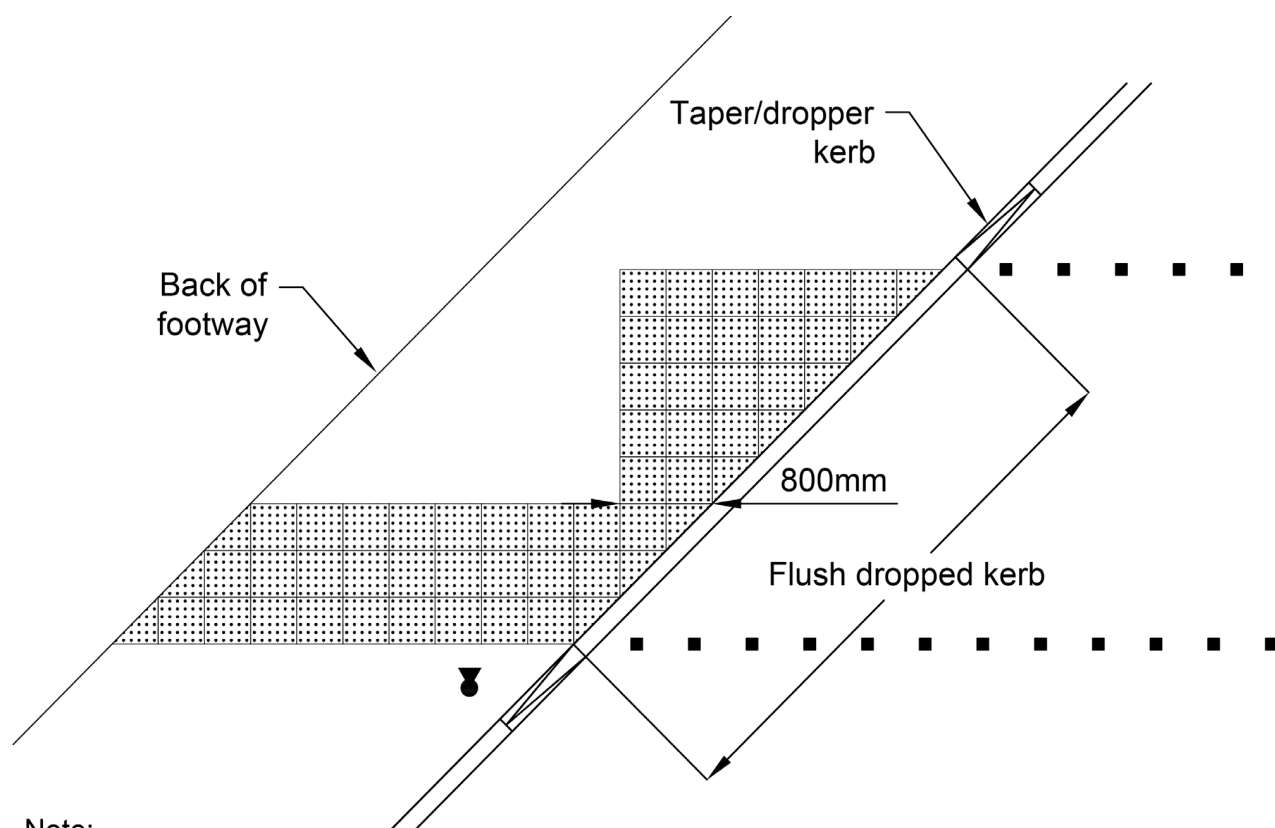


Figure 4: Layout of the blister surface at controlled crossing where the back of the edge of the surface is not parallel to the kerb



Note:
Not to scale
Crossing shown is signalised

2.4.2 Uncontrolled crossings

At uncontrolled crossings the blister surface should be installed across the full width of the flush dropped kerb and:

- where the crossing is inset into the side street (i.e. beyond the radius kerb), and is not in the direct line of travel for people walking, the tactile surface should be installed to a depth of just **400mm**, as people will encounter it at an acute angle. (Figure 5A)
- where the crossing is in the direct line of travel for people walking, the tactile surface should be installed to a depth of **1200mm**. (Figure 5B)
- as at controlled crossings, the back edge of the tactile surface should be at right angles to the direction of crossing (and therefore will sometimes not be parallel to the kerb)

Figure 5A: Layout of the blister surface at an inset uncontrolled crossing point

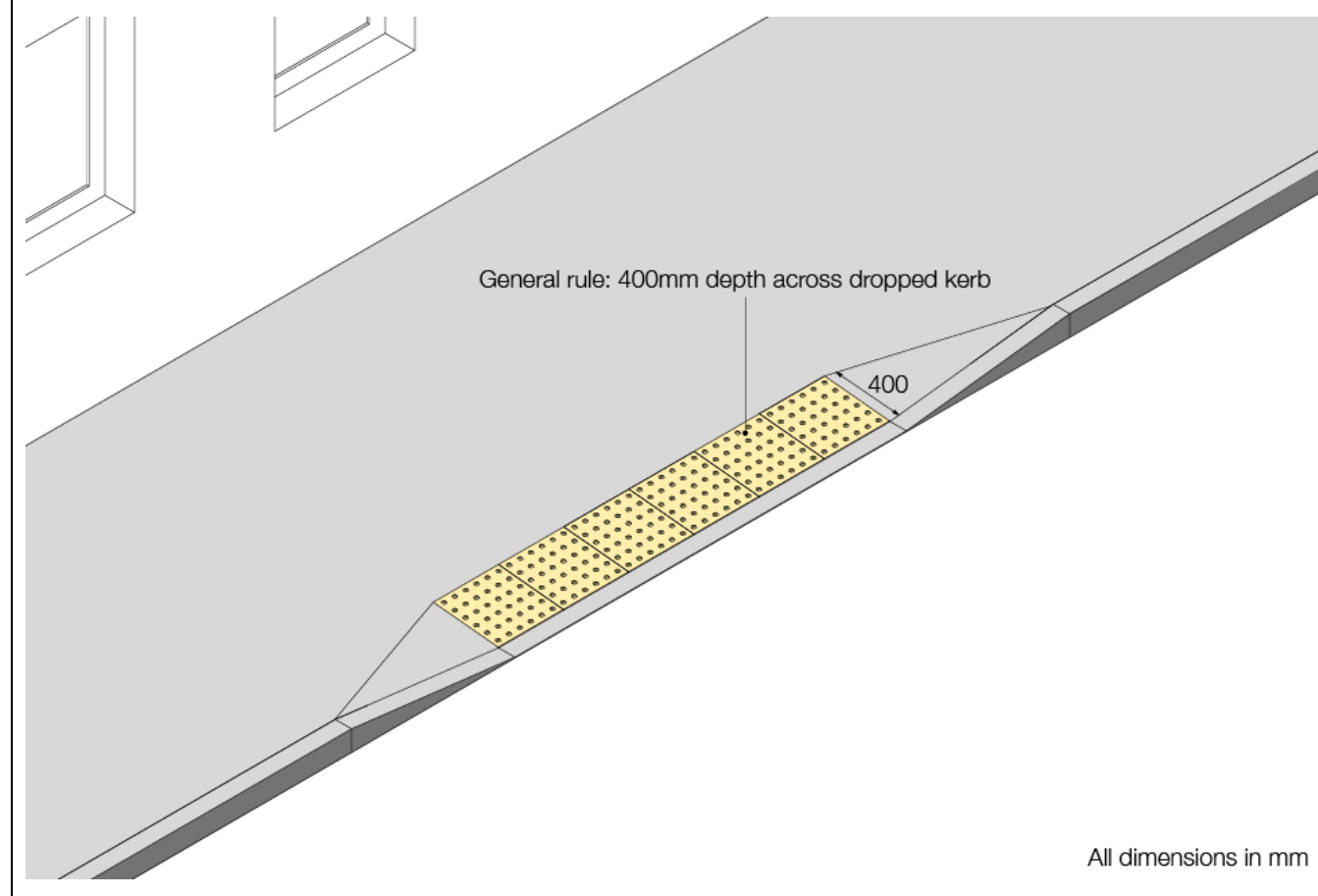
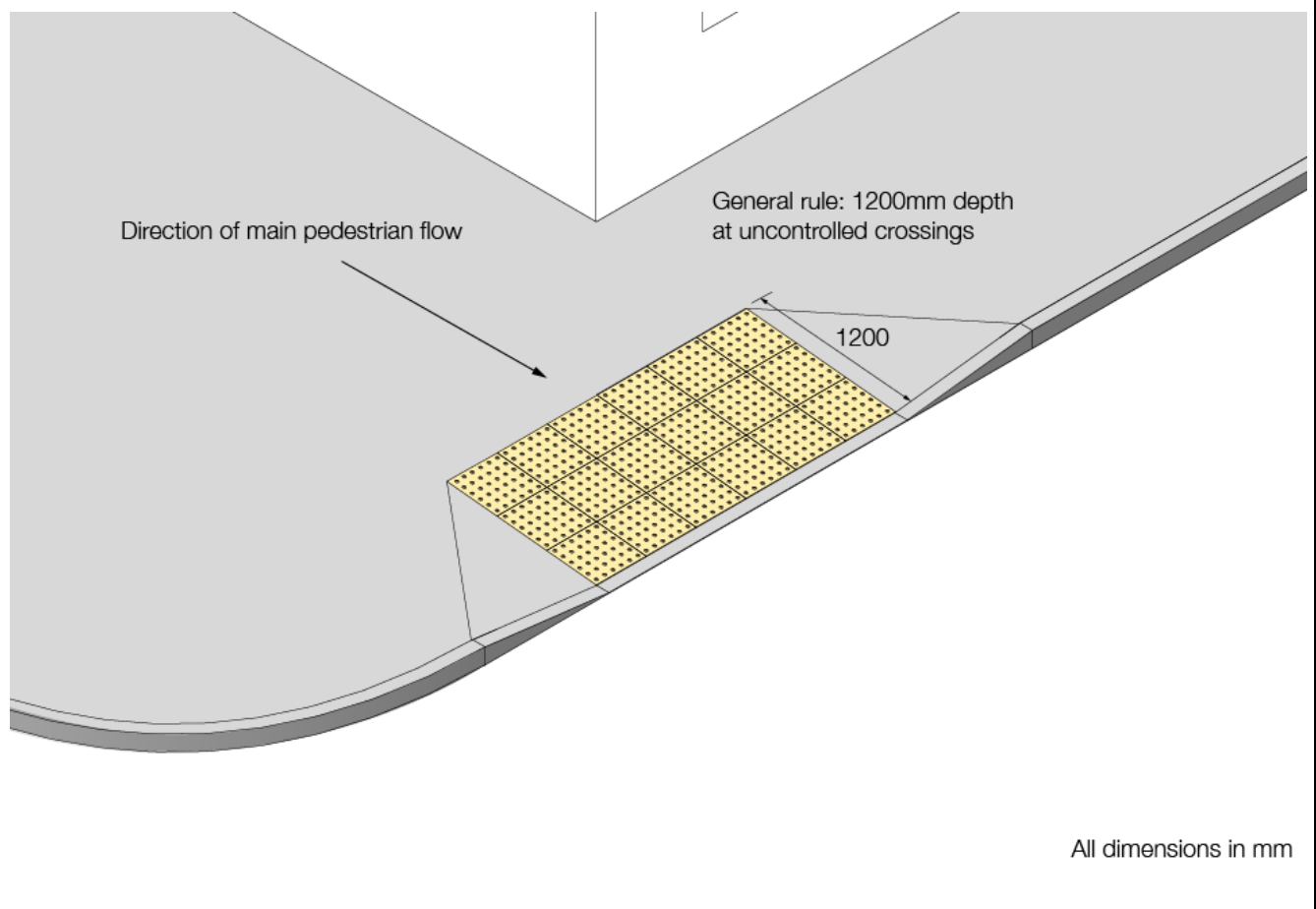


Figure 5B: Layout of the blister surface at an in-line uncontrolled crossing point



2.5 Additional layouts

2.5.1 Controlled crossings

Overlapping crossings

Where two controlled crossings are in close proximity, such as at the corners of junctions, the stems are likely to intersect. Since this may cause confusion, the design of the junction itself should seek to prevent this, for example, by making the corner radii smaller.

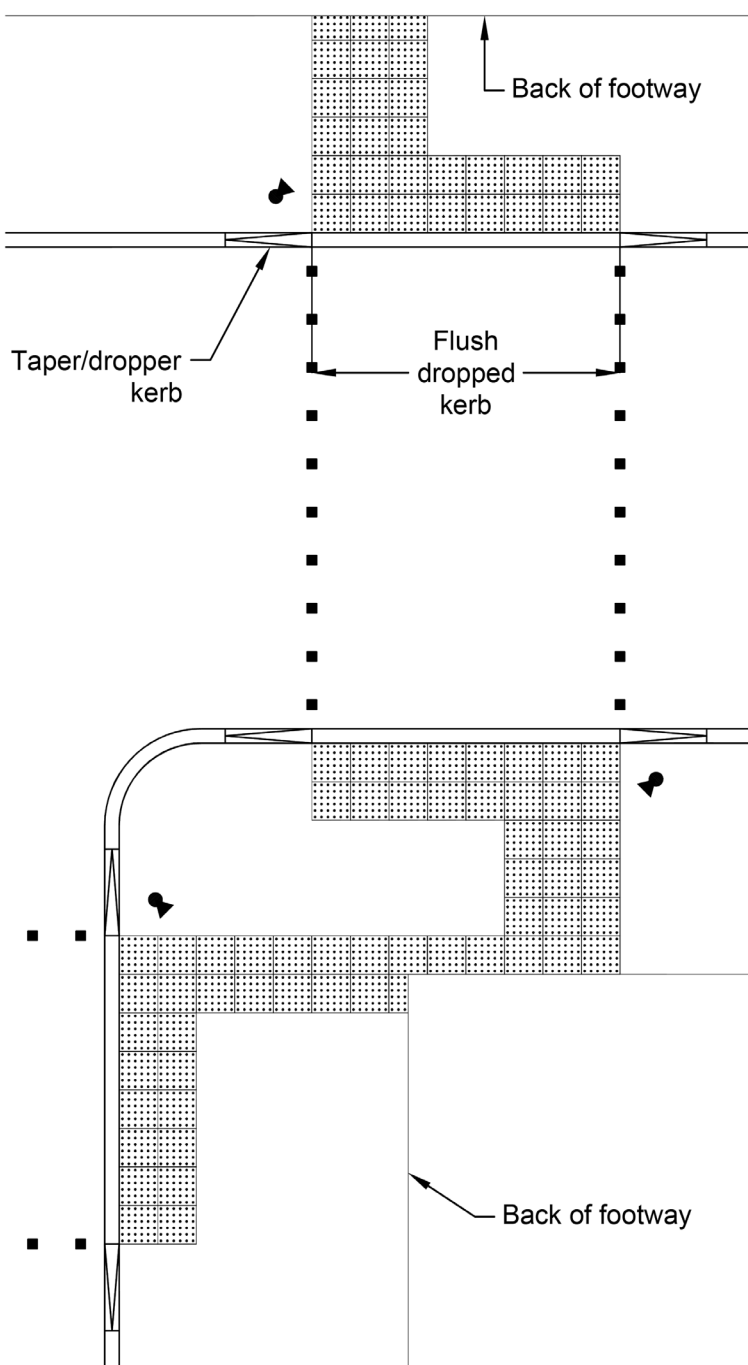
If this is not possible, and the crossings are at the junction of a main road and a side street, the stem leading to the main road crossing should always extend from the flush kerb across the entire footway. The stem leading to the side street crossing should only extend from the flush kerb to the point where it intersects with the other stem (Figure 6).

In situations where two crossings are so close that this would result in an extremely complex blister surface configuration, the location of one or both of the crossings should be adjusted. It is not the role of tactile paving to resolve inherent design problems.

Private forecourts

In cases where the back of the footway (e.g. the building line) is on a private forecourt that can be accessed by pedestrians, local authorities should, where appropriate, seek the agreement of the landowner to extend the stem of blister surface back across that private forecourt to the back of the footway.

Figure 6: Layout of the blister surface where there are overlapping controlled crossings



Note:
Not to scale

2.5.2 Uncontrolled crossings

Acute angled junctions

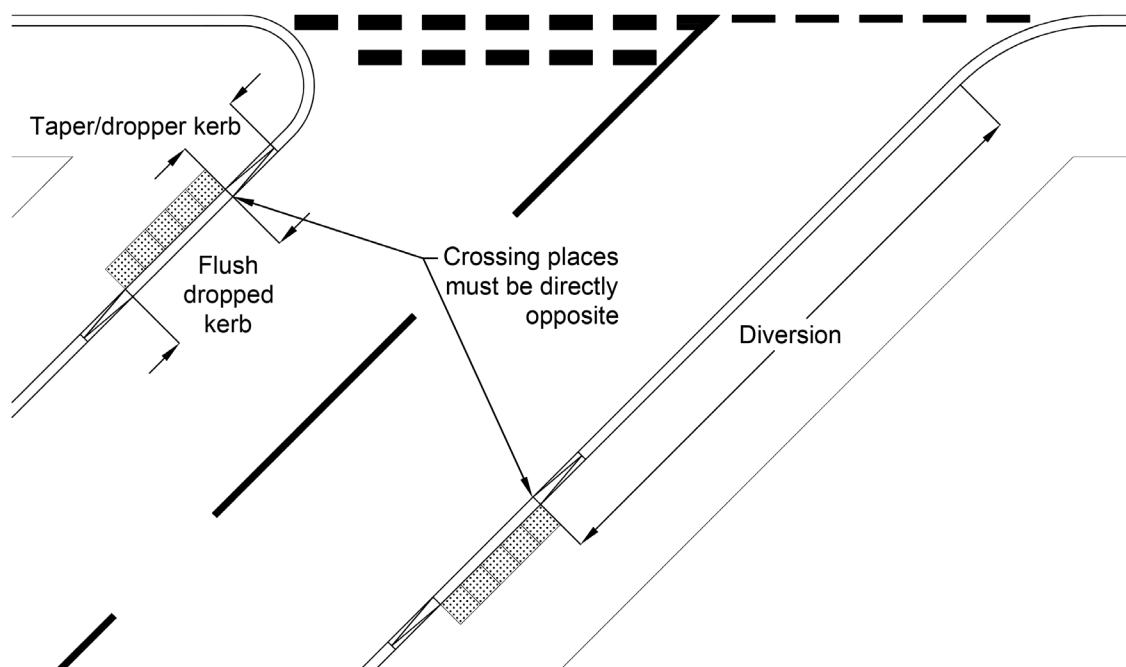
The basic rule is that dropped kerbs on either side of a road should be directly opposite each other to minimise the crossing distance (Figure 7). On acute angled junctions this will, of course, result in a significant deviation to one of the dropped kerbs, but it is considered that this arrangement best meets the needs of users. This provides vision impaired people with a straightforward blister surface layout, while wheelchair and other mobility aid users, and other people with mobility impairment benefit from a smaller area of blister surface and a shorter crossing distance. If there is an opportunity to modify the junction layout to make the angle less acute, this should be taken.

