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Understanding Tactile Paving at Pedestrian Crossings

Support Material
for Tactile Paving Providers

By Beata Duncan-Jones

UNDERSTANDING TACTILE PAVING at Pedestrian Crossings
Support Material for Tactile Paving Providers

Beata Duncan-Jones

Third edition, for the internet 2015
London Borough of Hammersmith & Fulham

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LBH&F, Social Services Department
Beata Duncan-Jones, Mobility Officer for Visually Impaired People, 1995

Please note,
a summary
of the tactile paving principles
is on pages 49 to 55.

The last page, page 103,
contains the whole system diagram,
which can be copied and taken on site for quick reference.

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FOREWORDS TO THIRD EDITION

Foreword by Councillor Sue Fennimore

I am delighted to welcome this 2015 internet edition of LBHF's "Understanding Tactile Paving - Support Material for Tactile Paving Providers".

This guide is written from the perspective of the customer, i.e. blind and partially sighted people who use pedestrian crossings.

Previously, printed editions have been used by many professionals across the country including local authority planning and highway officers; highway engineers and contractors responsible for tactile paving at pedestrian crossings.

Because of the demand from professionals and the public, Hammersmith & Fulham decided to publish this updated, internet version as an expression of our commitment to social inclusion. We are fully committed to working together across the Council to implement good practice and continue to make tactile paving a central part of highways specifications.

Since we started this programme of installing tactile paving across the borough, neighbouring boroughs have joined us in our determination to create a safer environment that helps to maximise the mobility and independence of people with visual impairment.

With accurate information about pedestrian crossings and tactile paving, blind and partially sighted people may gain the confidence to walk independently and safely wherever they are.

Finally, I would like to thank those who have contributed to this guide with special thanks to Beata Duncan-Jones.

Councillor Sue Fennimore
Cabinet Member for Social Inclusion

Foreword by Jane Wilmot OBE

I am delighted to welcome this 2015 internet edition of “Understanding Tactile Paving - Support Material for Tactile Paving Providers”. Beata Duncan-Jones has a lifetime experience of training blind and partially sighted people to use the pedestrian environment independently.

Beata has very helpfully written it from the perspective of blind and partially sighted people who use pedestrian crossings. Several important points arise.
Tactile paving at pedestrian crossings:

- provides essential information (like a sign for a roundabout for sighted people) so blind and partially sighted people can find and navigate different pedestrian crossings safely.
- Sighted people rely on consistent, accurate maps and signage for information when travelling from place to place. Blind and partially sighted people also rely on consistent and accurate tactile paving for information at pedestrian crossings when travelling from place to place.
- Consistent and accurate tactile paving at pedestrian crossings gives blind and partially sighted people the confidence that it is safe to cross.
- Incorrect tactile paving at crossings can be dangerous if blind and partially sighted people are misled by the information provided before using the pedestrian crossing.

These issues are well covered in this guide on tactile paving at pedestrian crossings. I warmly recommend this guide by Beata Duncan-Jones to every professional including local authority planning and highway officers; highway engineers and contractors responsible for tactile paving at pedestrian crossings. There are helpful tips and drawings to illustrate different situations that make professionals aware of little things if corrected will make a big difference to blind and partially sighted people.

It is a good read and helps to raise important issues which are not seen as a problem for sighted people but are major issues for blind and partially sighted people. When tactile paving is installed correctly to provide consistent and accurate information about the pedestrian crossing it gives blind and partially sighted people the confidence that they can walk independently and safely wherever they are.

This Internet Edition provides essential information to a much wider audience about providing consistent tactile paving at pedestrian crossings. It comes at a good time because the Department of Transport is reviewing its 1998 guidance on tactile paving with new guidance expected in 2016.

Jane Wilmot OBE
Chair, Hammersmith and Fulham Disability Forum

Foreword by Wayne Ryan, BSc, MSc, CQSW

Beata Duncan-Jones has worked in Hammersmith & Fulham as a mobility/rehabilitation officer for visually impaired people for 37 years. In 1978 Beata completed a course in mobility studies in visual impairment, at that time, at the National Centre in Birmingham.

Where did this interest and lifelong study, culminating in the production of this internet version of Understanding Tactile Paving at Pedestrian Crossings, come from? There are two points from which this journey can be seen to originate from. The first is a 'chance' incident, which led to the thought or idea being developed, the second was the 'experience of observation'.

In 1975 Beata's brother-in –law, who was visually impaired himself, wanted to attend a conference in Poland, where he lived. However, his guide was unable to attend so he asked if Beata could assist him. The outcome of this led to Beata translating a booklet on 'The physical environment and the visually impaired' (Per Gunner 1974), from English into Polish. As Beata recalls 'this experience sparked an interest for life'. The second influence was hard earned, from years of going out, into this terrain of the 'street environment' with visually impaired people, experiencing and thinking about how 'visually impaired people could use the facility of the environment'. Beata considered what the environments' limitations were, what the problems were, this fed into her continued observations, where she was able to arrive at a view where she could be more certain of the problems and issues for visually impaired users of this terrain. This is not unlike how a social scientist might, make use of continued observation, gathering data or information.

This experience of training people within the borough of Hammersmith and Fulham over the 37 years that she has worked here, has led to a 'grounded knowledge' of what we now call the 'streetscape'. Working in this environment, on the streets of Hammersmith and Fulham, noting the difficulties of hundreds of her clients, led to questions. These were questions about how visually impaired people could use the 'streetscape', of, 'what is good?' and 'what should be changed?'

Beata concerned herself with those who had a responsibility for providing these street 'features' and others who could improve this environment. Beata, after years of experience, looks back and views herself as an 'educator' in this field, and as a professional who wants to raise awareness. For Beata this 'intranet' edition can be used as a reference to learn about the street environment and the needs of its visually impaired users. It is hoped that those responsible for this environment, along with newly qualified students in the visual impairment field, the professionals and groups working with visually impaired clients will all benefit from this knowledge. Of course the learning comes from the experience of those whose independent mobility has, at different times been compromised. These are the people who, themselves, have a visual impairment, and wish to mobilise safely outside their own homes.

Wayne Ryan, Manager
Sensory Impairment Team

Introduction from the author

This is a revised, internet version of “Understanding Tactile Paving - Support Material for Tactile Paving Providers” originally published in 1995 and 1998.

“Understanding Tactile Paving” was initially written following an analysis of the problems involved in tactile paving installations. Provision of tactile paving has greatly improved since the 1990s, but just as then, also now, the majority of problems come from a lack of insight into the issues of blind mobility on the part of tactile paving providers.

People who provide such facilities need to understand how they are meant to be used by those for whom they were invented, otherwise no number of guidelines will improve the situation. So I explain things thoroughly and throw punches at times but pay a handsome complement to the British highway engineers at the end.