Crossing away from a junction

Vision impaired people will not generally use a crossing away from a junction and would prefer, where possible, to use a controlled crossing. Where crossings are provided away from junctions, for example, where the distance between junctions is considerable, a flush dropped kerb should be provided and the blister surface should be installed to a depth of **800mm** (Figure 8).

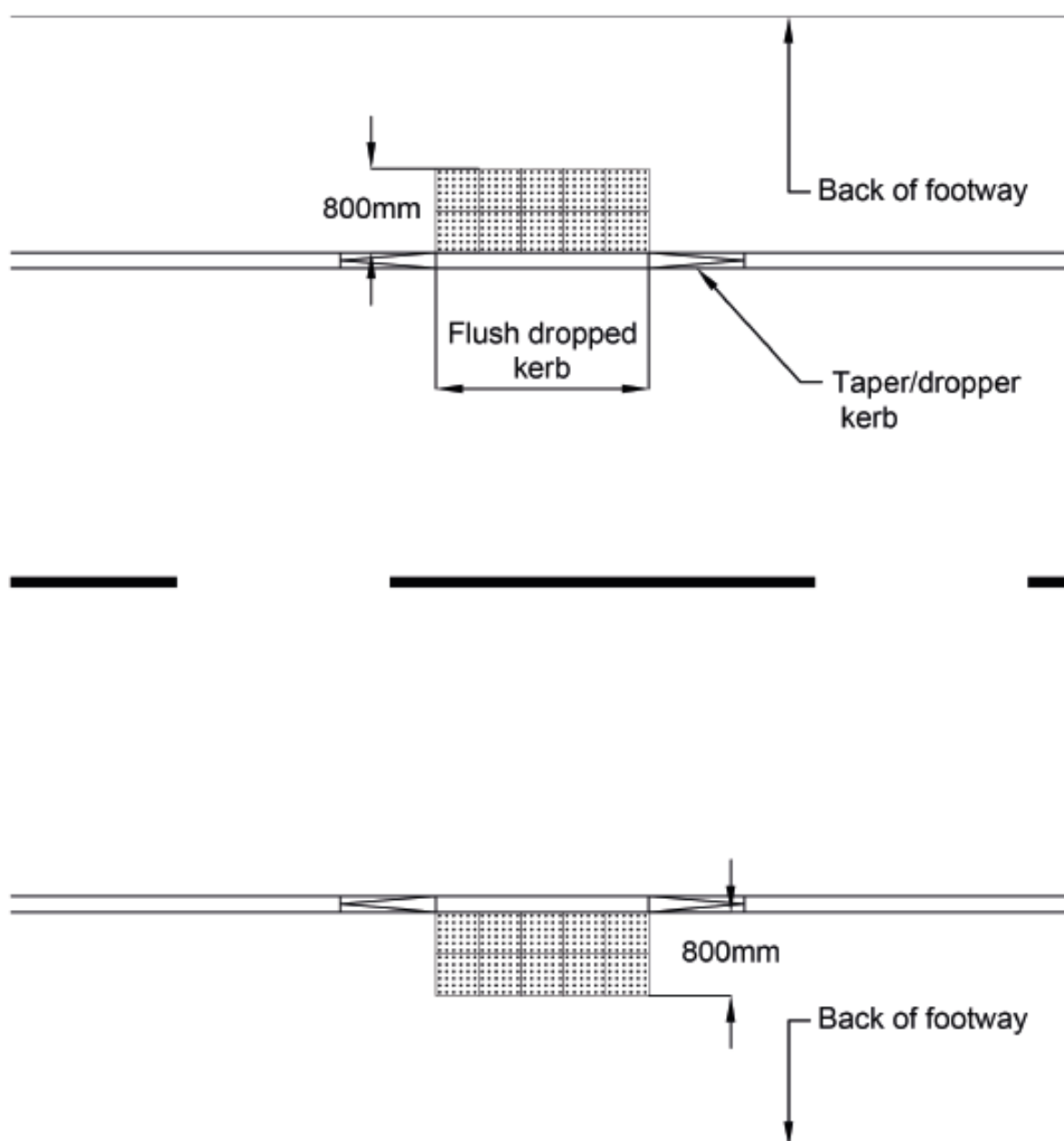
Any decision to install an uncontrolled crossing point of this nature, away from a junction, should only be undertaken after consultation as described in Section 1.6 on engagement (including with local vision impaired people, wheelchair users, and other people with mobility impairment), to determine whether such a crossing is desirable and, if so, what the most suitable location is.

Figure 7: Layout of the blister surface at inset uncontrolled crossing at acute angled junction



Note:
Not to scale

Figure 8: Layout of the blister surface at uncontrolled crossing away from a junction



Note: Not to scale, all dimensions in mm

2.5.3 Pedestrian refuges and other larger pedestrian islands

Where pedestrian refuges form part of a crossing, whether controlled or uncontrolled, the blister surface layout on the refuge(s) will vary according to the space available and any other features located there (see below). The red blister surface should only be used on refuges at controlled crossings.

On refuges, or splitter islands, where it is intended that pedestrians should not usually stop, it is important that the blister surface is not installed.

Pedestrian refuge

Where the refuge is less than **2m** depth, the blister surface should be laid across the full width, set back behind the kerb or **150mm** from the edge of the carriageway (where the refuge is at carriageway level) on both sides (Figure 9).

Where the refuge is two metres or more in depth, two rows of the blister surface **800mm** deep should be provided. Each row should be set back behind the kerb or **150mm** from the edge of the carriageway (where the refuge is at carriageway level) on both sides (Figure 10).

Staggered pedestrian refuge

The blister surface should be laid to a depth of **800mm** behind the kerb, or set back **150mm** from the edge of the carriageway, on both sides (Figure 11). Push button boxes should be installed on posts on both sides of each island crossing point. The posts should be positioned such that they do not create an obstacle for pedestrians.

Triangular pedestrian islands

The blister surface should be installed across the full width of each dropped kerb to a depth of **800mm**, set back behind the kerb, or **150mm** from the carriageway on all sides (Figure 12). If the triangular island is itself flush with the carriageway, there should be a kerb upstand all around to keep people away from the corners.

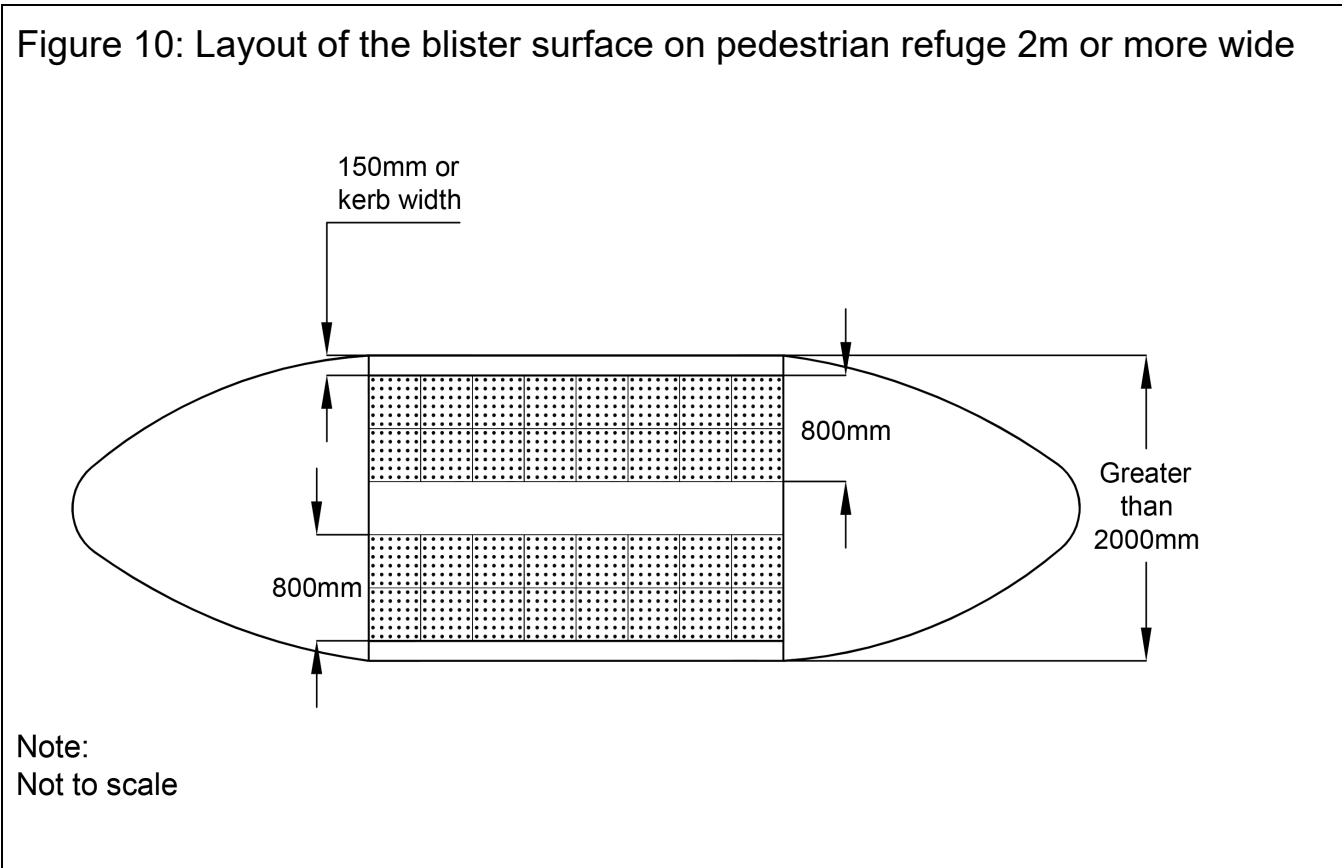
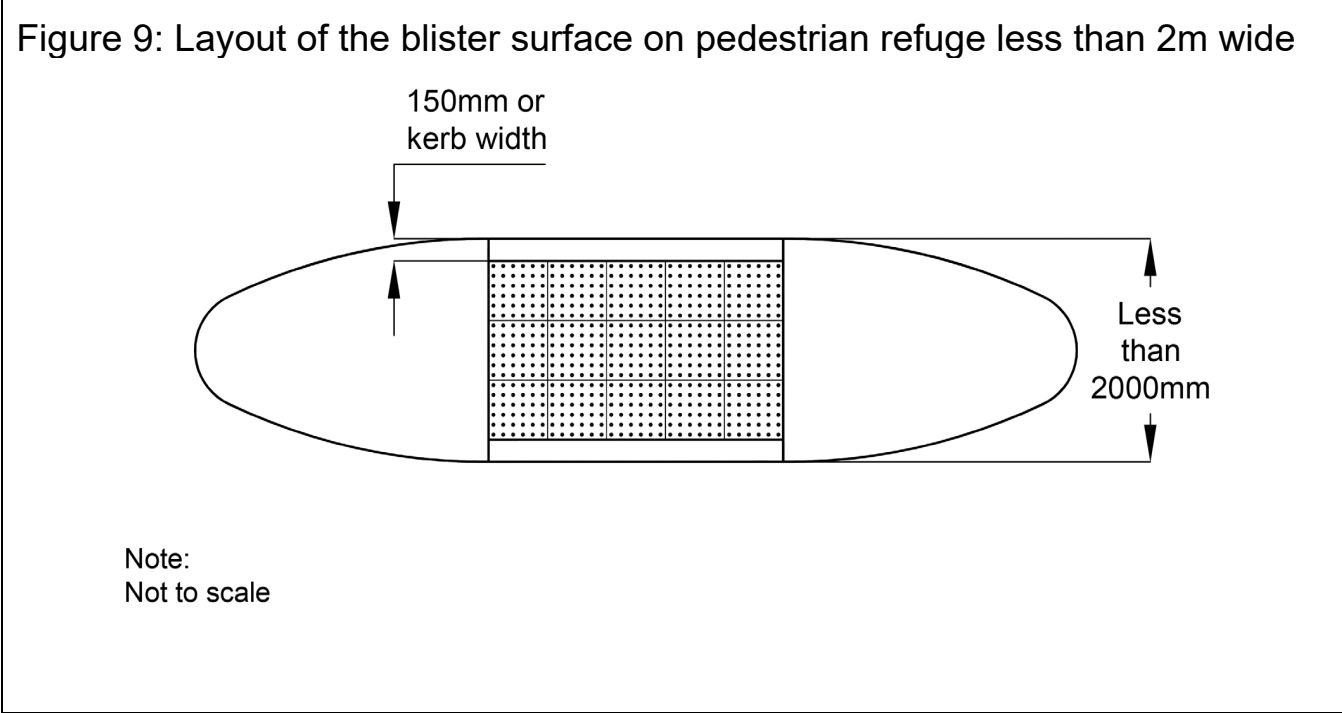
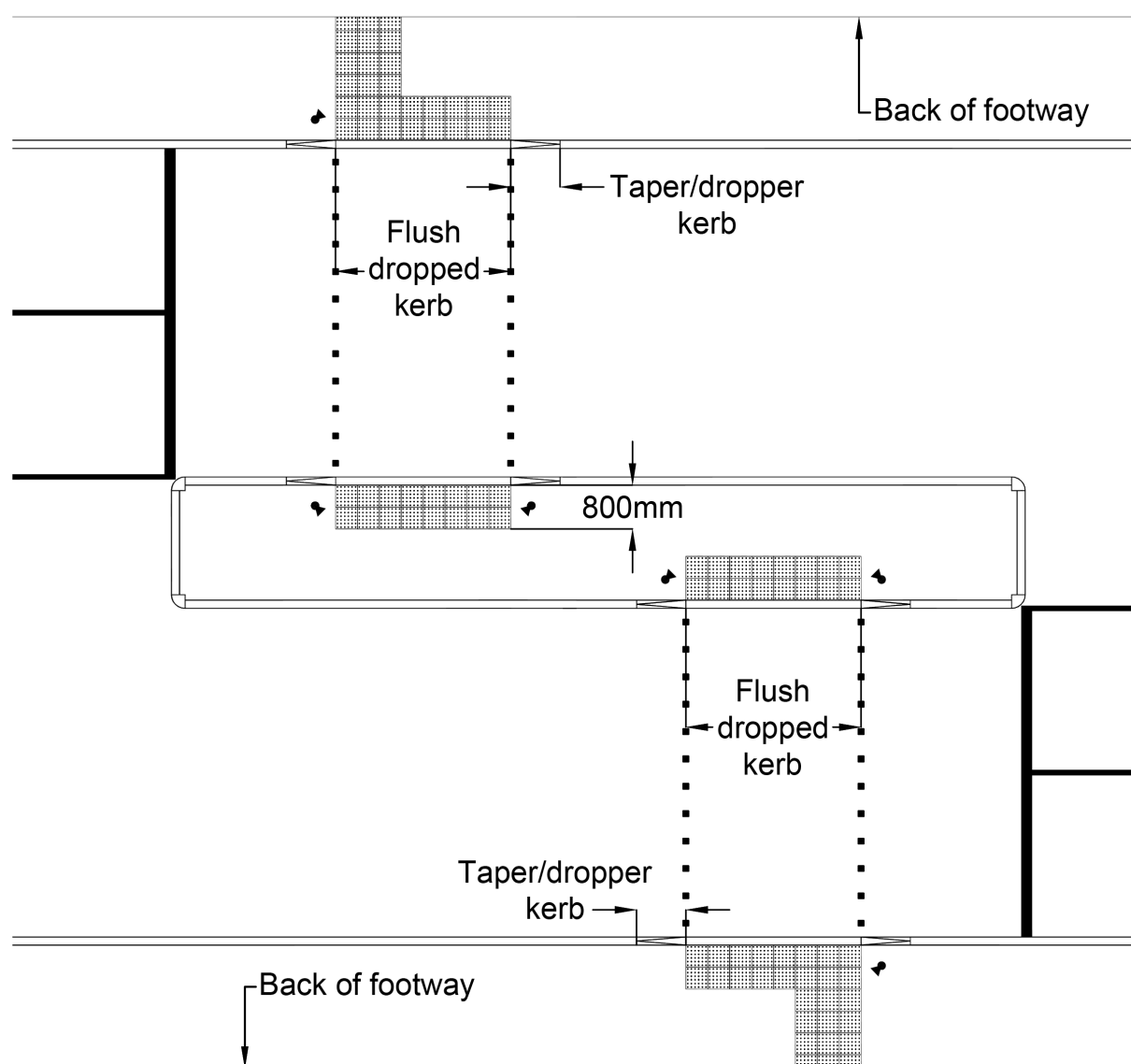
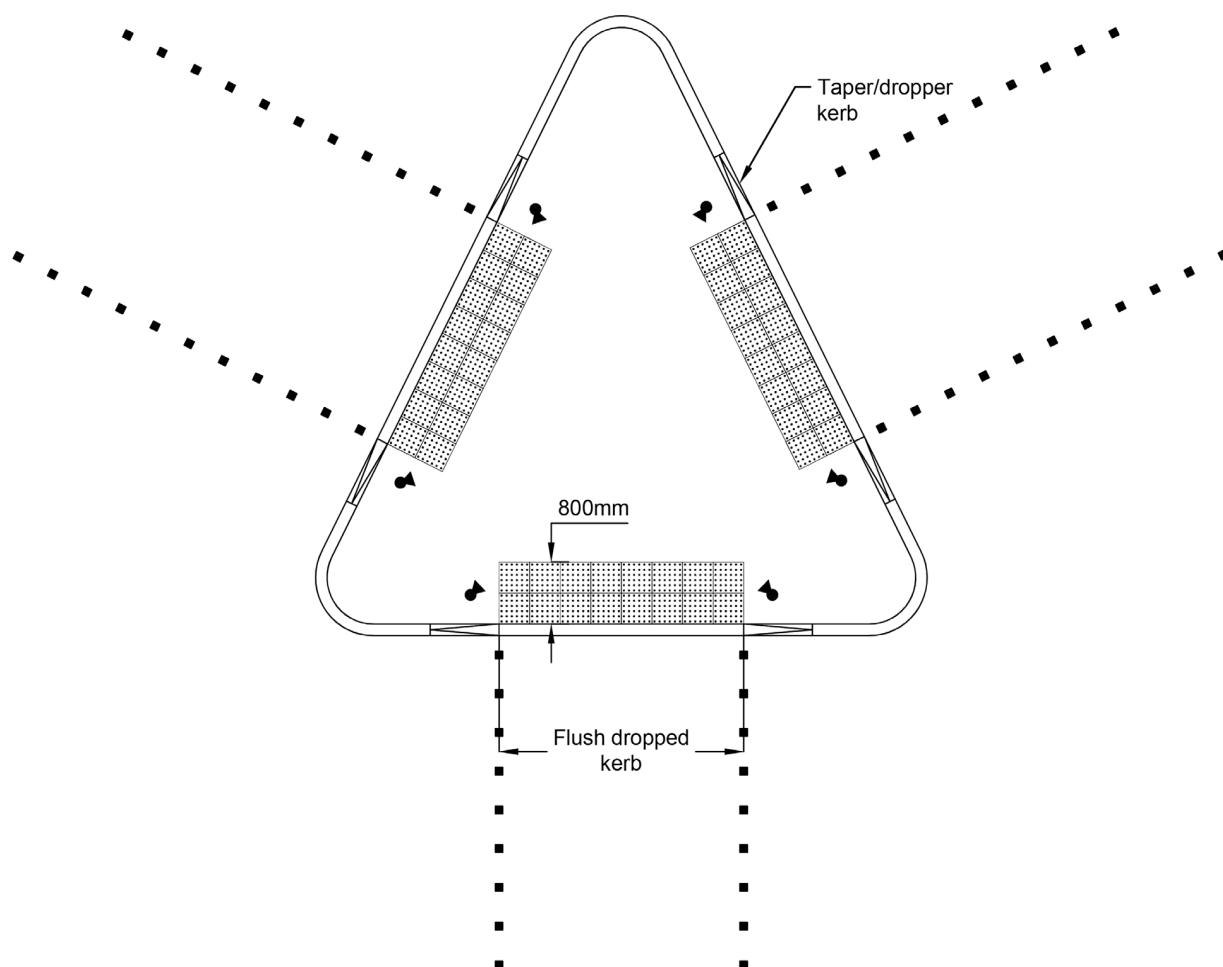