In **PART 1,** I explain a few concepts that need to be appreciated before one embarks on a programme of tactile paving installations.

In **PART 2,** I go over the major points of the tactile paving system.

The second section of Part 2 (pages 49 - 55) has a concise list of all the elements of the tactile paving system. It can serve as a checklist or can be taken as a separate entity by people who will not have time to read the whole work and study the issues. It is written in the form of short, positive statements about each element; what each element consists of and then what it does.

The one-page diagrams (pages 55 and 103) can be photocopied and taken on site as a quick reference. They literally contain the whole system.

PART 3 is about rectifying the situation of tactile paving installations. It highlights important points to be aware of, when seeking or giving opinions, or making decisions about tactile paving. Like any training program, this part ends with an outline of an approach to tactile paving installations and can be used to create an action plan.

Tactile paving cannot be taken in isolation so **PART 4** includes other environmental issues that have a serious impact on the safety of visually impaired pedestrians.

At the end, just as all the way through my work, I emphasise the importance of co-operation with the mobility and rehabilitation officers and in the final paragraph I take a European look at the environment and the needs of people with visual impairment.

I should stress that the examples of environmental designs that I use are taken from across the U.K. and are not representative of any specific area.

The full value of “Understanding Tactile Paving at Pedestrian Crossings” is realised if it is read as a whole. It is written so that the key points of a general nature (e.g. guiding a blind person, usefulness of residual vision, mobility training) are integrated at different parts of the text. For those who will only glance through, my personal recommendation is to read the paragraphs: “Colour and texture contrast”, “Colour

Schemes” and to look at the cartoons!

Finally my thanks to the army of people who helped me with spelling and grammar and to my now grown up daughter Karen, on whom, from the age of five, I tested the clarity of all my cartoons!

Beata Duncan-Jones
Mobility & Rehab Officer for Visually Impaired People

TERMINOLOGY

People with visual impairment

It is estimated that there are two million people in the United Kingdom who are visually impaired. A proportion of these people are registered with their local authority as blind or partially sighted. Currently the phrases used are: severely visually impaired (blind) and visually impaired (partially sighted). The registration though formal, is voluntary. Hence not all people with visual impairment are registered. In other words there are many more visually impaired people than the statistics indicate.

A great number of people who are registered blind (severely visually impaired) have various degrees of residual vision and there are those who are registered partially sighted (visually impaired) but function as blind.

In recent years there has been a swing from using the "blind and partially sighted" terminology to using the phrase: "visually impaired people", with the emphasis on the word "people" as opposed to "the" visually impaired.

Writing about issues of tactile perception I felt I needed a vocabulary which carries a strong message about lack of sight and the need for tactile information. So for the purpose of this project I used the word blind throughout to describe anyone, whatever their degree of visual loss and usefulness of vision, who needs tactile information to find a road crossing. In parts, where I write specifically about residual vision and appreciation of colour in identifying a crossing, I felt the phrase "visual impairment" was more appropriate.

Mobility officers

I use the term **mobility officer** to include all specialist workers who **teach** outdoor mobility skills to visually impaired people. This includes rehabilitation workers, guide dog mobility instructors and technical and mobility officers. Because of the changes in training for specialist workers which have been taking place over the years, the term which is currently used in the majority of local authorities is: rehabilitation worker, though not all may necessarily be engaged in teaching mobility.

Tactile paving

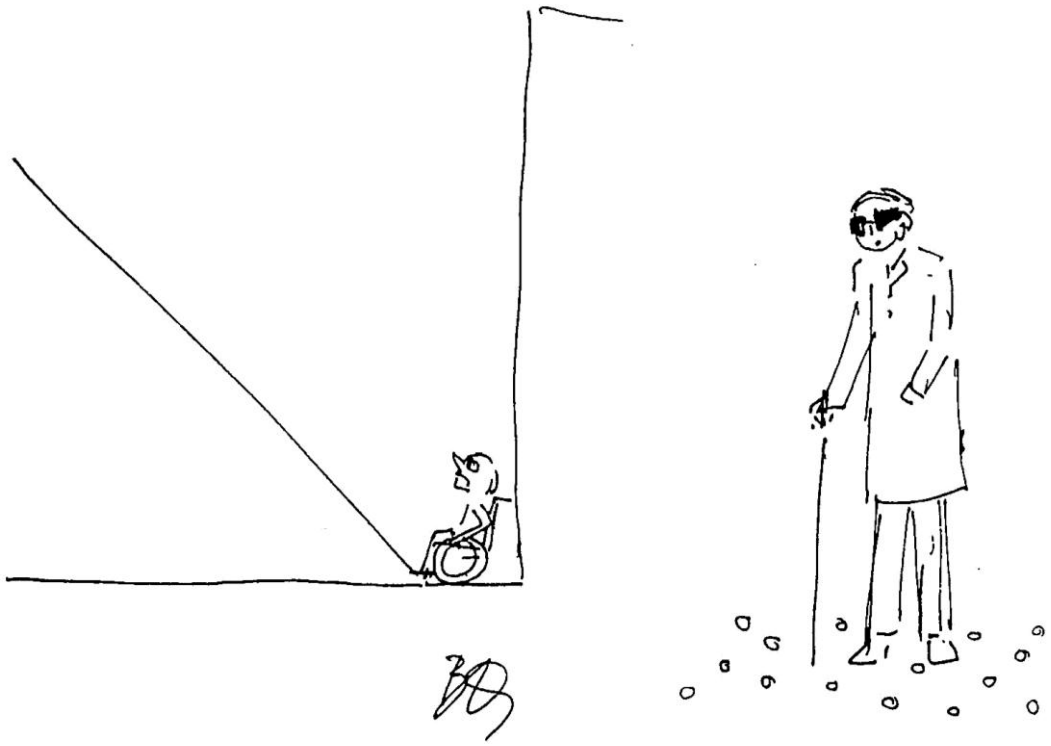
There are seven different surfaces recommended by the Department of the Environment, Transport and the Regions (DETR), now Department for Transport, to use for the benefit of people with visual impairment. The surface I refer to throughout as **tactile paving** is called by the DETR, "Blister Surface for Pedestrian Crossing Points".

PART 1

TACTILE PAVING - major issues

Understanding tactile paving

Understanding the issues of blind mobility is absolutely essential to the successful installation of tactile paving.



A quick glance at the above cartoon will produce an instant and accurate conclusion that the ramp is too steep. The possible consequences of such a ramp are also understood.

The case of assessing the usefulness of tactile paving at first glance by a sighted person is vastly different. Without the right know-how a sighted person will not be able to tell whether the facility is helping a blind person or not.