Figure 11: Layout of the blister surface on staggered pedestrian refuge



Note:
Not to scale
Traffic signs omitted for clarity

Figure 12: Location of the blister surface on triangular pedestrian island



Note:
Not to scale

2.5.4 Vehicle crossovers and vehicle accesses

General layout

At all vehicle crossovers, a minimum **25mm** upstand should be provided between the carriageway and the vehicle crossover. This upstand should help ensure that vision impaired people do not inadvertently venture into the carriageway.

Vehicle crossovers with high traffic flows

Where the traffic flow is sufficiently high, a vehicle crossover or vehicle access should be treated as an uncontrolled crossing at a side street. The blister surface should be installed in accordance with Section 2.4.

Local authorities will need to exercise judgement, in consultation with local user groups, when assessing where traffic flows are sufficiently high to warrant the use of the blister surface. Vehicle accesses to petrol filling stations, shopping parades and supermarkets or car parks are examples of where the use of the blister surface is likely to be appropriate.

Vehicle crossovers with low traffic flows

The blister surface should not generally be applied on vehicle crossovers to residential properties, nor should it generally be applied in other locations where the volume of traffic using a crossover or access is low. Local authorities should use their judgement, in consultation with local user groups, in determining whether or not traffic flows are sufficiently low to mean that the blister surface is not needed.

2.5.5 Raised crossings for traffic calming

General layout

Where the carriageway has been raised to the level of the footway, the blister surface should be installed on the footway. The treatment will be the same as for an uncontrolled or a controlled crossing, depending on the facilities to be provided on the raised area (see Section 2.4).

Where an extensive area of the carriageway has been raised, it is not appropriate to install the blister surface along the full length of the raised area. In

those circumstances, the blister surface should only be applied to the main crossing points (Figure 13).

Where the remaining interface between the footway and the raised carriageway is flush, or has an upstand of less than **25mm**, it is vital to ensure that vision impaired people are not able to stray inadvertently onto the carriageway. This could be achieved by creating a level difference between the footway and carriageway of at least **25mm** (so that the transition is not actually flush), or by using an appropriate form of physical barrier.

Side street entry treatments

Where side street entry treatments provide an uncontrolled crossing facility they should be treated as per an in-line uncontrolled crossing (see Section 2.4 and Figure 14).

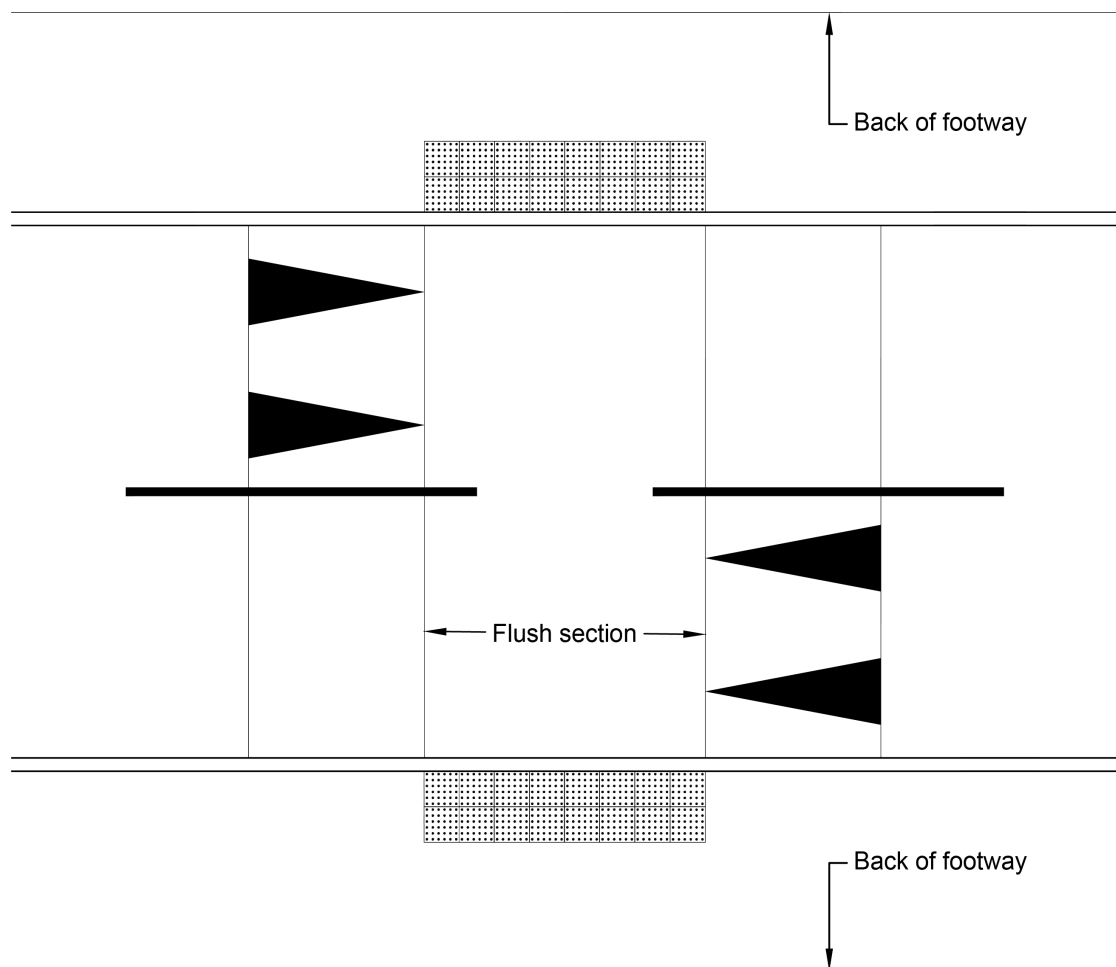
Entire junction treatments

Where the carriageway has been raised to the level of the footway around an entire junction, it is essential that vision impaired people are kept away from the radius by an appropriate physical barrier, such as planters or guard-railings (Figure 15).

2.5.6 Inspection covers

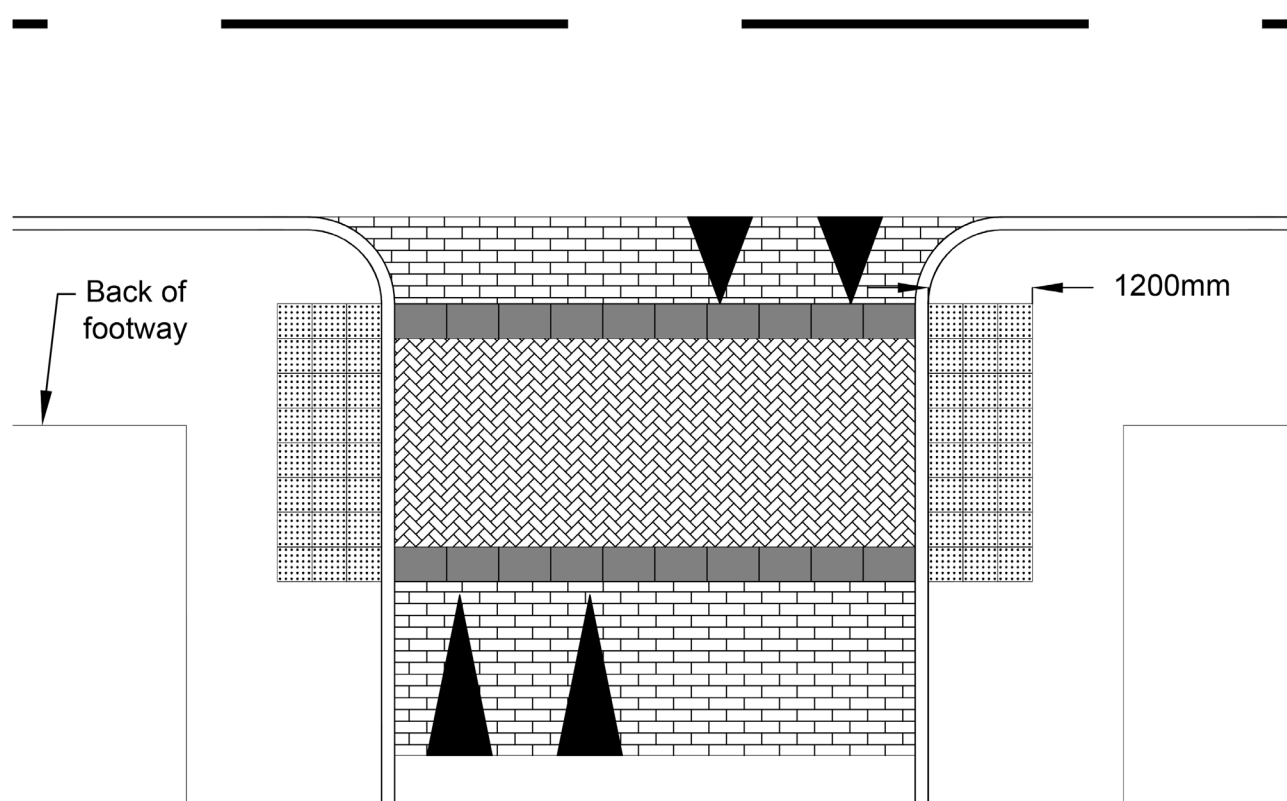
The layout of blister surfaces can be disrupted by inspection covers, creating layouts that are confusing for vision impaired people, as well as unsightly for other people. Local authorities should therefore encourage utility companies, where possible, to provide covers that can be converted to take a blister surface inlay.

Figure 13: Layout of the blister surface at an uncontrolled crossing on a kerb-to-kerb flat top road hump



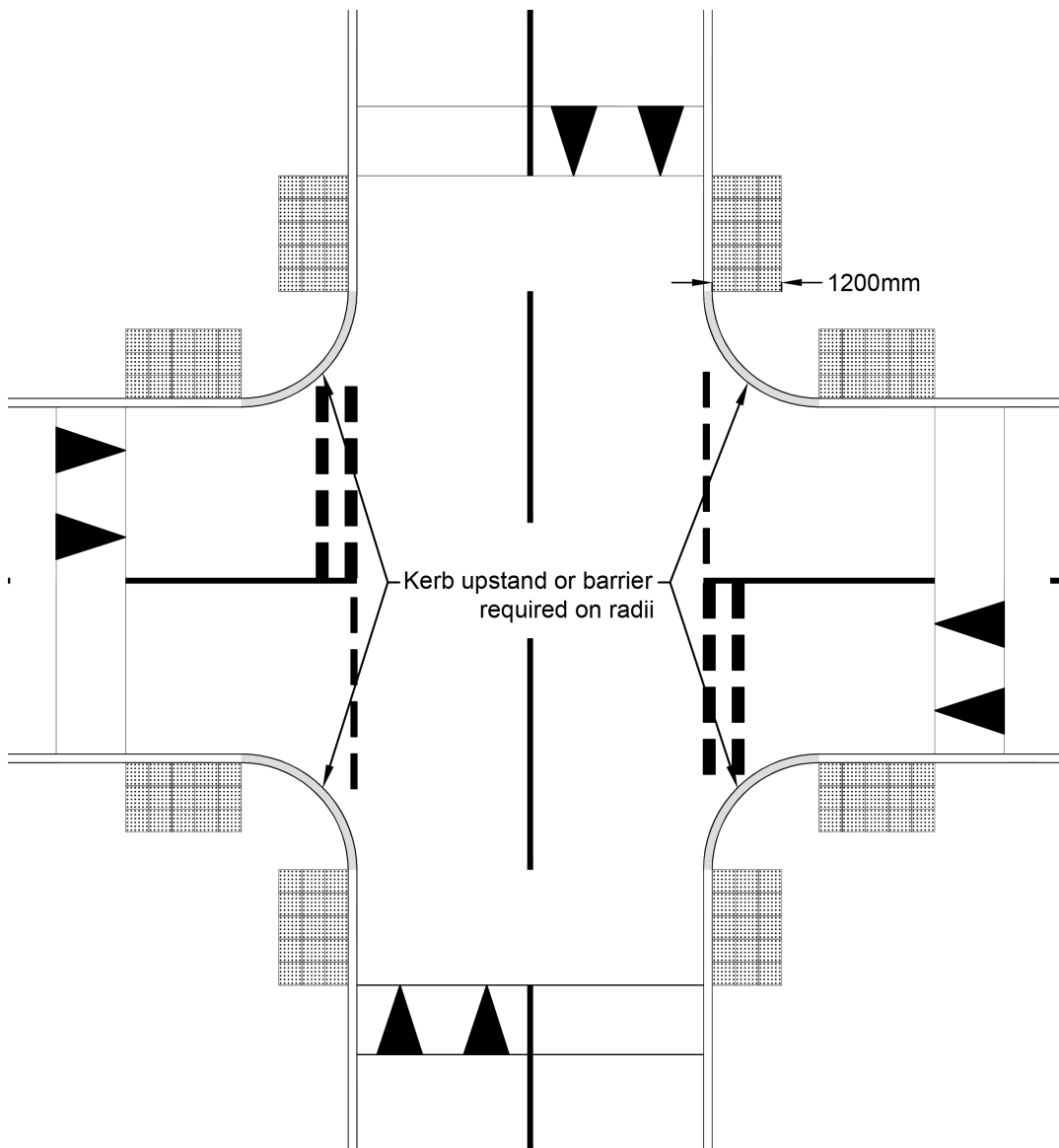
Note:
Not to scale

Figure 14: Layout of the blister surface at a side street junction where the side street carriageway has been raised to the level of the footway



Note:
Not to scale
Layout shown is an uncontrolled crossing
The ramps to the raised area are shown formed of paviours. Other materials can be used.

Figure 15: Layout of the blister surface at a junction where the entire junction carriageway has been raised to the level of the footway



Note:
Not to scale
Layout shown is an uncontrolled crossing

3 Corduroy hazard warning surface

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design, to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

3.1 Purpose

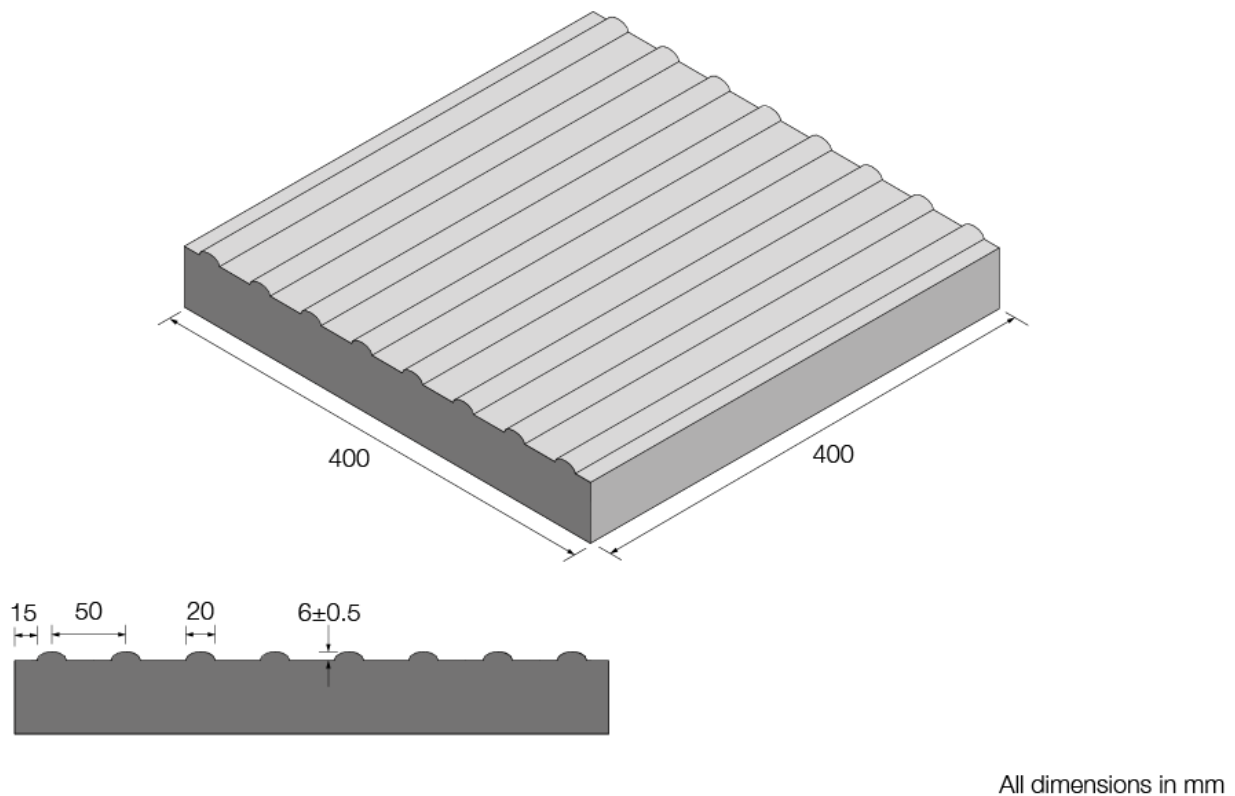
The corduroy surface conveys the message 'hazard, proceed with caution'. Its purpose is to warn vision impaired people and other people of the presence of specific hazards, including steps, level crossings, the approaches to on-street tram and other Light Rapid Transit (LRT) platforms, and the transition from footways to areas shared with other users (see Section 3.3).

3.2 Definition

The profile of the corduroy surface comprises rounded bars running transversely across the direction in which people will be walking. The bars are 6mm (\pm 0.5mm) high, 20mm wide and spaced 50mm from the centre of one bar to the centre of the next (Figure 16). There are, therefore, eight bars on a standard 400mm by 400mm module.

The corduroy surface can be made of any material suitable for and with slip resistance appropriate for footway use. It is normally buff coloured, but can be any colour, other than red, that achieves good visual contrast with the surrounding area.

Figure 16: Profile and plan of the corduroy surface



3.3 Application

The corduroy surface can be used in any situation (except at pedestrian crossings – see Section 2.1) where vision impaired people need to be warned of a hazard and advised to proceed with caution. Examples include:

- the top and bottom of steps
- the foot of a ramp to an on-street tram platform (but not at any other ramps)
- a railway level crossing
- where people could inadvertently walk directly onto a railway station platform

- at transitions between a footway or footpath and a shared use route (Section 5)

The corduroy surface is not intended to warn of the presence of obstacles in the footway, such as cycle stands or other street furniture, where people should be advised not to proceed. The over-arching requirements of an accessible public realm should mean that such features are located where they will not create an obstacle. However, where this is not possible, designs should include features such as tapping rails to reduce hazards. Additionally, use of the guidance path surface may be considered to guide people around such obstacles (see Section 6).

3.4 General layout

The surface should be laid so that the bars run transversely across the direction of pedestrian travel.

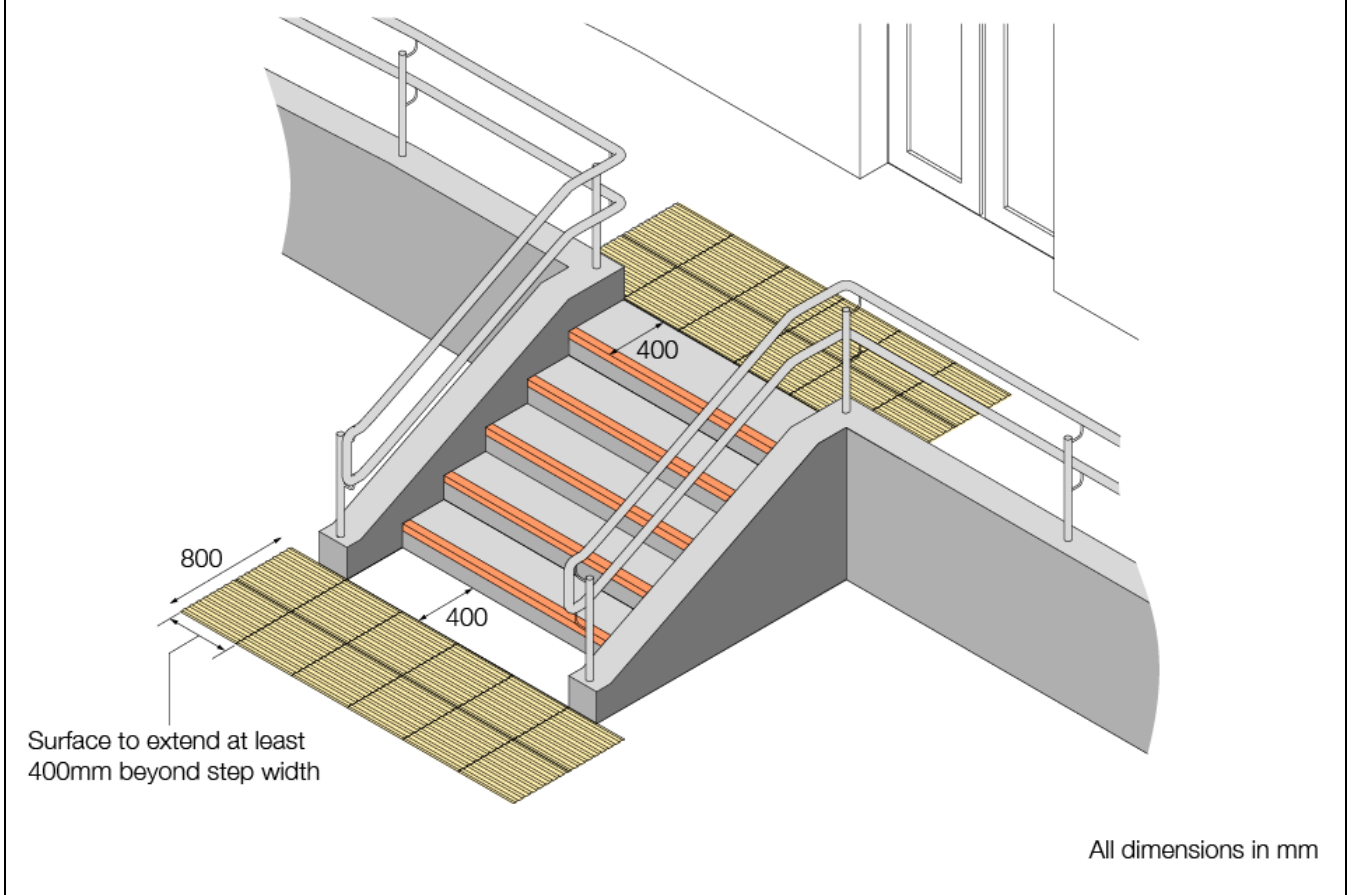
3.4.1 Steps:

At steps (Figure 17):

- the corduroy surface should extend across the full width of the steps at both the top and bottom of the flight
- where possible, the surface should start 400mm from the first nosing, to give people time to adjust their walking speed
- if the steps are in the direct line of walking travel, the surface should be laid to a depth of 800mm
- if people would have to make a deliberate turn to encounter the steps, then it is acceptable to lay the surface to a depth of 400mm
- the surface should extend at least 400mm beyond the width of the steps on either side, to allow for people approaching the steps at an angle. However, the surface should not extend across any adjacent facilities, for example, a ramp or lift
- a continuous handrail, acting as a guide across intermediate landings, will inform the user that the series of steps continues, obviating the need for the surface to be installed and avoiding its excessive use. However, the surface should be installed if the steps can be accessed via a landing

- where ramped access is provided immediately adjacent to steps then care should be taken to ensure that the access for wheelchair and other mobility aid users is unimpeded

Figure 17: Layout of the corduroy surface at top and bottom of flight of steps

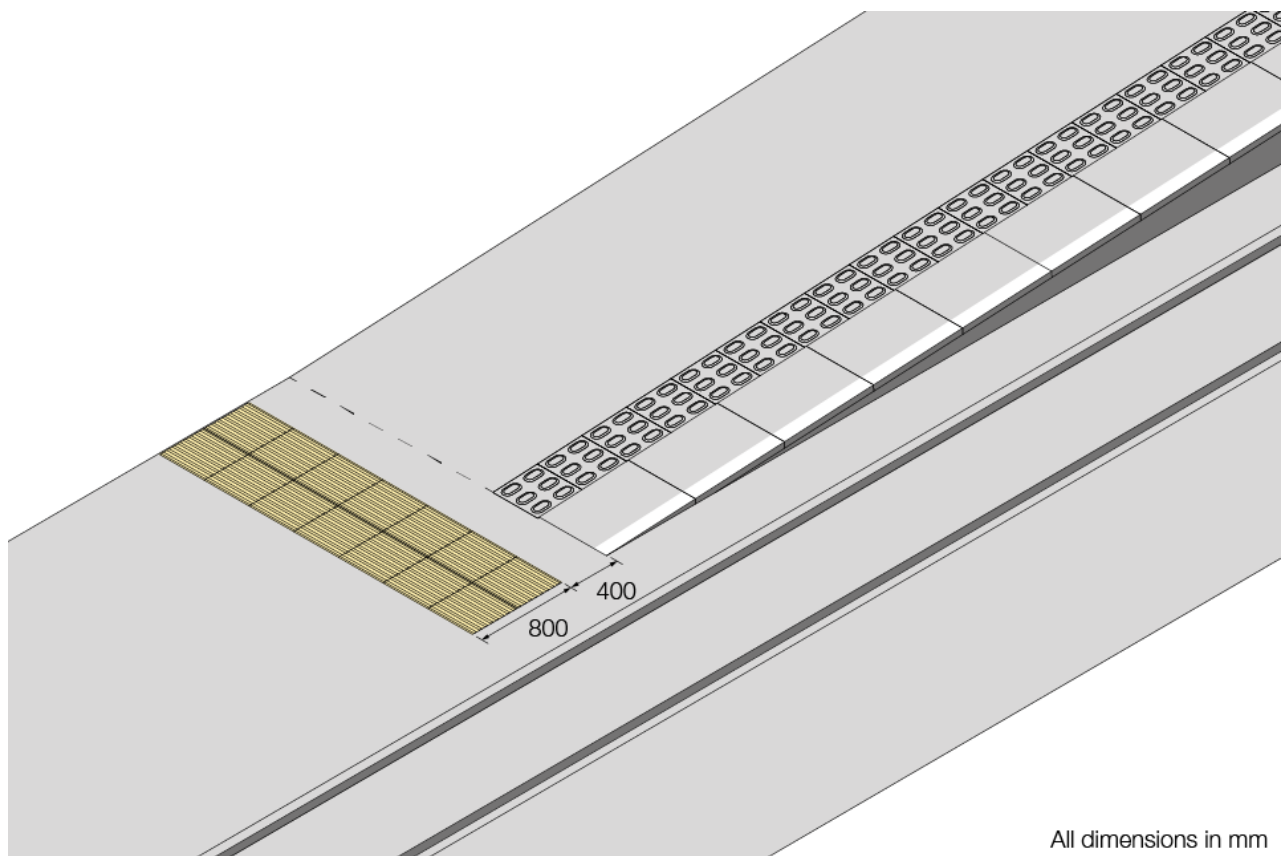


3.4.2 Ramps to on-street tram and other LRT platforms

At ramps to on-street tram and other LRT platforms (Figure 18):

- the surface should be installed across the full width of the ramp, at the bottom only
- the corduroy surface should be laid to a depth of **800mm** and set back **400mm** back from the bottom of the ramp, to give people time to adjust their walking speed

Figure 18: Layout of the corduroy surface at ramps to on-street tram or other LRT platforms

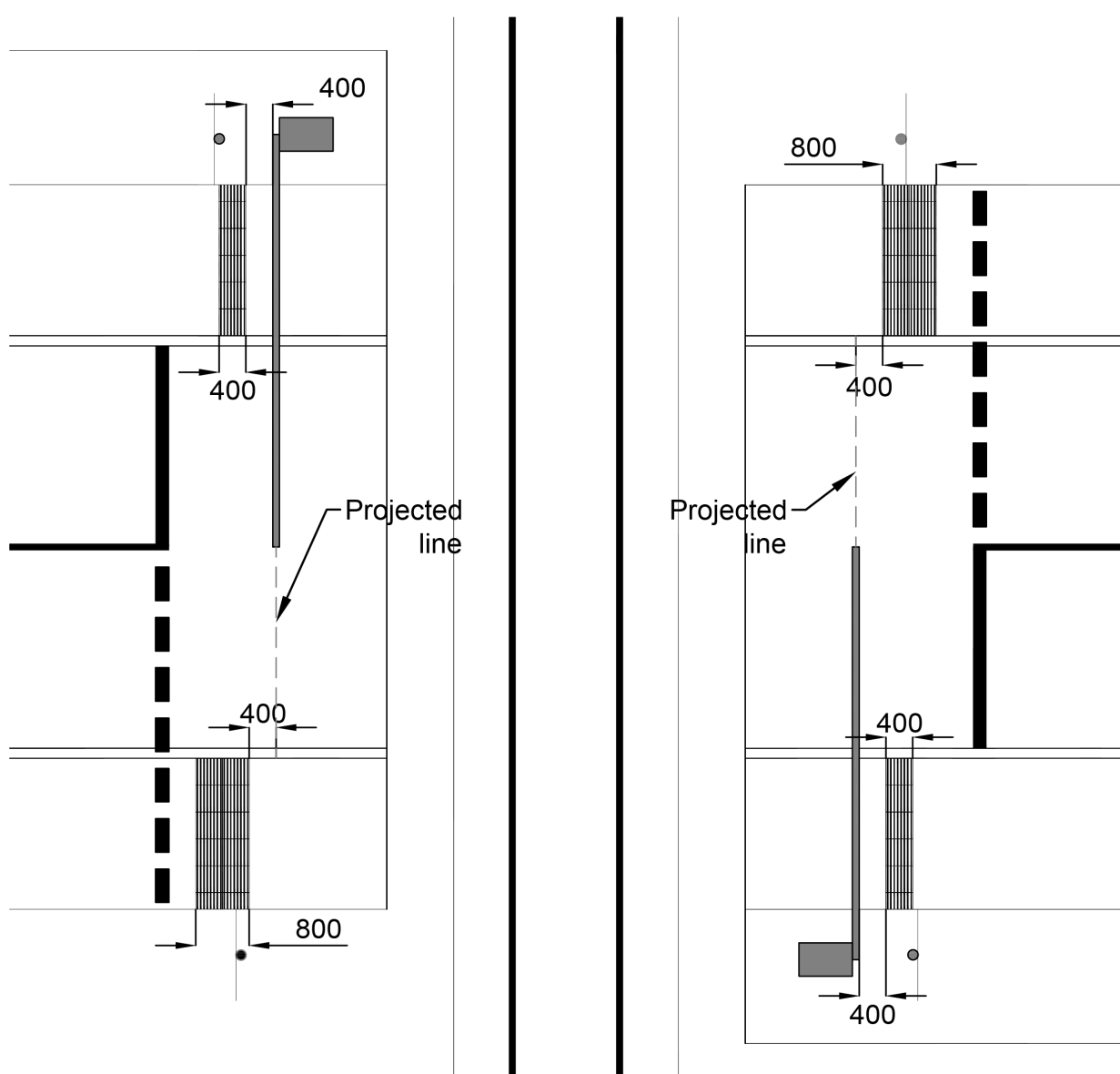


3.4.3 Level crossings

At level crossings (Figure 19):

- the corduroy surface should extend across the full width of the footway, or for **1200mm** if there is no footway
- the corduroy surface should start **400mm** from the barrier, or from the projected line of the barrier on the open side. If the corduroy surface is installed closer, people may not have enough time to adjust their walking speed
- with barriers on both sides, the corduroy surface should be laid to a depth of **400mm**
- with barriers on one side only, the corduroy surface should be installed to a depth of **400mm**, on the side with the barrier, and **800mm** on the side without a barrier
- with no barriers, the surface should be installed to a depth of **800mm** on both sides
- the additional depth of tactile paving in the latter two cases is to ensure that vision impaired people have sufficient underfoot warning where there is no barrier in place to halt their progress

Figure 19: Layout of the corduroy surface at level crossings



Note:
 Not to scale
 All dimensions in millimetres
 Road markings extend across
 footway on side with no barrier

3.5 Additional layouts

3.5.1 Entrance to platform area in an unprotected railway station

In railway stations with unprotected pedestrian entrances, it may be possible for vision impaired people to walk, unknowingly, onto a platform from the street. In such circumstances, the corduroy surface should be laid to a depth of **800mm** across the full width of the unprotected pedestrian entrance.