In fact what can happen is that when tactile paving is installed incorrectly, even to the point of endangering blind persons' lives, people still feel satisfied at providing visually impaired people with the facility. Other such issues to do with well-meant provisions for the community are expressed by the satirical cartoon on page 57.

A blind person standing on tactile paving has first to interpret it before using it. This interpretation happens in the blind person's head, so to speak, and is **not visible** to people watching. “Inside knowledge” is required to understand the facility and how a blind person uses it.

As it happens, the people responsible for installing tactile paving have no expertise in visual impairment or in particular, blind mobility, and may be unaware how it is used.

However, there are people who do specialise in this subject. These are the mobility/rehabilitation officers and guide dog mobility instructors. Their job is to teach visually impaired people to use what the highway engineers provide. Therefore these two groups of people, i.e. mobility specialists and highway engineers, need to work together when tactile paving is provided.

Mobility/rehabilitation officers are usually employed by Social Services Departments, by specialist voluntary organisations for visually impaired people or by educational establishments. Guide dog mobility instructors are based at the local branches of Guide Dogs. They teach visually impaired people mobility skills and the use of tactile paving, though, of course, there are differences in the techniques they teach. Mobility/rehabilitation officers teach to use a white cane. Guide dog mobility instructors teach to use a guide dog. Some may also teach the long cane system.

Links between the highway engineers and the mobility specialists are essential for tactile paving to be successful. I am not talking here about consultation as such, although I do raise this later, but about a group of professional people extending their knowledge so that they can do the job well. After all, both parties are aiming for the same goal: to enable visually impaired people to travel independently and safely.

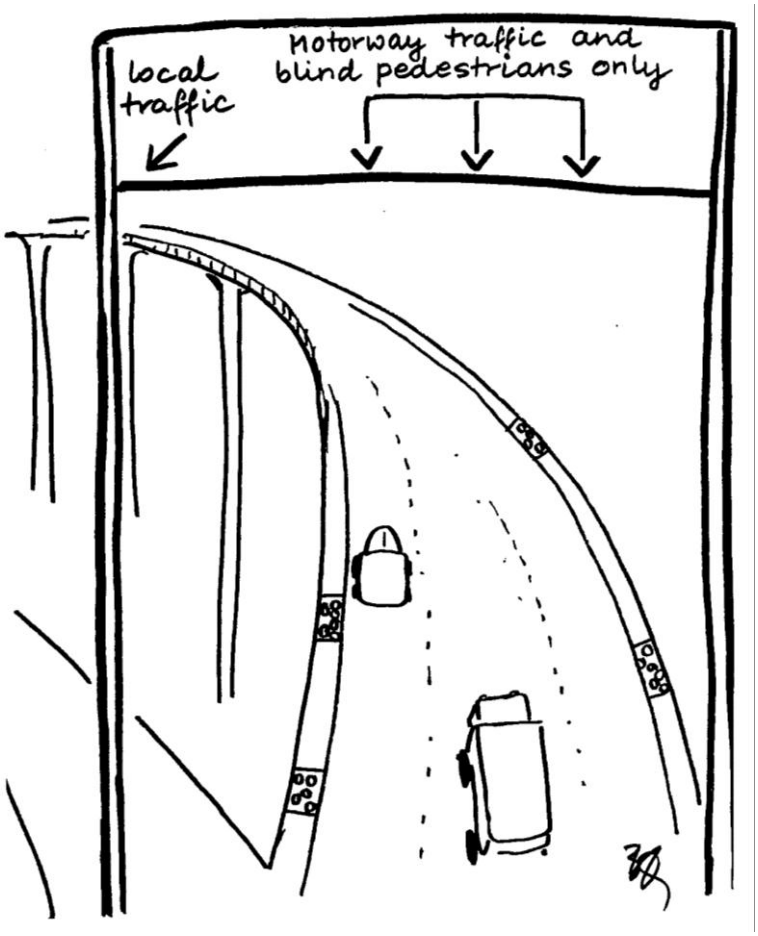
Indeed the exchange of ideas will prove useful both ways. Undoubtedly engineers have genuine technical problems to overcome and legal parameters to consider. If these are understood by mobility officers then new and more appropriate proposals may in turn be communicated to the policy makers on access and environment.

Tactile paving - a mobility aid

Tactile paving is first and foremost a mobility aid for visually impaired people and needs to be treated as such – always.

When tactile paving is not treated as a mobility aid, but as a mere paving or traffic issue, then the appropriate consultations do not take place and extraordinary mistakes occur.

For example: an installation of tactile paving I have seen on the emergency sidewalk of a flyover, must, I assume, have arisen out of an approach that tactile paving is just an alternative surface at engineers' disposal – not a mobility aid for blind people.



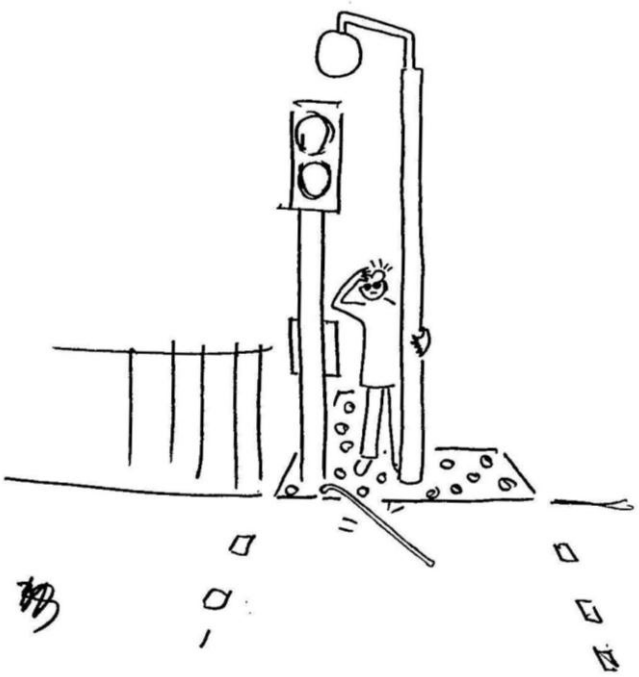
Similarly, treating installation of tactile paving as part of a plan to replace bad pavement, rather than providing a mobility aid for blind pedestrians, often leads to the surface being provided on one side of the road only. This in turn provides a blind person with haphazard information about crossings.

There needs to be an overall plan for installing tactile paving so the installations are carried out on both sides of the road and in the case of a major junction, on all connected sides.

Such a “pavement matter” approach does not foster a much needed broader look at tactile paving, which considers both the individual features already present at the site and the mobility techniques blind people have to employ at different crossings. Looking at the features of the location in the context of the techniques blind people use to cross the roads, before installing tactile paving would help to avoid problems such as the one illustrated below.