3.5.2 Shared facilities

At shared facilities:

- the corduroy surface should be used where a footpath or footway joins a segregated shared cycle track/footway route on the cycle track side (see Section 5 and Figure 24B)
- the corduroy surface should also be used at transitions between a footway or footpath, and areas permitted to be shared by pedestrians and cyclists (as denoted by signs to TSRGD diagram 956)
- in these situations, the corduroy surface should be laid to a depth of **800mm**.

4 Platform edge (on-street) warning surface (lozenge)

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

4.1 Purpose

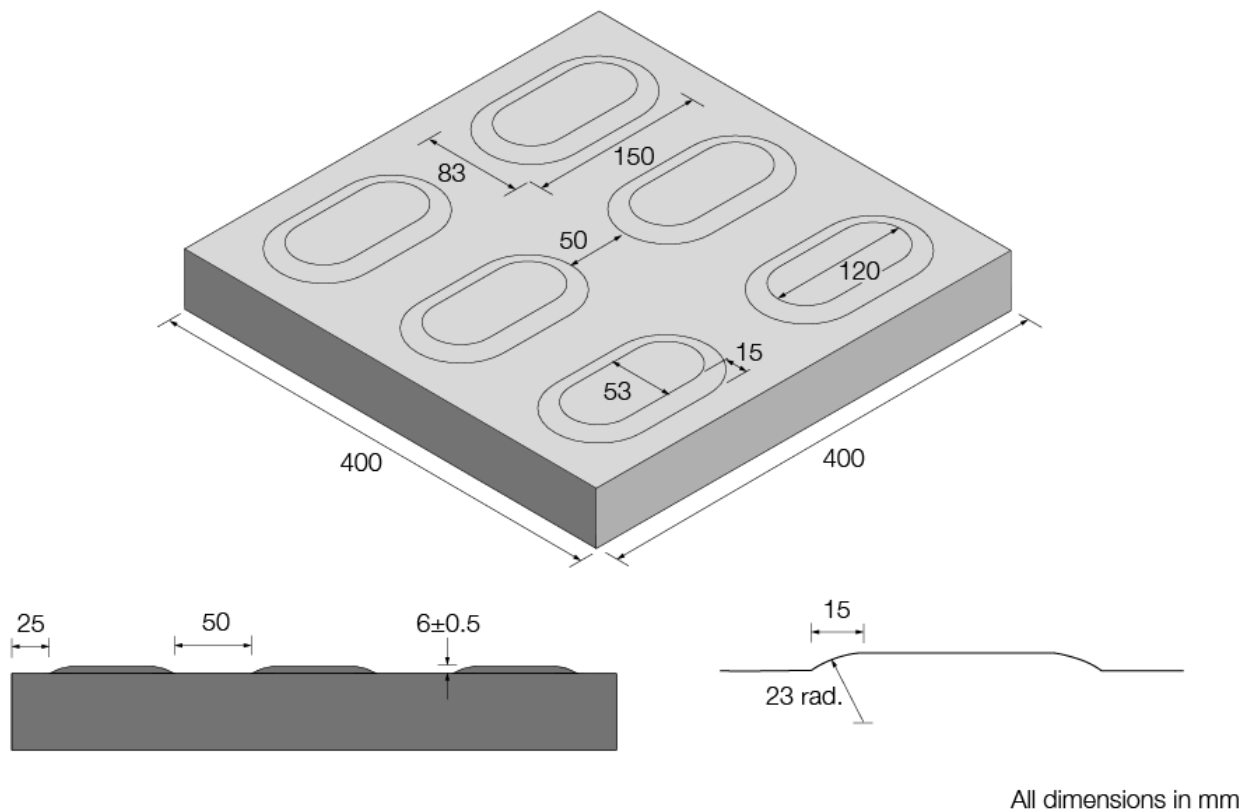
The purpose of the platform edge (on-street) warning surface is to warn vision impaired people that they are approaching the edge of an on-street tram or other Light Rapid Transit (LRT) platform.

4.2 Definition

The profile of the platform edge (on-street) warning surface comprises rows of 'lozenge' shapes. The lozenge shapes are 6mm (± 0.5 mm) high and have rounded edges in order not to be a trip hazard. Each lozenge is 150mm by 83mm and they are spaced 50mm apart (Figure 20). This spacing means that there are six lozenges on a standard 400mm by 400mm module.

The platform edge (on-street) warning surface can be made of any material suitable for and with slip resistance appropriate for footway use. It is normally buff coloured, but can be any colour, other than red, that achieves good tonal and colour contrast with the surrounding area.

Figure 20: Profile and plan of the platform edge (on street) warning surface



4.3 Application

This surface should be used on all on-street tram or other LRT platform edges. It should not be used on off-street platforms, where a different surface is required (see Section 7).

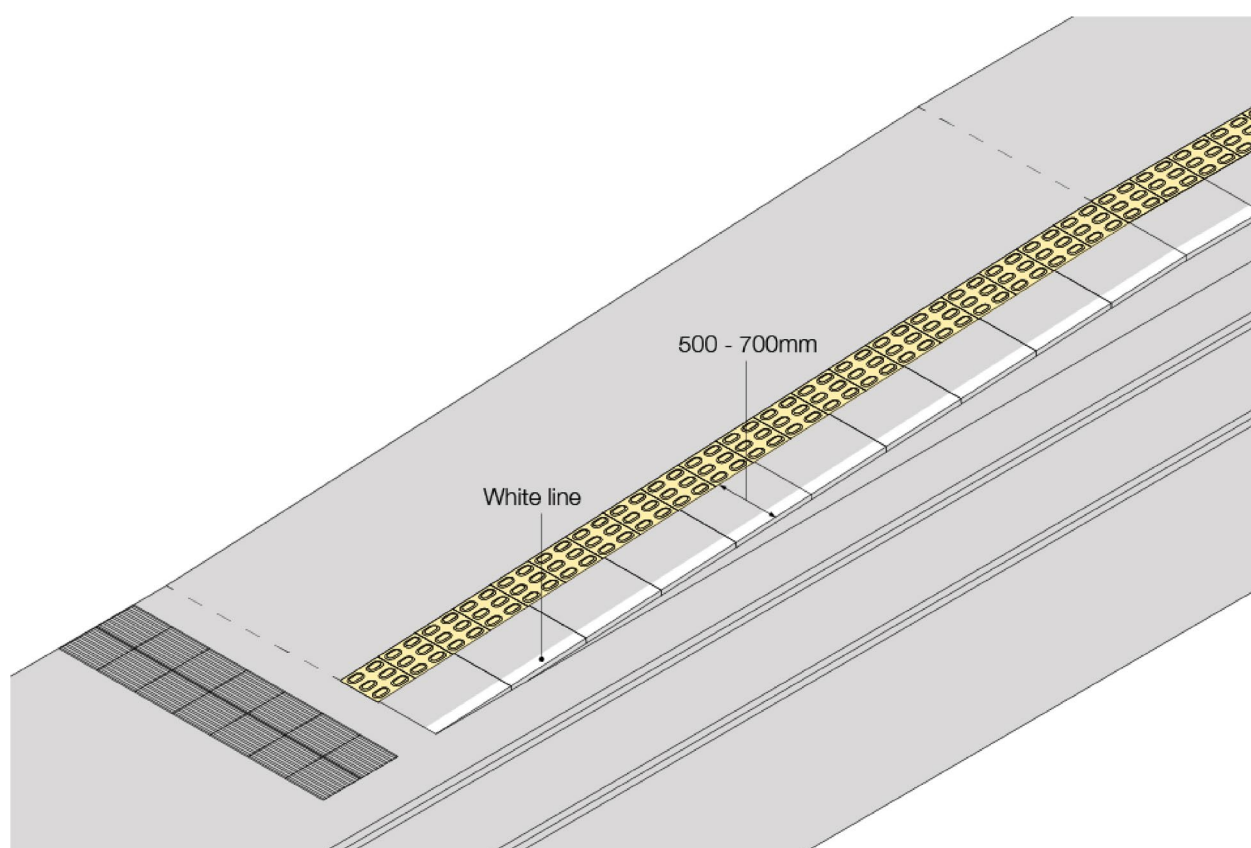
4.4 Layout

The lozenge surface should be laid immediately behind the platform coping stone (Figure 21) and set back at least **500mm** from the platform edge, to give people enough time to stop walking once they have detected the surface.

The surface should be installed to a depth of **400mm** along the entire length of the platform and should extend down any ramps.

The corduroy warning surface should be used to indicate the base of any ramps (see Section 3.4.2).

Figure 21: Layout of the platform edge (on street) warning surface



Note:
Not to scale
All dimensions in millimetres

5 Segregated shared cycle track/ footway surface and central Delineator strip (ladder & tramline)

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

Local Transport Note 1/20 Cycle Infrastructure Design (LTN 1/20) is clear that shared use routes in streets with high pedestrian or cyclist flows should not be used. Where it cannot be avoided, shared use may be appropriate if well-designed and implemented and where pedestrian numbers are very low. Cycle tracks and footways should be designed to be perceived as wholly separate facilities. Where it is not possible to achieve this level of separation, and the footway and cycle track are immediately adjacent and parallel to one another, the guidance in this section should be followed. This will assist vision impaired people and will also be helpful to all other users.

5.1 Purpose

The purpose of the tactile surface used in conjunction with a segregated shared cycle track/footway is to advise vision impaired people, cyclists and all other users of the correct side to enter.

The purpose of the central delineator strip is to help vision impaired people, other users, and cyclists keep to the correct side. However, as noted in LTN 1/20, it is difficult to maintain and may be disregarded by pedestrians. A kerb at least 50mm high or a strip of light-coloured material that can be detected with a cane is likely to be more effective at helping visually impaired people to detect and negotiate the track. This could be achieved by using an alternative raised strip which is trapezoidal in cross section, or some other textured material.

5.2 Definition

The profile of the segregated shared cycle track/footway tactile paving surface comprises a series of raised, flat-topped bars, each 5mm (± 0.5 mm) high, 30mm wide, and spaced 70mm apart. There are four bars on a standard 400mm by 400mm module (Figure 22).

This tactile paving surface can be made of any material suitable for and with slip resistance appropriate for footway use. It is normally buff coloured, but can be any colour, other than red, that achieves good tonal and colour contrast with the surrounding area.

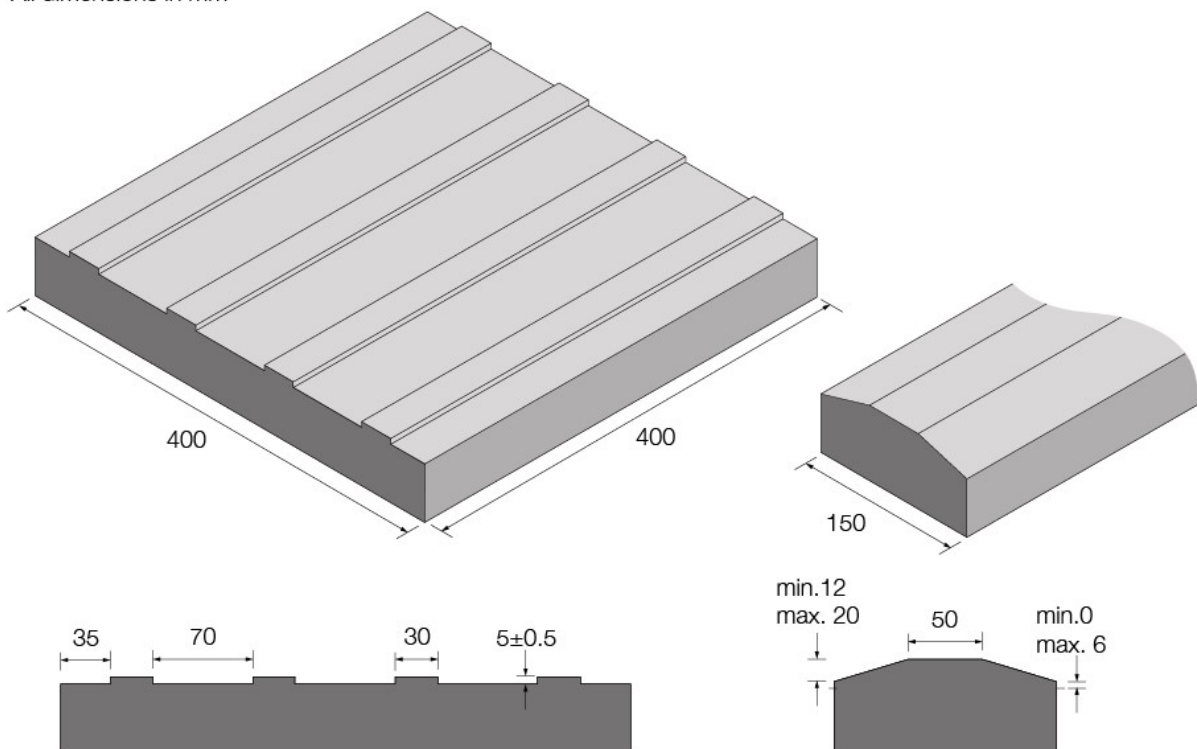
On the footway side, the surface is laid so that the bars are transversely across the main direction of travel for people walking, and it is called the 'ladder' surface in this orientation. On the cycle track side, the surface is laid so that the bars are in line with the main direction of travel for people cycling, and it is called the 'tramline' surface in this orientation. This arrangement was chosen because it was felt the rumble effect created by the transverse pattern would deter cyclists from entering on the pedestrian side.

The central delineator strip is **12-20mm** high (preferably **20mm**), **150mm** wide with sloping sides and a flat top of **50mm**. It is the only tactile paving surface element that is prescribed within the Traffic Signs Regulations and General Directions 2016 (TSRGD), diagram 1049.1. It should have a white finish and a construction tolerance of ± 6 mm for any vertical upstand below the trapezoidal profile (Figure 22).

Surfaces should also be regularly maintained to prevent the development of potholes, or the accumulation of mud, fallen leaves, snow or ice, all of which may be hazardous for cyclists. Detailed guidance on surfacing and maintenance of cycle routes is given in LTN 1/20.

Figure 22: Profile and plan of the segregated shared cycle track/footway surface and central delineator strip

All dimensions in mm



5.3 Application

The tactile surface and central delineator strip are for use on any segregated shared route where the designated pedestrian side is not physically separated from the designated cyclist side, for example by a difference in level.

5.4 General layout

The tactile surface should be laid at the beginning and end of the shared segregated route, at regular intervals along the route (repeater strips), and at any junctions along the route with other walking, wheeling or cycling routes.

The surface should extend across the full width of the footway (ladder) and cycle track (tramline) and should extend to a depth of **2400mm**. For any repeater strips, however, only **800mm** depth of surface is required.

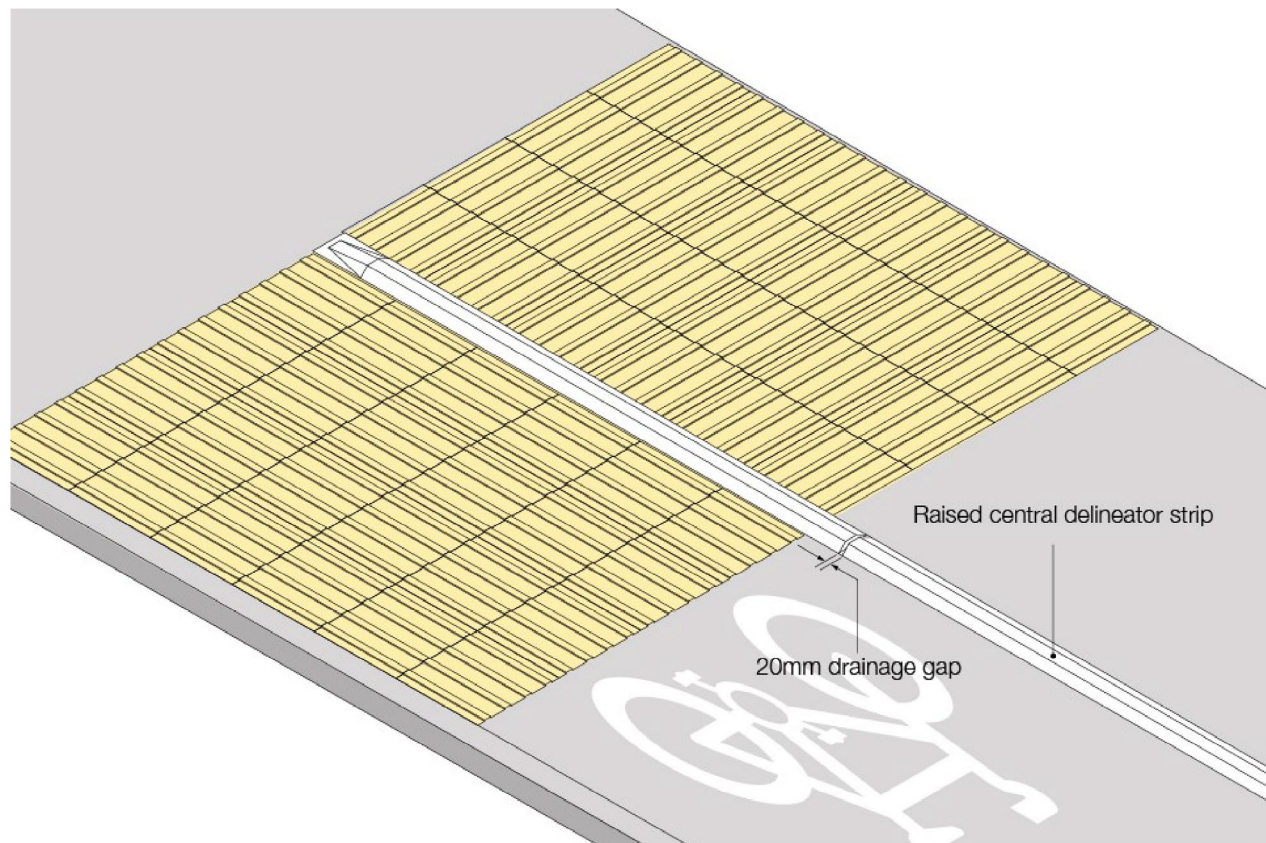
On the footway side, the surface should be installed with the bars running transversely across the direction of travel ('ladder'). On the cycle track side, the surface should be laid with the bars running in the direction of travel ('tramline').

The central delineator strip should run the entire length of the route, creating a 'kerb' between the designated footway side and the designated cycle track side. Simply using a white line road marking to TSRGD 2016 diagram 1049B is not adequate for this purpose as it will not be detected by vision impaired people, while the thermoplastic raised white line to 1049.1 may also be disregarded by pedestrians and is difficult to maintain (LTN 1/20 paragraph 6.2.8).

At transitions, signs to TSRGD diagram 956 should mark the entry to shared areas and signs to TSRGD diagram 957 should mark the entry to segregated shared areas (LTN 1/20 paragraph 9.4.3).

Using different coloured surfaces and/or different materials for the footway and cycle track can provide a useful additional cue for vision impaired people and others, including cyclists.

Figure 23: Layout of the segregated shared cycle track/footway surface and central delineator strip



Note:
Not to scale

5.5 Additional layouts

5.5.1 At junctions where a footway joins a shared route

Where the footway joins the shared route on the footway side:

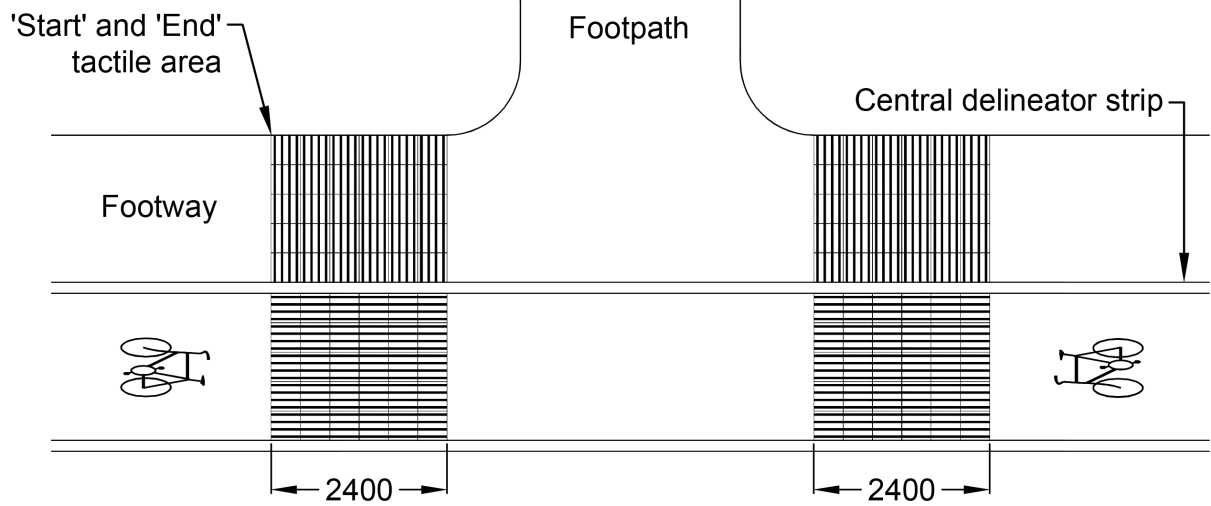
- the ladder/tramline surface should be installed for **2400mm**, on both the pedestrian and cyclist sides, on either side of the junction (Figure 24A)
- the central delineator strip should continue across the junction, to continue to guide vision impaired people to keep to the pedestrian side

Where the footway joins the shared route on the cycle track side:

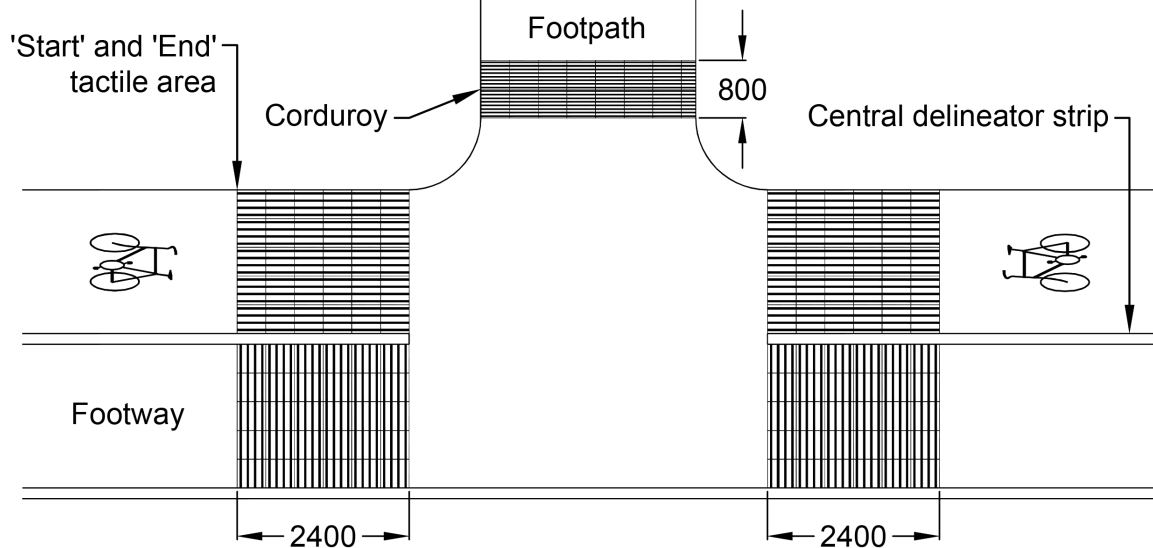
- the ladder/tramline surface should be installed on both the pedestrian and cyclist sides for **2400mm** on both sides of the junction (Figure 24B)
- the central delineator strip should not continue across the junction
- to warn vision impaired people approaching from the footpath that they are stepping on to the cycle track, the corduroy surface (see Section 3) should be installed across the footpath to a depth of **800mm** where it joins the parallel route

Figure 24: Layout at a junction where a footway or footpath joins a shared route

A - Where the side path joins on the footway side



B - Where the side path joins on the cycle track side



Note:
Not to scale
All dimensions in millimetres

5.5.2 At junctions where a cycle track joins a shared route

Where the cycle track joins on the footway side of the shared route:

- the ladder/tramline surface should be installed for a depth of **2400mm** on either side of the junction
- the central delineator should not continue across the junction (Figure 25A)

Where the cycle track joins on the cycle track side of the shared route:

- it is not necessary to install the ladder/tramline surface
- the central delineator should continue across the junction (Figure 25B). This is because there is no break in the footway side and pedestrians do not need to be informed that there is a junction with a cycle track

5.5.3 At junctions where one shared route joins another

At junctions where one shared route joins another (Figure 26):

- the ladder/tramline surface should be installed for **2400mm** on both the pedestrian and cyclist sides of both routes and on either side of the junction
- the central delineator should not continue, in either direction, through the junction

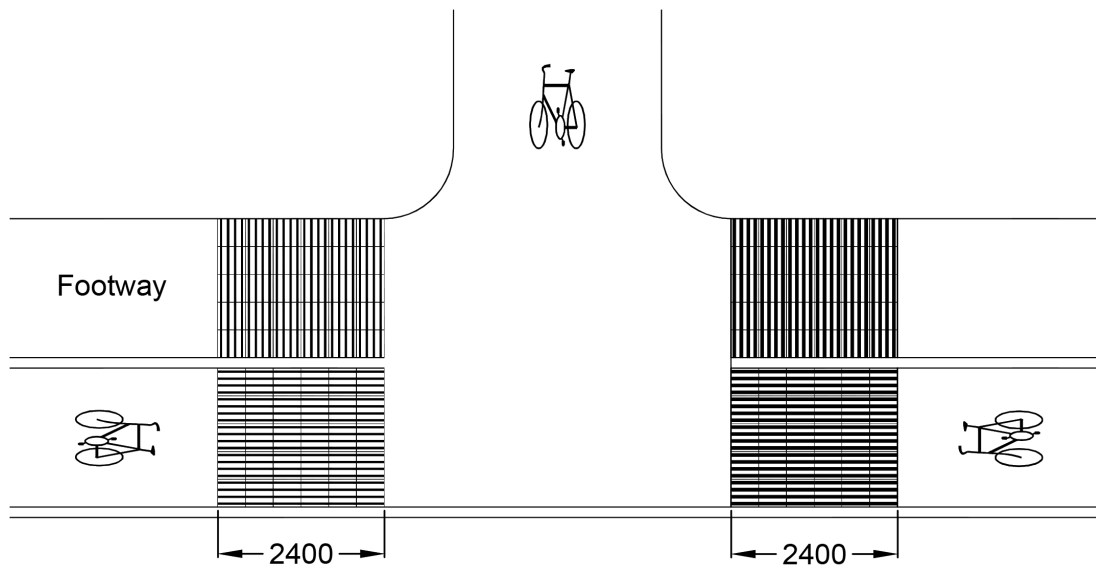
5.5.4 Uncontrolled crossing of a shared route over a vehicular carriageway

At uncontrolled crossings of shared routes over a vehicular carriageway (Figure 27)

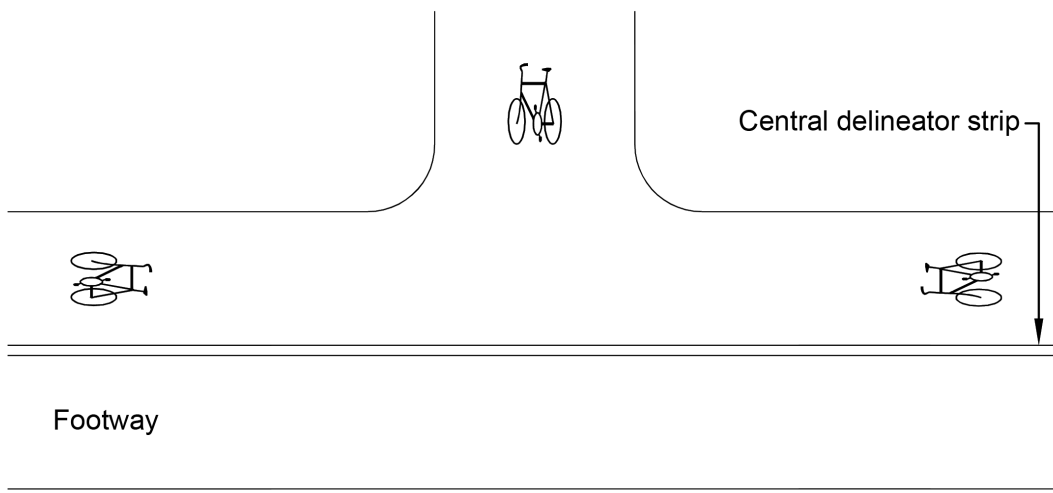
- where a carriageway, such as a side street, crosses the shared route, the ladder/tramline surface should be provided to a depth of **2400mm**, to indicate the start/end of the route. This arrangement should be set back **2400m** from the flush dropped kerb
- at the flush dropped kerb itself, the blister surface should be laid to a depth of **1200mm** across the full width of the crossing point

Figure 25: Layout at a junction where a cycle track joins a shared route

A - Where the side cycle track joins on the footway side



B - Where the side cycle track joins on the cycle track side



Note:
Not to scale
All dimensions in millimetres

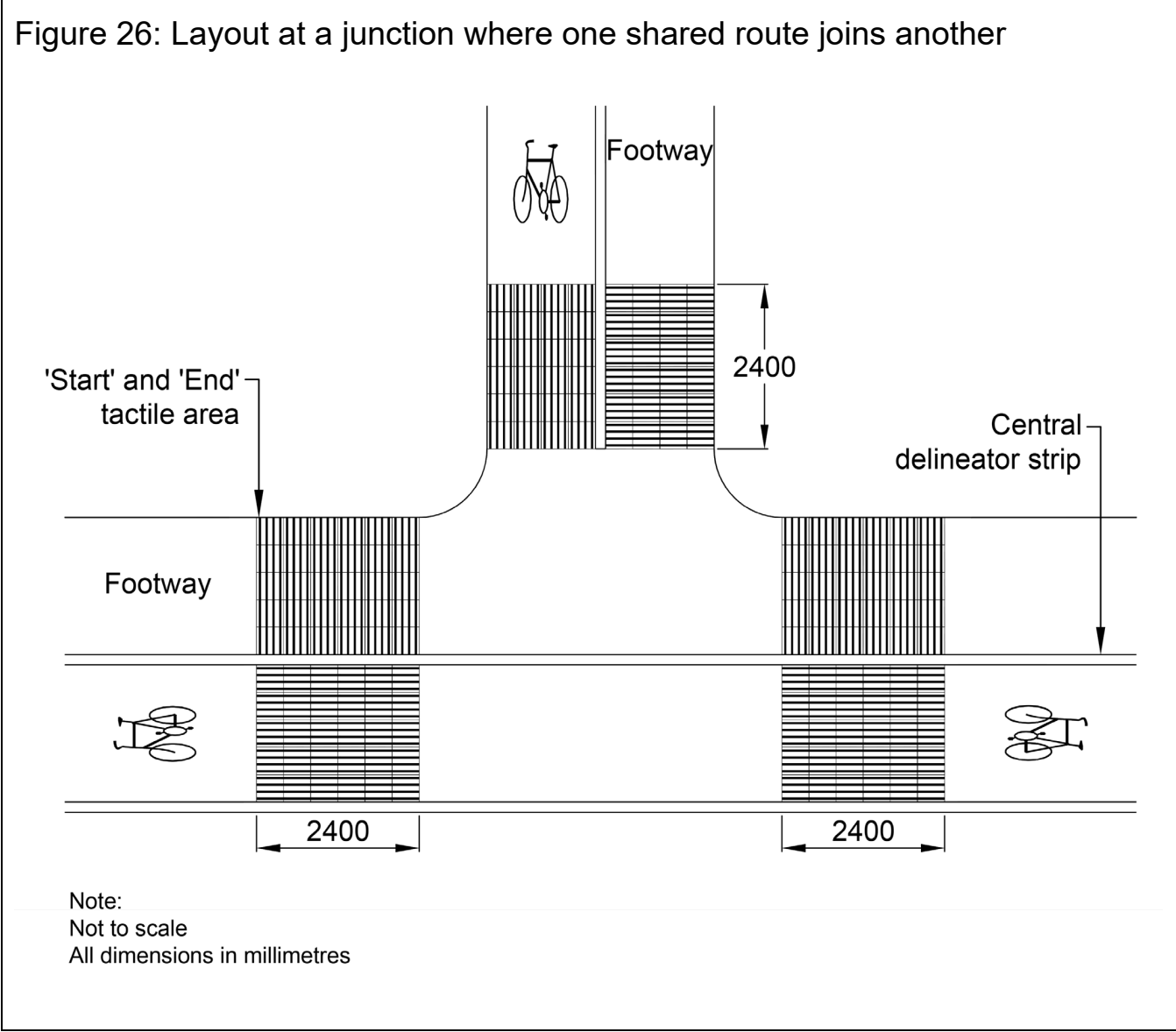
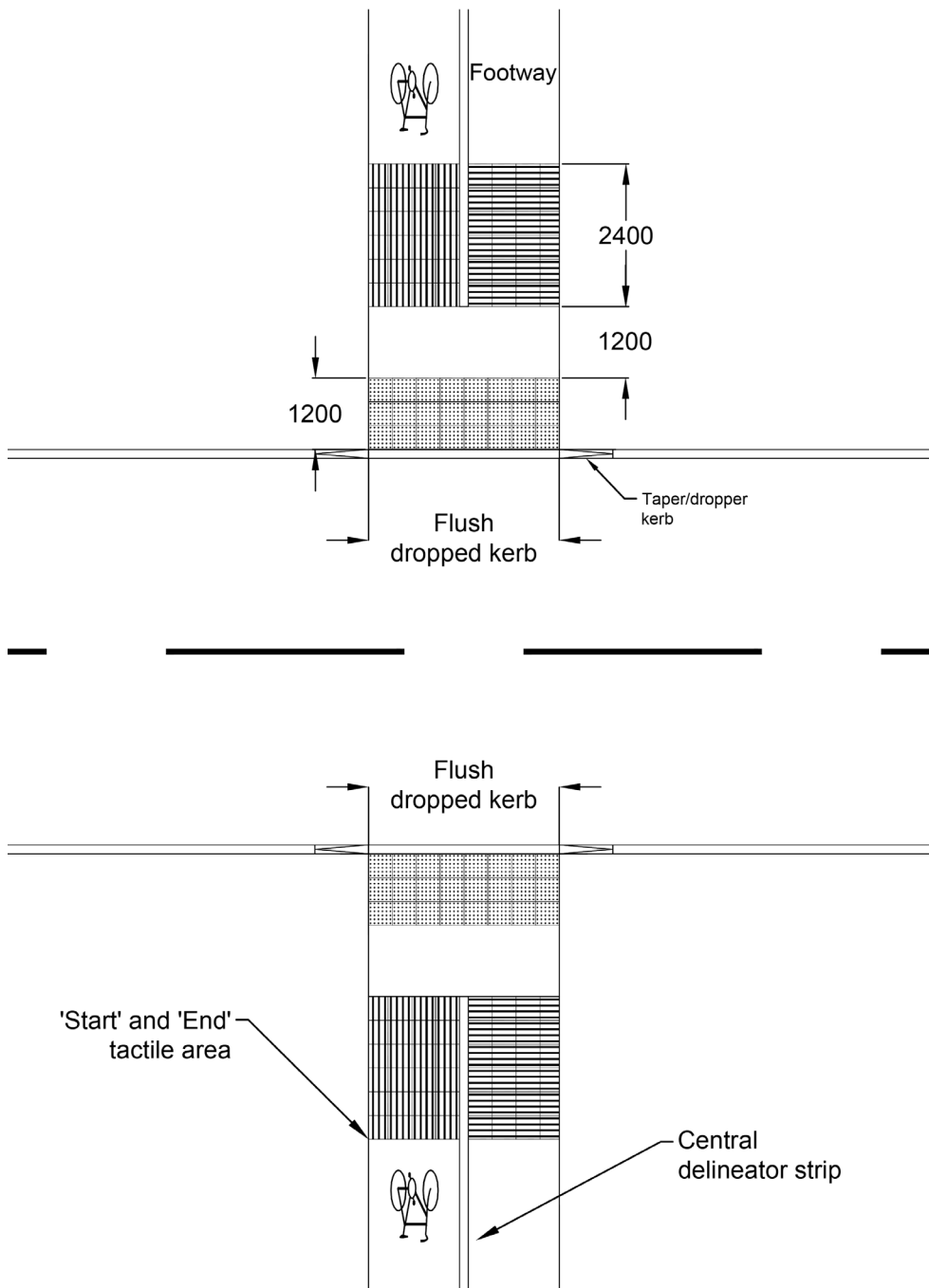


Figure 27: Layout a junction between a shared route and a carriageway - uncontrolled crossing



Note:
Not to scale
All dimensions in millimetres

5.5.5 Controlled crossing of a shared route over a carriageway

A similar approach to Section 5.5.4 is required where a controlled crossing is provided over the carriageway. However, in this situation, the blister surface at the flush dropped kerb needs to be laid in an 'L' shape, to guide vision impaired people to the push button box. This arrangement should be in accordance with the general guidance set out in Section 2.4.1, although the depth of the blister surface at the crossing point need only be **800mm** (Figure 28).