At a pelican crossing with an L shape configuration a blind person, having found the pole, may want to “shift” him/herself to the left to reach the centre of the crossing while holding the cane in front of the body. Therefore at this moment a blind pedestrian is not protected on the side by the cane, but trusts that the crossing is clear so that it is OK to do this particular manoeuvre.

Street furniture placed within the area of crossing would also be a problem for a guide dog user as the guide dog is usually kept on the left side of a blind person. Tactile



paving must never lead a blind person into an obstacle. If it does, then blind people will start perceiving it as a hazard in itself, rather than an aid to safe crossing. A blind person must be absolutely sure that while on the tactile paving surface he/she can manoeuvre him/herself according to the learned techniques in complete safety.

There may be other problems, which need to be considered in advance of installing tactile paving. For example, if a crossing is placed close to descending steps, 'the blister surface', using the Department for Transport's phrase, indicating the crossing, may come too close to the steps (stairs are always a point of concern for visually impaired people). This inadvertently creates a hazardous situation; a person focusing on the crossing can easily fall down the unexpected steps. In such cases, where there is not enough space between a road crossing and stairs (stairs should usually be proceeded by a different type of tactile paving, so called corduroy surface), something extra may be needed to prevent an accident; e.g. a rail, relocation of the crossing or a different solution.

Visually impaired people use stairs, but the potential risk is in not noticing the drop or in misjudging the distances, particularly when stressed, tired or disturbed. For these reasons many accidents actually happen on familiar ground. I personally knew two blind men who had fatal falls on stairs. Both accidents happened at home where they had lived for over 20 years.

Stress is a major factor on stairs. When there are stairs leading down or any drops of surface on a route, the majority of visually impaired people experience tense anticipation which in turn causes them to make mistakes.

The "Guidance on the Use of Tactile Paving Surfaces" (1998) published by the DETR makes a specific point on considering the surrounding environment when providing tactile paving. Local mobility officers may prove particularly helpful here if involved during the planning stages so that any site preparation is included in the overall programme.

Tactile paving - a system as opposed to a landmark

When tactile paving is installed incorrectly, it undermines the entire system.

A blind person, who has been misled by tactile paving once or twice, will not be able to use it afterwards, even though it may be in perfect order. The previous experience will sound a warning not to trust it. The facility, though provided, will cease to be a useful and reliable source of information for that blind individual. Travelling a route regularly, they will begin to use the surface as a landmark, not as part of an information system; just as a person driving a car may rely on seeing a pub in order to make a turn rather than follow the signposts.

It is useful to compare tactile paving and blind people to road signs and drivers, if only to see an extraordinary double standard in perceiving and meeting the needs of drivers and of blind people.

It is clearly understood that drivers need systematic information about roundabouts, for example. Since the drivers travel, such information needs to be uniform right across the country as indeed it is. In the case of information for blind travellers about a pelican crossing, for example, this can vary from borough to borough, from street to street or even from one side of the crossing to another. Would such variation be allowed for drivers who can see?

Consistency

The layout of tactile paving, the context of the situation and the colour of the slabs all contain information for visually impaired people. However, for the system to work, as well as being correctly installed, it has to be consistent, regular and simple.

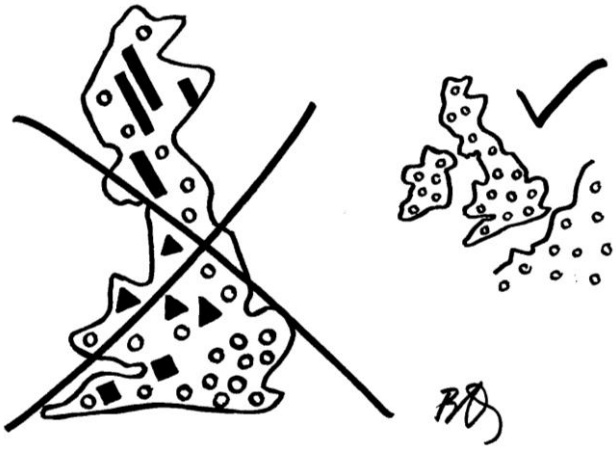
A blind person like anyone else can work in one area, live in another and have a business appointment in yet another area. If in all the three areas tactile paving is laid according to different principles, how can this be helpful to a blind person?

In fact blind people travel longer distances in search of a school, a job or accommodation than their sighted counterparts.

In some areas, within the one authority there are different engineers responsible for smaller localities, each with the freedom to interpret and implement the guidelines on tactile paving. This leads to extraordinary variations in the designs within an area.

At this point I can quote Ann Frye, Head of the Mobility Unit at the Department of the Environment, Transport and the Regions speaking at a seminar organised by Hammersmith and Fulham Social Services Department in April 1994 entitled: “Environment and the needs of people with visual impairment”:

“Tactile paving is not a matter for interpretation and creativeness; it is only going to work if it is done correctly, according to the guidance and consistently”. Right across the country, I add.



Safety

I once spotted (I do a lot of tactile paving spotting!) tactile paving at a zebra crossing, but not at the crossing point, rather next to it, within the zig-zag zone. Since this was almost in front of an organisation for disabled people, I went inside and asked if they knew anything about it. They told me: “this was for blind people”.

So, there is not only a problem of lack of awareness about tactile paving but also an assumption that what is not safe for sighted people, is safe for blind people – perhaps a white stick is a magic wand!

I frequently see tactile paving installed in places where no one would recommend a member of their own family to cross, for example: on the flyover, next to the crossing, on apexes of junctions and even where there are no crossings. Such installations frequently occur – probably with the best of intentions – in front of places for people with visual impairment.

The safety of visually impaired pedestrians should always be foremost in the thoughts of everyone involved in a project and at every stage of its development. This includes the stage when the crossing is being built.

A perfect installation of tactile paving for a controlled crossing can pose a serious danger to blind people when installed prior to the crossing being operational. Sighted people see the works in progress and can instantly assess the situation. A blind person travelling alone, having found tactile paving under their feet, has no way of knowing that the crossing is not to be used.

Great care needs to be taken that blind people are not lured into crossing the road at sites which are not ready. However, awareness of how a blind person is likely to use the crossing or how drivers may behave is extremely important as in some situations the tactile paving needs to be installed first.

A case where tactile paving is needed at an early stage of road works is when a zebra crossing changes from a single to a double crossing. The cones the workmen put on the road to install an island immediately indicate to drivers that the crossing is a double crossing and they drive accordingly. A blind pedestrian will still feel the smooth surface of the single zebra and, being unaware of any change, will proceed without stopping. Here the chance of a serious accident in a case like this is very high indeed particularly for blind pedestrians who are familiar with the crossing and know it as a single one.