To avoid conflict between cyclists and pedestrians, the stem of the 'L' shape should lead from the end of the pedestrian side of the shared route. Where this is on the left side of the crossing, as opposed to the usual right side, push button boxes should be provided on both sides. At Toucan crossings, two pedestrian push button boxes will always be required.

A gap of at least **400mm** should be provided between the ladder/tramline surface and the back end of the blister surface stem.

5.5.6 Controlled crossings along a shared route

Where a controlled crossing is situated along a shared route, the blister surface should be installed in accordance with the general guidance set out in Section 2.4.1. The stem of the blister surface should extend back from the flush dropped kerb to the rear of the footway, whichever side of the shared route this is on, and the blister surface should be laid to a depth of **800mm** across the full width of the crossing point. Figure 29A shows the layout where the footway is furthest from the carriageway, Figure 29B shows the layout when the footway is nearest to the carriageway.

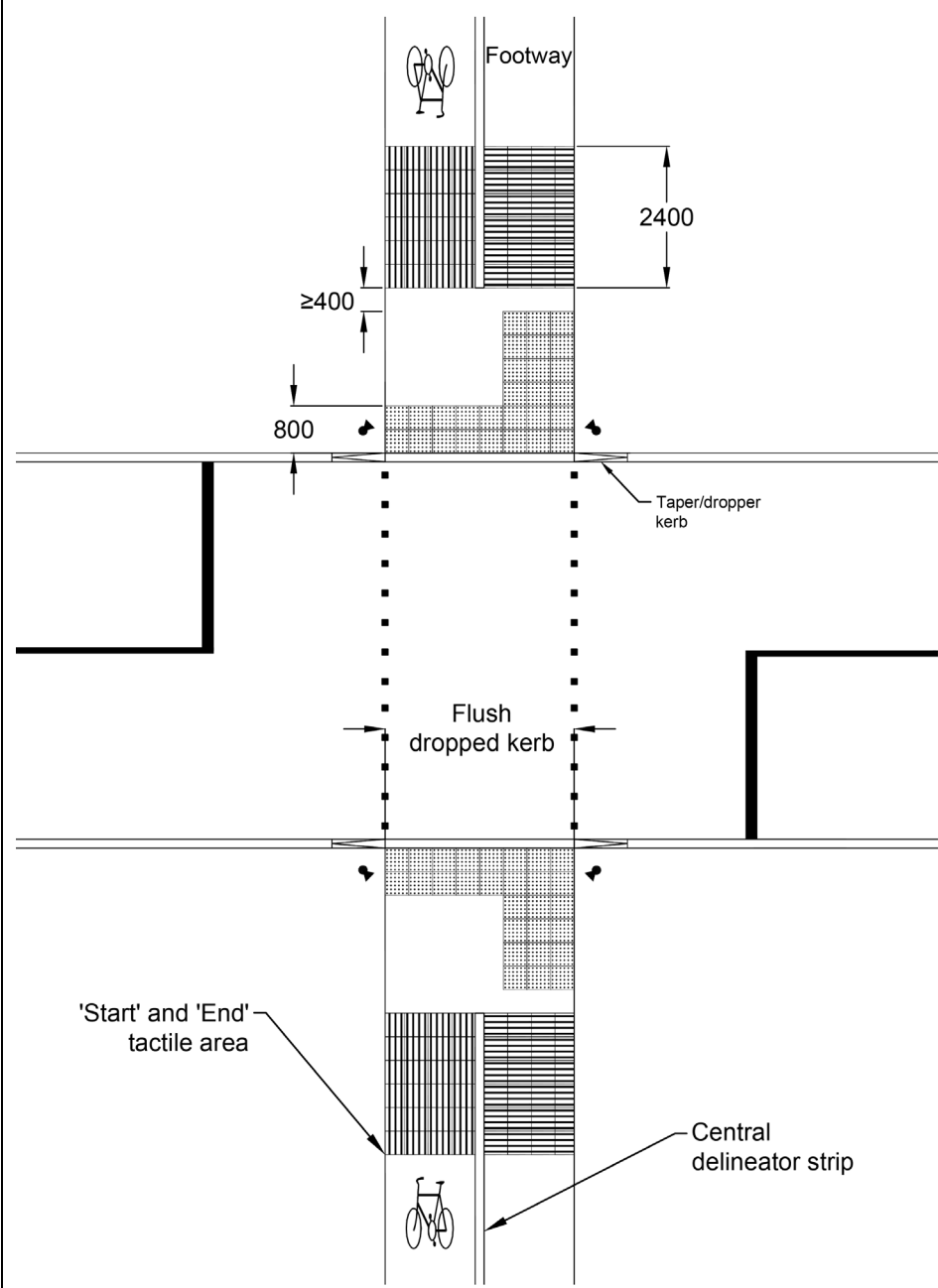
The ladder/tramline surface should also be installed to a depth of **2400mm** at the break of the shared route on either side of the crossing. These arrangements should be set back **1200mm** from the crossing point.

The delineator strip should not continue through the crossing area if the footway is furthest from the carriageway to be crossed, or if the crossing is a Toucan or a Parallel crossing.

Although the waiting areas for pedestrians and cyclists are separate at a Parallel crossing, this area should be treated as shared-use, similar to the layouts shown in Figures 28 and 29. This will give reassurance to visually impaired people

about the environment they are entering, particularly if they are entering from the cycle route side of the crossing.

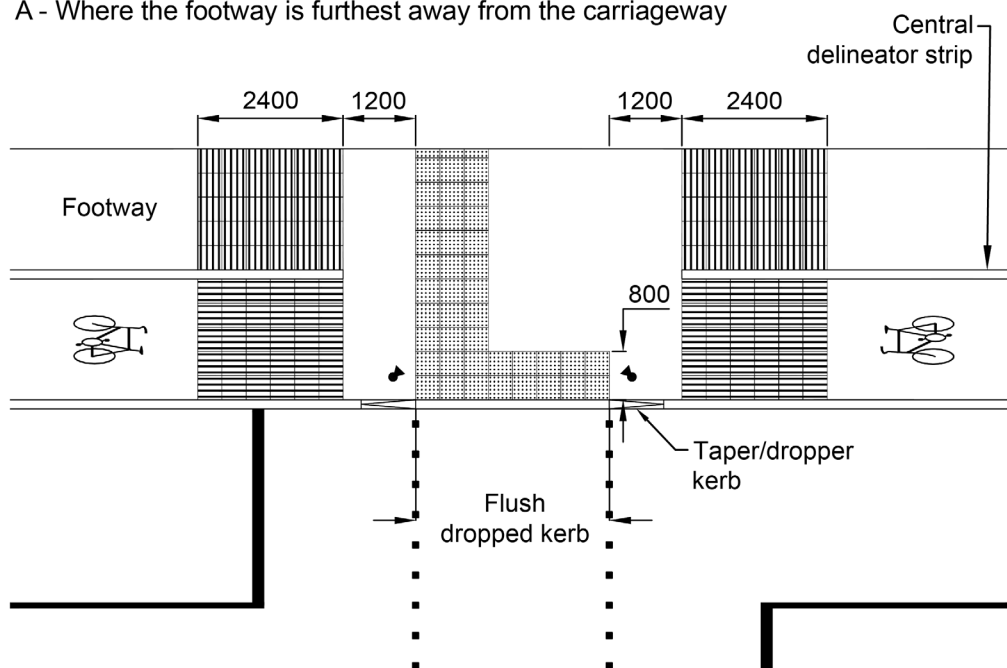
Figure 28: Layout a junction between a shared route and a carriageway - controlled crossings



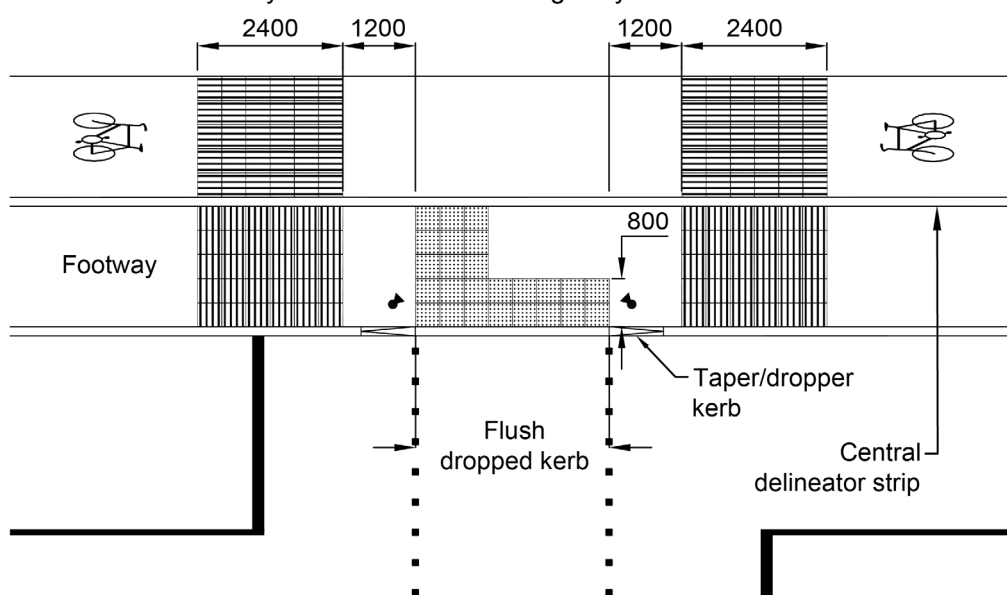
Note:
Not to scale
All dimensions in millimetres

Figure 29: Layout at controlled crossings along a shared route

A - Where the footway is furthest away from the carriageway



B - Where the footway is nearest to the carriageway



Note:

Not to scale

All dimensions in millimetres

6 Guidance path surface

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

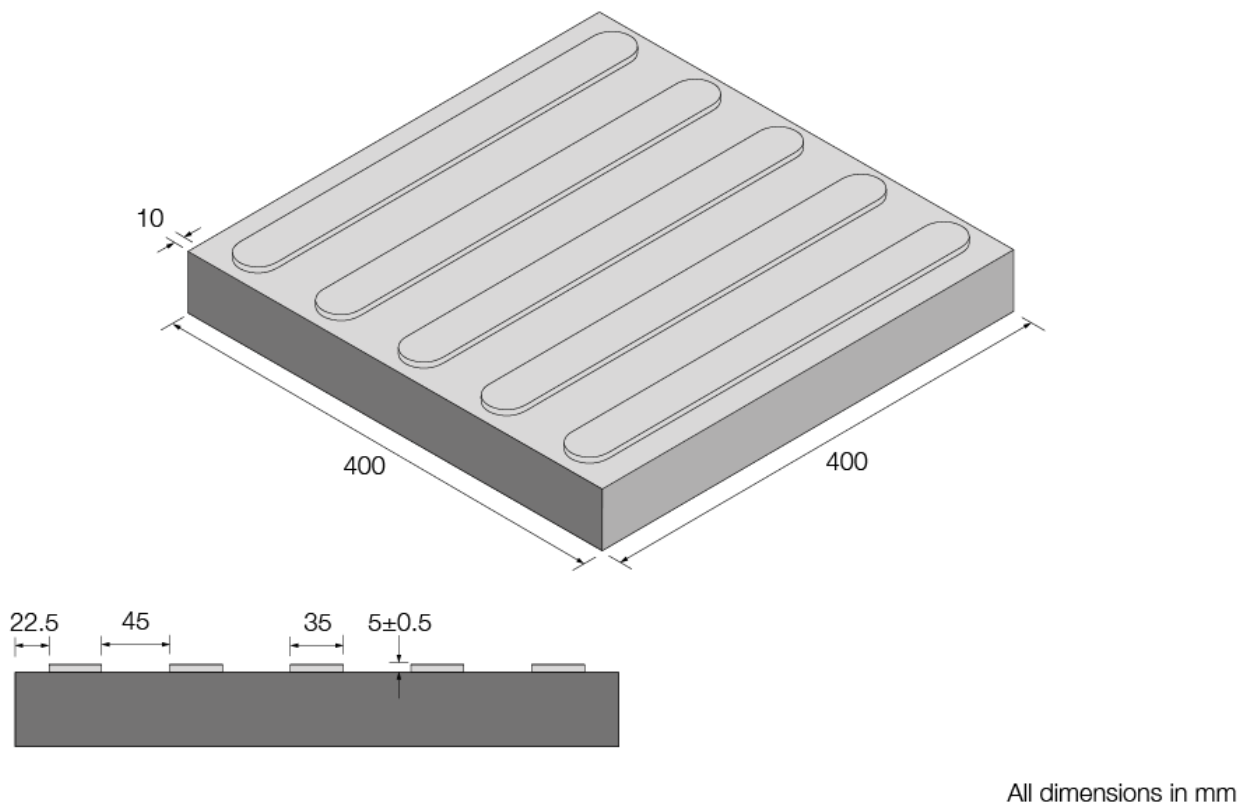
6.1 Purpose

The purpose of the guidance path surface is to guide vision impaired people along a route when the traditional cues, such as a property line or kerb edge, are not available. It can also be used to guide people around obstacles, for example street furniture in a pedestrianised area. The surface was designed so that people can be guided along the route, either by walking on the tactile surface, or by maintaining contact with a long cane.

6.2 Definition

The profile of the guidance path surface comprises a series of raised, flat-topped bars running in the direction of pedestrian travel. The bars are 5.5mm (± 0.5 mm) high, 35mm wide and are spaced 45mm apart. There are, therefore, five bars on a standard 400mm by 400mm module (Figure 30).

Figure 30: Profile and plan of the guidance path surface



The guidance path surface can be made of any material suitable for and with slip resistance appropriate for footway use. It can be any colour, other than red, that achieves good tonal contrast with the surrounding area.

6.3 Application

The guidance path surface is recommended for use in the following circumstances:

- where the traditional cues, such as a property line or kerb edge, are absent (for example, in a pedestrian precinct)

- where vision impaired people need to be guided around obstacles (for example, in a pedestrian precinct), although care should be taken in siting street furniture to ensure that such problems are not created
- where vision impaired people have a specific need to find a particular location
- in transport terminals to guide vision impaired people between facilities

Before installing a guidance path, it is recommended that local authorities or other responsible agencies consult local groups representing vision impaired people and other disabled people concerning the route(s) in question and with regard to the route they would like the path to follow, so that the surface is used to best effect.

6.4 General layout

The exact layout of the guidance path will be site specific, but general advice is provided below whereby:

- the surface should be installed with the bars running in the direction of travel for people walking
- the guidance path should be **800mm** wide. If the path is narrower, people may find it difficult to maintain contact with it
- the guidance path should be kept as straight as possible, since people are more likely to lose contact with the surface at bends or junctions
- the path should take people along a safe and unobstructed route, and there should be an unobstructed space of at least **800mm** on either side of the path. This is to avoid people walking into obstacles, should they stray off the path, to allow space for a guide dog, and to provide a clear pathway for anyone who finds the surface uncomfortable
- in busy shopping centres, a minimum width of **2000mm** unobstructed space should be provided between the path and the property line. This is to reduce the likelihood of the guidance path being obstructed by other pedestrians, shop displays, etc.
- wherever possible, the route should avoid inspection covers, as they would interrupt the path. Where this is not possible, the guidance path surface should be inlaid within the inspection cover (see Section 2.5.6)

6.5 Additional layouts

6.5.1 Right angle turns

Where a right angle turn in the guidance path is necessary, the surface should be installed so that the bars run transversely across the direction of pedestrian travel for **1200mm** (or as long as possible up to a maximum of **1200mm**) before the turn, in both directions. This will provide pedestrians walking towards the turn with advance warning that they are approaching a change in direction. (Figure 31).