Whenever work begins on a crossing it is a good idea to start from the firm conviction that a totally blind person travelling alone will be passing there and will use the facility.

Alternatives are to barricade a crossing until it is ready or to install tactile paving slabs upside down and when the crossing is in full operation to turn the slabs over. However, someone told me of instances where the slabs were laid like this permanently in the belief that the blisters were there to grip the surface underneath!

Clearly, understanding the issues of tactile paving is essential to all those involved in providing it.

Purpose of tactile paving - the message of the surface

Tactile paving at road crossings is a surface that tells a blind person about a crossing. It does not say: “stay away!” but: “here is a place to cross”. In case of controlled crossings it also says: “here is a good place to cross, a safer one!” There is a feeling of safety associated with tactile paving.

Unfortunately there are many mistaken installations of tactile paving which seriously undermine the system and devalue it for blind people. Many mistakes are due to frequent misconceptions about the purpose of different tactile paving surfaces and mixing the concepts of guiding, warning and informing.

'The blister surface', using the Department for Transport's phrase, is only a surface that indicates crossing points. It is not meant as a guiding surface or for warning. If the surface were used as a warning, a blind person would be unable to tell when it would mean "keep off" and when "cross here".

Of course, elements of guiding, warning and informing are there and intermingle with each other, or one takes precedence over another in different circumstances.

For example, the strip of tactile paving across the footway which informs a blind person that the crossing is there, also guides him/her to the crossing point. This does not mean however that the surface should be used for guiding a blind person from one place to another by, for example, installing long paths of tactile paving to connect locations or to guide between the obstacles. Blind people are taught the tactile paving system and manoeuvre themselves through the space according to their expectations. Unexpected layouts will not necessarily convey the right message to the blind person.

Similarly, tactile paving at dropped kerbs warns a blind person about the road ahead but it does not indicate a dangerous place where one should not enter.

There are different types of surfaces being introduced nationally, specifically for guiding and warning blind people. Having said that, it is important to stress, if only to stop further misconceptions about blind people's foot finesse, that blind pedestrians are only able to distinguish very few surfaces while walking and even that requires a lot of concentration and training.

The guidelines on the use of tactile paving issued by the Department of the Environment, Transport and the Regions (1998) include the guidance on all agreed surfaces to benefit visually impaired pedestrians. They are:

- Blister surface (this book is only about this surface and I refer to it as tactile paving)
- Corduroy hazard warning surface
- Platform edge (off street) warning surface
- Platform edge (on street) warning surface
- Segregated shared cycle track/footway surface and central delineator strip
- Guidance path surface
- Information surface

The research that was undertaken prior to publishing the Guidance on the use of Tactile Paving Surfaces was very thorough with tactile paving layouts installed at the Department of Transport's testing centre where they could be tried out by people interested in the subject. At that time there was a Joint Committee on Mobility for the Blind and Partially Sighted which worked very closely with the DRTR's own Mobility Unit. The committee was later known as the RNIB/GDBA Joint Mobility Unit.

Colour and texture contrast

Tactile paving works by contrast – a person with visual impairment distinguishes it because its surface is different in texture and colour to the surface next to it.

Installation of surfaces similar in colour and texture next to tactile paving defeat the principal objective of tactile paving which is to create contrast. For example: the use of red bricks in combination with red tactile paving, or yellow stones with yellow tactile paving, reduces the contrast both tactile and visual.

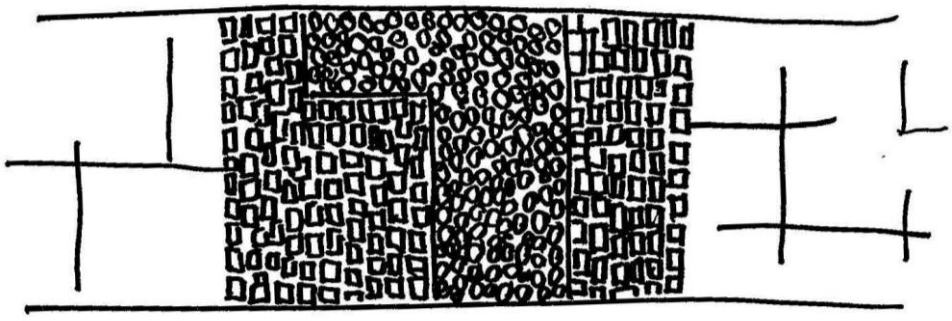
I write about the street environment, but at this point I need to mention that the principle of tactile and colour contrast also applies to indoor situations and transport environments. In a London train station, I saw a platform surface made of small tiles; when touched with a long cane, the difference between the tiled platform and the platform edge warning surface could not be felt.

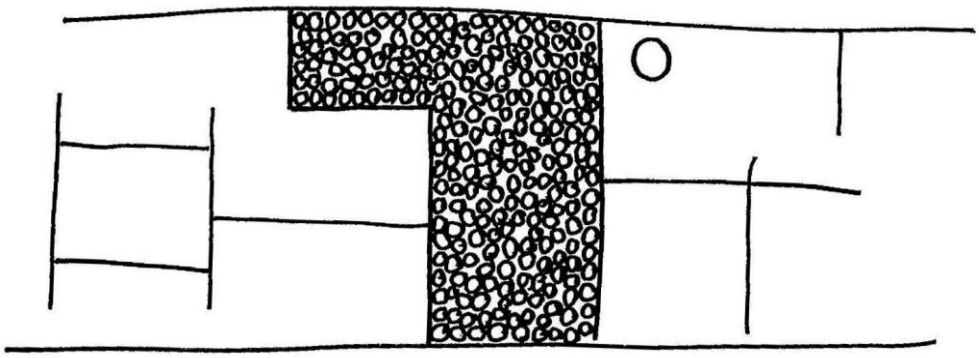
In the street environment, in some cases colours are applied as a design element rather than to fulfil the objective of tactile paving. These problems seem to have increased particularly since the introduction of yellow into the tactile paving system.

I have seen many examples where following the installation of yellow tactile paving, yellow has also been adopted for the adjoining footway and road surfaces. This results in the blend of three, or often four, yellows, and of course most importantly, loss of contrast.

It is not a blend of colour people with visual impairment need, but colour contrast. The colours of tactile paving are already very pale; they are not as bright and bold as colours used to benefit drivers. The shape of the blisters has already been flattened which makes it more difficult to detect. There isn't really any more room for compromise before tactile paving becomes ineffective.

Changes to the surface adjacent to controlled crossings which ignore contrast are very common. Rather than leaving the footway alone, all the area adjoining the L shape configuration is often filled with red bricks. The desired, tactile and visual contrast is then seriously undermined.