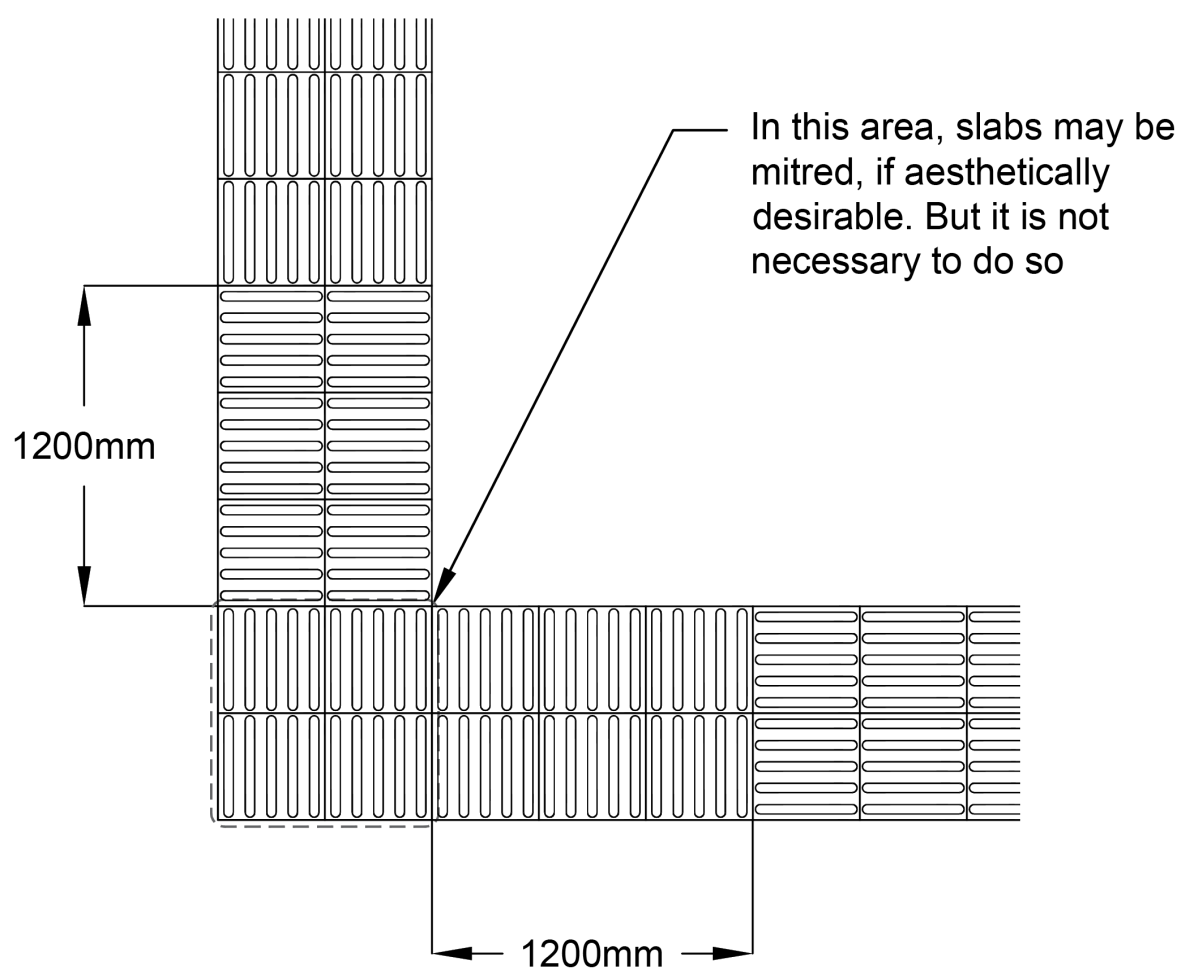
6.5.2 Bends

Sharp bends should be avoided as they make it difficult to maintain contact with the path. Where a bend, other than a right angle turn, is necessary, the surface should be installed with the bars running in the direction of travel, and should be turned slightly to accommodate the bend.

6.5.3 Junctions

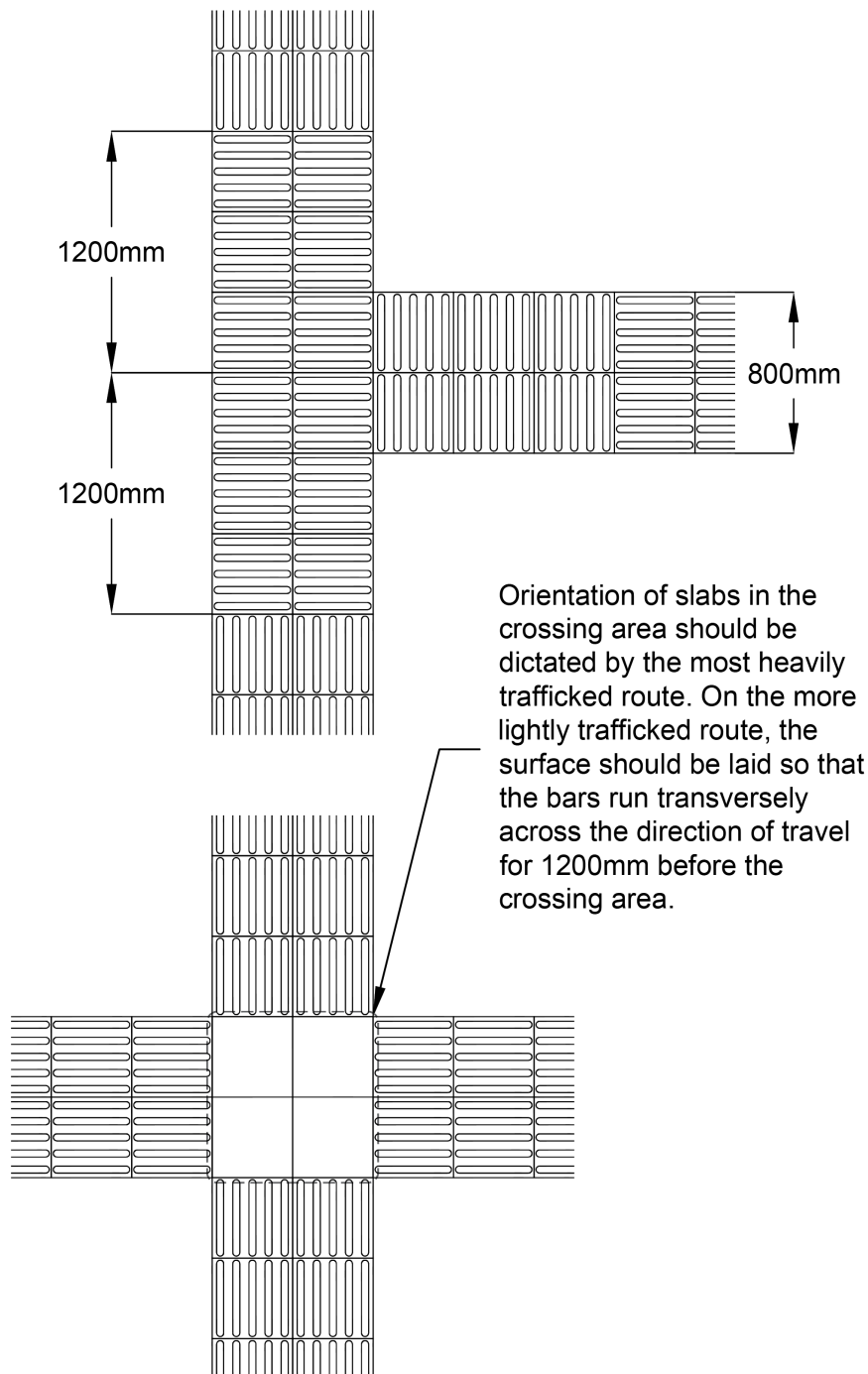
Where a junction is necessary to give the pedestrian a choice of routes, the guidance path surface should be installed with the bars running transversely for **1200mm** (or as long as possible up to a maximum of **1200mm**) before the intersection. At crossroads, the surface in the central area of the junction should be orientated in the direction of the most heavily trafficked route. (Figure 32).

Figure 31: Layout of guidance path surface at a right-angle turn



Note:
Not to scale

Figure 32: Layout of guidance path surface at a T-junction and at a crossroads



Note:
Not to scale

7 Platform edge (off street) warning surface

The guidance in this section should be applied according to the key principles set out in Section 1.2. The provision of tactile paving should be fully integrated within the wider process of inclusive design to create streets and spaces that are accessible for all. It is essential that all users find the layout of the public realm, including the provision of tactile paving, to be simple, logical and consistent.

7.1 Purpose

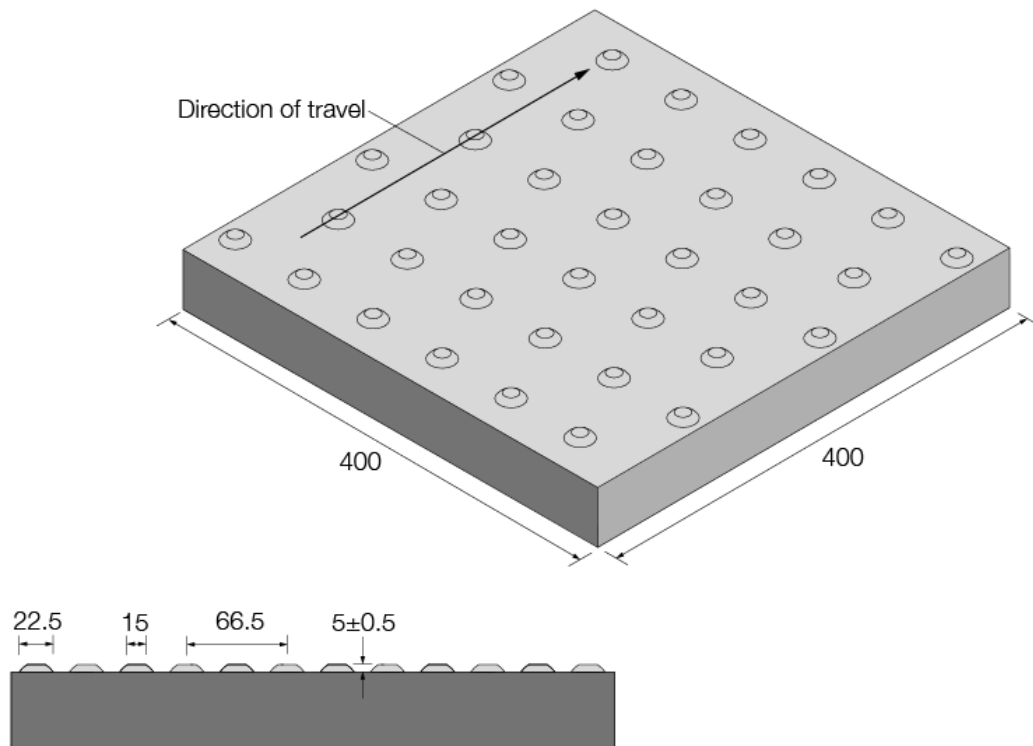
The purpose of the platform edge (off street) warning surface is to warn vision impaired people of the edge of all off-street rail platforms, including heavy rail platforms, underground platforms and off-street tram or other LRT platforms.

7.2 Definition

The profile of the platform edge (off-street) warning surface consists of offset rows of flat-topped domes 5mm (± 0.5 mm) high, spaced 66.5mm apart from the centre of one dome to the centre of the next (Figure 33).

The platform edge (off-street) warning surface is different to the blister surface used at pedestrian crossing points (see Section 2). It can be made of any material suitable for and with slip resistance appropriate for its location. It can be any colour other than red but should provide good tonal contrast with the materials used for the platform and platform edge.

Figure 33: Profile and plan of the platform edge (off street) warning surface



All dimensions in mm

7.3 Application

The platform edge (off-street) warning surface is recommended for use at all off-street railway platforms including:

- heavy rail platforms
- underground platforms

7.4 Layout

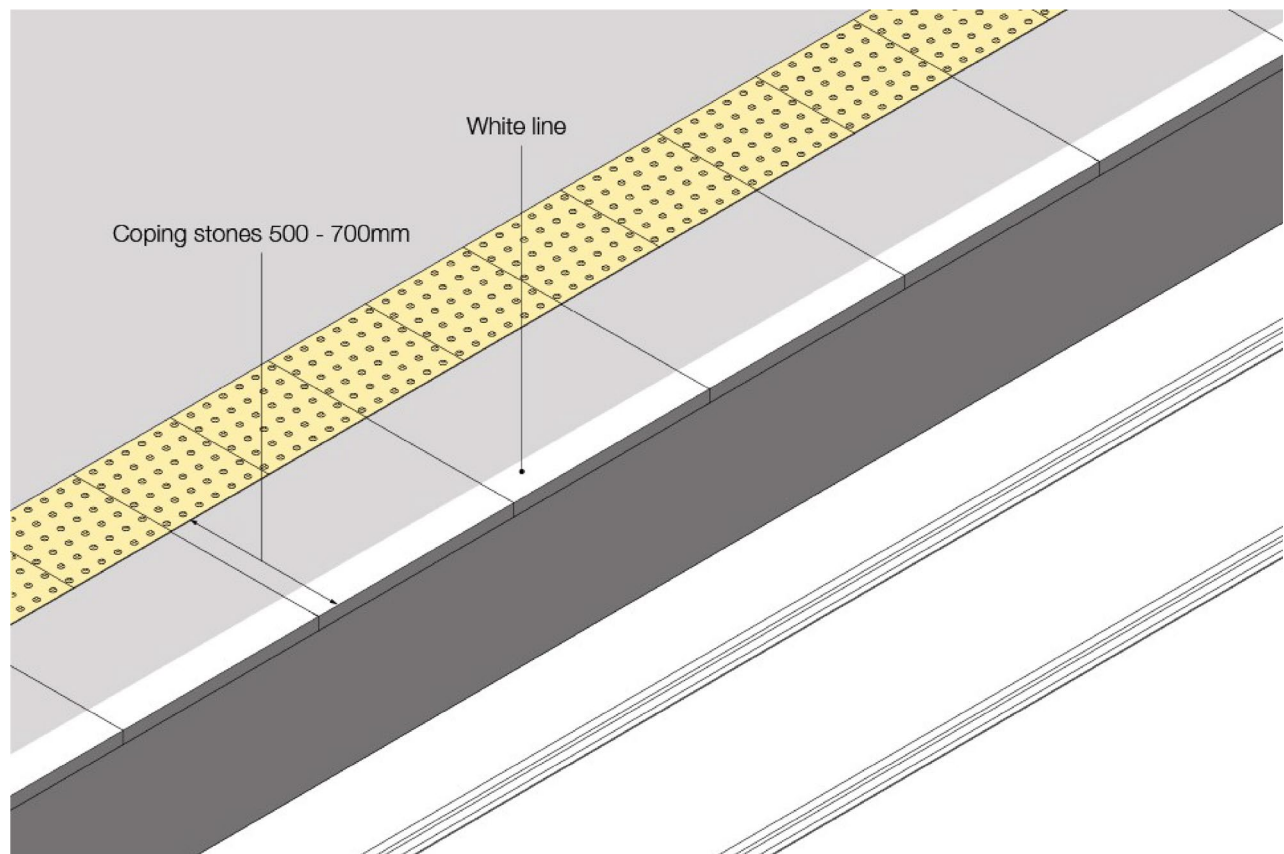
The platform edge (off-street) warning surface should be laid immediately behind the platform edge coping stone (Figure 34). In most cases this will be between **600mm** and **700mm** back from the platform edge, but in some circumstances may be as little as **500mm**. It should never be less than this because people may not have enough time to stop walking once they have detected the tactile surface.

The surface should be installed to a depth of **400mm** along the entire length of the platform, as this depth has been found to be sufficient in station environments. The layout assumes that people take a step back when the surface is detected, to ensure they stand well away from the platform edge.

The surface should never be laid at right angles to the platform edge to mark the end of the platform. Where the platform ends or slopes down to the track, the surface should stop at this point. The end of the platform shall either be fitted with a barrier that prevents public access or shall have a visual marking and tactile walking surface indicators with an attention pattern indicating a hazard.

Further information is provided in Section S1 (Platform Design) of the Design Standards for Accessible Railway Stations (Department for Transport, Transport Scotland).

Figure 34: Layout of the platform edge (off street) warning surface



Note:
Not to scale

8 Glossary

The following descriptions relate to how these terms are used in the context of these guidelines:

Vision impaired people	People who are blind, deafblind, or partially sighted or have a severe vision loss
Tactile paving	Profiled paving surface providing guidance or warning to vision impaired people
Controlled crossings	Controlled crossings are those where motorised vehicles and cycles must stop at a red light or give way, so pedestrians have priority in law. For the purposes of this guidance, controlled crossings consist of give-way crossings and signal-controlled crossings
Uncontrolled crossings	Crossing locations where pedestrians do not have priority in law over vehicular traffic.
Side street	An uncontrolled crossing across the mouth of a side street at its intersection with another road
Inset crossing	Refers to a pedestrian crossing point, controlled or uncontrolled, which is located around a corner, at least one metre beyond the radius
In-line crossing	Refers to a pedestrian crossing point, controlled or uncontrolled, which is located in the direct line of travel of pedestrians moving along a footway

Vehicle crossover	Vehicle accesses across a footway and providing access to residential and other facilities, with a ramp replacing the kerb.
TSRGD	Traffic Signs Regulations and General Directions

9 Bibliography

Chartered Institution of Highways and Transportation (September 2010) Manual for Streets 2

Department for Transport (March 2007) Manual for Streets.

Department for Transport / Transport Scotland (March 2015) Design Standards for Accessible Railway Stations: A Joint Code of Practice.

Department for Transport (May 2016) DfT Circular 01/16: The Traffic Signs Regulations and General Directions 2016.

Department for Transport (May 2020) Specification for the Reinstatement of Openings in Highways (Fourth edition).

Department for Transport (July 2020) Local Transport Note 1/20: Cycle Infrastructure Design.

Department for Transport - Inclusive Mobility.

[Equality Act \(2010\).](#)

International Standards Organisation (2019) ISO 23599. Assistive products for blind and vision-impaired persons - Tactile walking surface indicators.

[Public Sector Equality Duty \(2011\).](#)