Sometimes, at controlled crossing locations, instead of installing red tactile paving at the crossing points, the entire site surfaces are changed to red, and then yellow tactile paving is installed at the crossing points. Why?

I have seen many cases of grey or black tactile paving provided at controlled crossings. Grey and black are not suitable colours for use at crossing points if they are to benefit visually impaired pedestrians. They do not contrast well with the colours of the road surface and footpaths that usually are just a different shade of grey or black.

Black tactile paving in particular does not provide a visually impaired pedestrian with an encouraging message. The black colour on the footway is associated with the lumps and patches of black tarmac used for filling potholes; something to watch out for. A black patch on the ground surface can also mean a shadow, a hole, a drop, an iron service cover, an obstacle of some sort and of course the road.

The black and white surface of a zebra crossing is seen by many people with visual impairment but this is because of the play of the two colours, not because the black colour is the most visible.

The importance of colour contrast for people with visual impairment cannot be over-emphasised.

Many visually impaired people have such severe sight damage, they will not be able to see the face of the person they talk to, they will not see stairs and will not see the footway, but they will see light and colour patches. If there is some regularity to the colour patches seen, then they will start using these colour patches to their advantage and make sense of them. Hence, an odd area of black tactile paving at a zebra crossing will be of no use, but a red one will.

See also the paragraph: “Colour schemes” on page 83.

Similarly there are many people with visual impairment who cannot see the footway, but can see the yellow lines and use them to navigate themselves while walking. Just as a point of interest: the red lines along the red routes are not as effective as the yellow lines.

To get an idea how important colour is to people with visual impairment you can take a clear plastic document folder (the one that works best is Polypropylene “orange peel”

finish), put in front of your eyes and look around. You will instantly notice how everything blends beyond the point of recognition, but colour and brightness stand out.

Striving for ever new designs of the streetscape should not put pressure on the visually impaired community to compromise the tactile paving system requirements.

Many of the proposals, as described above, do not provide good reason for their justification, yet the tactile paving system, so important to the independence and safety of visually impaired people, and as it happens, very well researched and consulted, is endlessly knocked and dented as the liability and source for all the problems. (Please see also the paragraphs on involving visually impaired people in consultation processes, pages 56 to 65).

Historic areas

There is some concern that tactile paving does not fit in areas protected for their historic value.

On the issue of colour, double standards can often be observed in relation to fulfilling the needs of visually impaired pedestrians and those of drivers. This particularly can be observed in so called conservation areas. The need for good colour contrast for drivers, whether on the road surface or at eye level, is well understood and drivers are provided with what they need, even in areas of particular beauty or historic value. It is equally important for visually impaired pedestrians to have colour contrast on the streets.

A patch of red, very pale after all, on the footway does not present a problem in this context, particularly if the cost is the safety of a visually impaired pedestrian. There are lots of different striking colours all over the streets.

In an area of historic interest, I recently saw, grey tactile paving and looked at the colours of the immediate surroundings. There was a petrol station nearby which was strikingly colourful and almost jumped out of the picture, the white and yellow markings on the road surface and double red lines stood out by their strong colours, so what was the grey tactile paving at the crossing attempting to preserve?

The colours for tactile paving, red for controlled crossings and yellow for uncontrolled

crossings should be treated as colour coding in the area of road safety. The emphasis on the contrast alone with freedom to vary the colours undermine the clarity of the system.

The argument about conservation areas is over stretched. It is extremely subjective to say that a pale red patch of paving at a road crossing will have an adverse effect on the overall impression of the area while there are all sorts of other features in the vicinity; striking shapes and colour contrasts for the benefit of people who see well.

I sometimes hear the phrase 'horrible pink' which spreads negative attitudes towards tactile paving. Tactile paving is a mobility aid which aims to improve independence of people with a serious disability and colour plays a very important role in this. Just like, I expect, one would not make derogative remarks about a loop system or a ramp, one should not make adverse remarks about this facility. If anything, people should talk in encouraging terms about access issues and spread awareness about different needs of disabled people.

PART 2

TACTILE PAVING - major elements

All elements of tactile paving have meaning and all elements relate to the specific ways visually impaired people orientate themselves.

When the meaning of only some elements of the tactile paving system are appreciated by people who install tactile paving, then visually impaired people do not get the full benefit of the facility.

Tactile paving correctly installed will convey several messages about a crossing to a blind person. When incorrectly installed, it will convey an incomplete message or no messages at all if the key element is missing. When it signals a wrong message altogether, then this is also dangerous.

All elements of tactile paving must, therefore, be installed correctly.

Legal status

Tactile paving used to have the legal status of a road sign. This compelled local authorities to get the layout of tactile paving right every time.

Regrettably the surface lost its legal status when in 1991 the installation of tactile paving, so far reserved for controlled crossings only, was extended to other types of crossings. It was thought that the legal status could not be upheld with such a huge variety of situations where tactile paving could now be used. However, changes in legal status do not mean the surface can now be used in an "as you wish" manner. The legal status may have changed but the way blind people orientate themselves has not.

The primary purpose for extending the application of the surface for uncontrolled

crossings was to counteract loss of the kerb at crossing points. Disabled people, particularly the wheelchair users, as well as other groups, need ramps at crossing points, whereas blind people need kerbs to tell them where the footway ends and where the road begins. Following the Disabled Persons Act 1981 dropped kerbs were introduced on a large scale.

There was a great urgency to do something for blind people, who, following the installation of dropped kerbs, started walking into roads without realising it. This problem became apparent particularly at side road crossings. So the use of the same type of surface for dropped kerbs, though of a different colour, received its go ahead, and the surface is now used at all types of crossings in conjunction with the dropped kerbs.

Following the extension of the use of tactile paving at dropped kerbs there was a period of great confusion in the provision of tactile paving – hence this book! The situation has been clarified by the DETR guidelines: “Guidance on the Use of Tactile Paving Surfaces” (1998) which superseded the advice in the Disability Unit Circular 1/91

The strip of tactile paving across the footway

Its evolution

The strip of tactile paving laid across the footway is the key element of the tactile paving system at controlled crossings. It enables a passing blind person to locate the crossing. This is the principal reason for which the surface was invented.

When first used, this strip used to be as wide as the crossing itself. There were complaints from other groups of people and a compromise was reached at national level to narrow the strip to leave only the optimal minimum necessary for a passing blind person to step onto it and register its presence. Hence the current strip 3 slabs wide (1200 mm).

Tactile paving closely adjacent to the kerb line was left, as before, to correspond to the width of the crossing in order to indicate to a blind person the boundaries of the crossing. This is how the format of the letter “T” evolved. With this configuration the strip across the footway would bring a blind person to the centre of the crossing: an ideal position from which to start to cross, considering that a blind person may veer when crossing the road.

In the case of a pelican crossing with a push button, a blind person needed to first locate the pole (as does a sighted person), so a format of the letter “L” was proposed. The vertical stroke of letter “L” would take a blind person to the pole, and the base of the letter “L” would still indicate the width of the crossing. A blind person using a pelican crossing would be aware of the position of the pole in relation to the centre of the crossing and the traffic and would adjust his/her position accordingly.

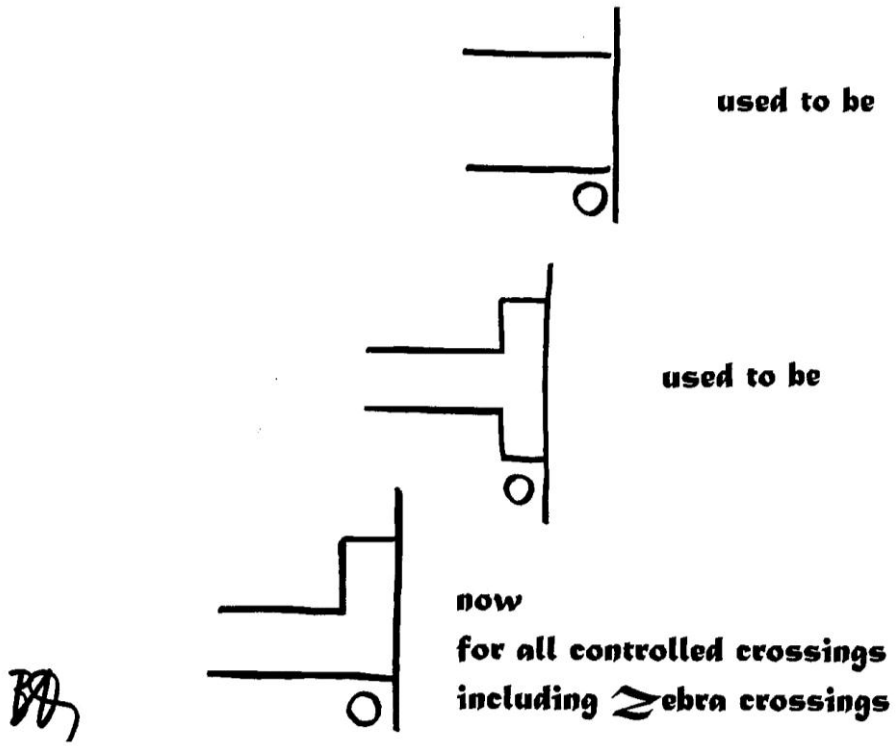
So these two configurations of tactile paving the “T” for zebra crossings and the “L” for pelican crossings became standard and visually impaired people were taught the

techniques accordingly to identify these crossings.

However, in 1991 the regulations governing the installation of tactile paving changed and this created a lot of confusion about tactile paving. The “T” shape configuration reserved for zebra crossings was often used at pelican crossings or side road crossings. As a result the “T” shape configuration became an unreliable sign for blind pedestrians and urgent action was needed to bring greater clarity to the tactile paving system for both blind pedestrians and highway engineers.

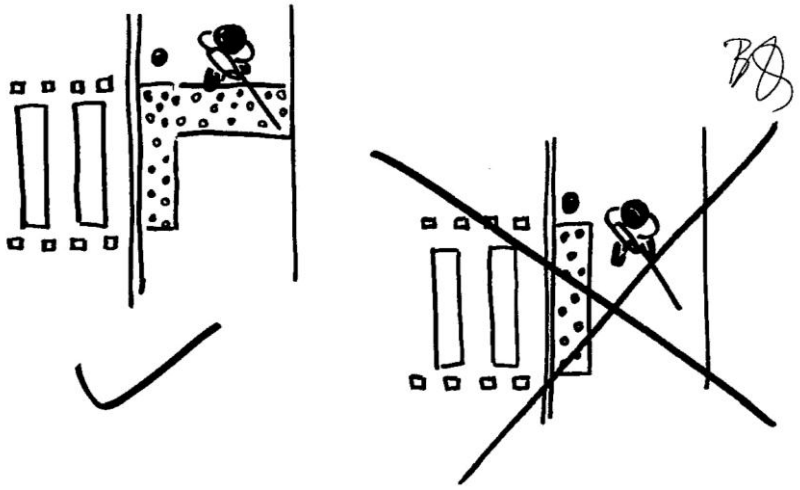
In 1996 the Department of Transport and the Royal National Institute for the Blind conducted a national consultation on the subject of tactile paving and produced much awaited guidelines on use of tactile paving: “Guidance on the Use of Tactile Paving Surfaces” (1998).

The 1998 guidance did away with the “T” shape altogether and advised the “L” shape configuration for all controlled crossings including zebra crossings and brought uniformity to the system.



At controlled crossings

In retrospect a lot of misunderstanding arose from the extended use of the tactile surface at dropped kerbs. There has been a spate of varied installations of tactile paving with only some elements of the configuration applied. For example: zebra and pelican crossings began having tactile paving installed at the dropped kerb only, and not across the footway. This of course was a mistake and a great loss to blind people.



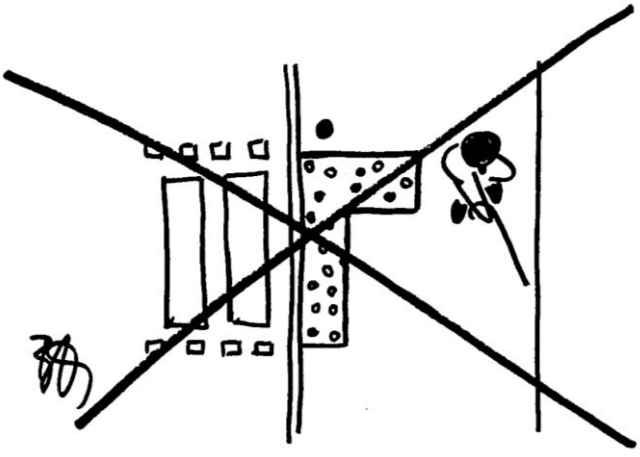
The strip across the footway at controlled crossings is a core element of the system. Installation of tactile paving at controlled crossings at the ramped part of the crossing only, denies blind people the key part of this otherwise excellent facility.

At controlled crossings the strip across the footway enables a passing blind person to identify that at that level, on the roadside, there is a controlled crossing.

By “controlled” I mean a crossing where there is a condition when drivers are obliged to stop for pedestrians. The rules governing such a condition vary according to the type of crossing, but they are there and are understood both by drivers and pedestrians. At uncontrolled crossings there are no rules, only misconceptions, and drivers are not obliged to stop for pedestrians. Hence the pedestrians, both blind and sighted need to use their own judgement and cross when there is a gap in the traffic flow. However, knowing whether the crossing is controlled or uncontrolled is essential for one's safety on the road. Sighted people have this knowledge.

Partial installations of the strip of tactile paving across the footway

The strip of tactile paving which extends only partly across the footway at controlled crossings is not enough. A blind person can miss it and will need to find the crossing by other means, which makes the provision of the facility an ineffective exercise.



The success of the surface lies in its texture, containing the blisters, and in its layout all the way across the footway at controlled crossings.

The layout across the footway is a success because it meets a blind person's requirements in addressing the specific problem directly related to lack of sight. Having no visual reference points to navigate, blind people veer when walking, thus their position on the footway is not regular. Tactile paving laid all the way across the footway takes care of this problem: it allows blind pedestrians to find it irrespective of their position on the footway.

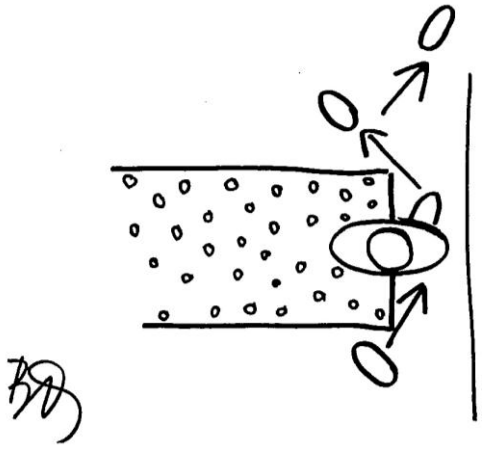
There are many factors, environmental as well as personal which influence a blind person's position on the footway. These may be: the type of mobility aid used, experience, anticipation, the type of visual impairment, congenital or acquired, residual vision, posture, gait and any other physical disability and medical condition, widening or narrowing of the footway, gradient, traffic flow, any objects on the footway including other people and much more. Mobility officers are aware of these factors and can tell which features of the environment are likely to influence the line of travel of a blind person and why.

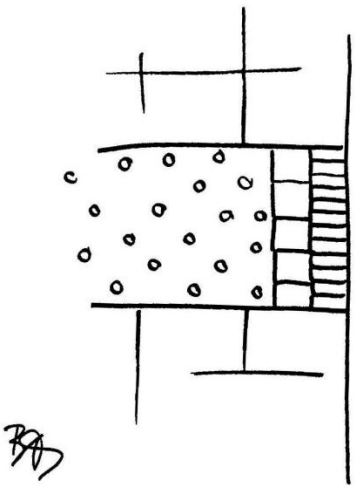
For example, if the footway preceding the tactile paving is wider or has some sort of recess, a blind person is likely to be close to the wall when the footway narrows again and will miss the tactile paving if it is not laid all the way to the wall. This may not be the case with a person using a guide dog or a person who has residual vision.

There are different styles of walking. Some blind people walk with a bounce or a bouncy zig-zag concentrating on avoiding obstacles. With this style of walking they are particularly prone to missing tactile paving if it is not laid all the way back to the building line.

If the surface is touched with only half of one foot, for example, it will not give a blind person a sufficient message. It may feel like a bit of gravel or bad pavement. Blind people's feet are not laser sensors; they are just ordinary feet and have shoes on.

Sometimes the “tails” are finished in brickwork by the building line with two or three different types of bricks laid to form a decorative pattern. **This is not helpful**.





This creates a gap between the end of the tactile paving and the building. Laying tactile paving slabs all the way to the building line is important and both simpler and cheaper than the example above.

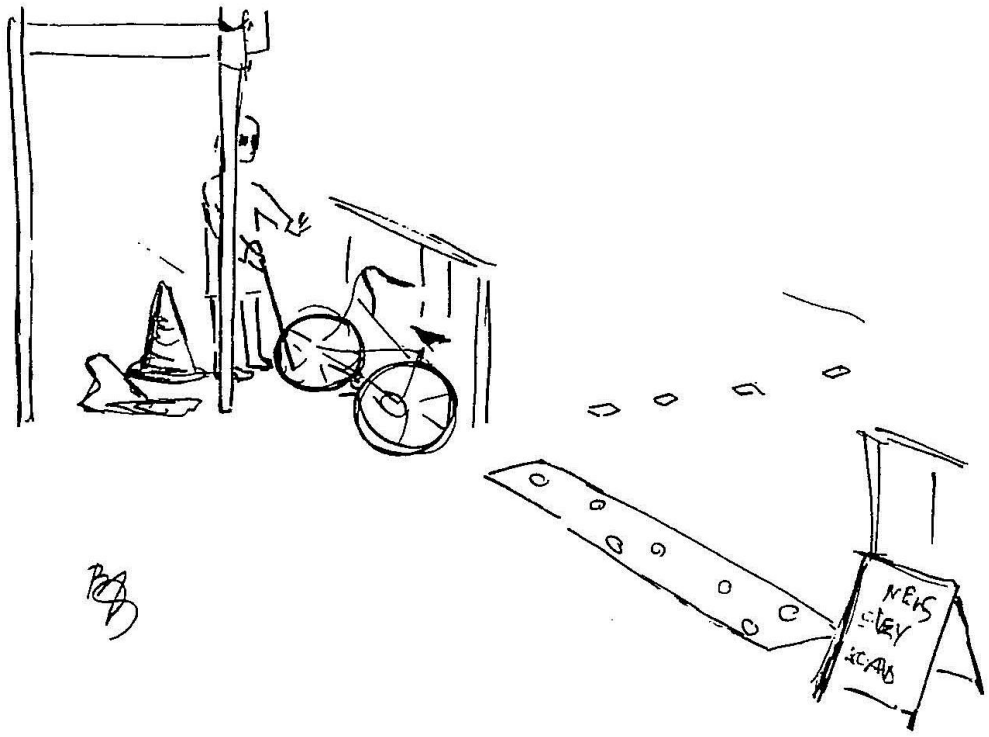
Creating decorative patterns around the tactile paving installations makes identifying tactile paving more difficult whether by visual or tactile means. A visually impaired person has to pick the tactile paving from within a pattern rather than finding it on the basis that it stands out.

Sometimes the excuse given for not laying tactile paving all the way to the wall is that the ground belongs to a private landlord. I question these explanations, particularly regarding locations where the councils have laid the paving and maintain the footway. Why then would laying one king of a paving slab be OK but not the other?

At controlled crossings, tactile paving laid all the way across the footway, frees blind people from anxiety over finding the crossing and from feeling along all the obstacles on the way leading to the crossing, such as bicycles chained to the railings, newspaper stands or whatever else there may be.

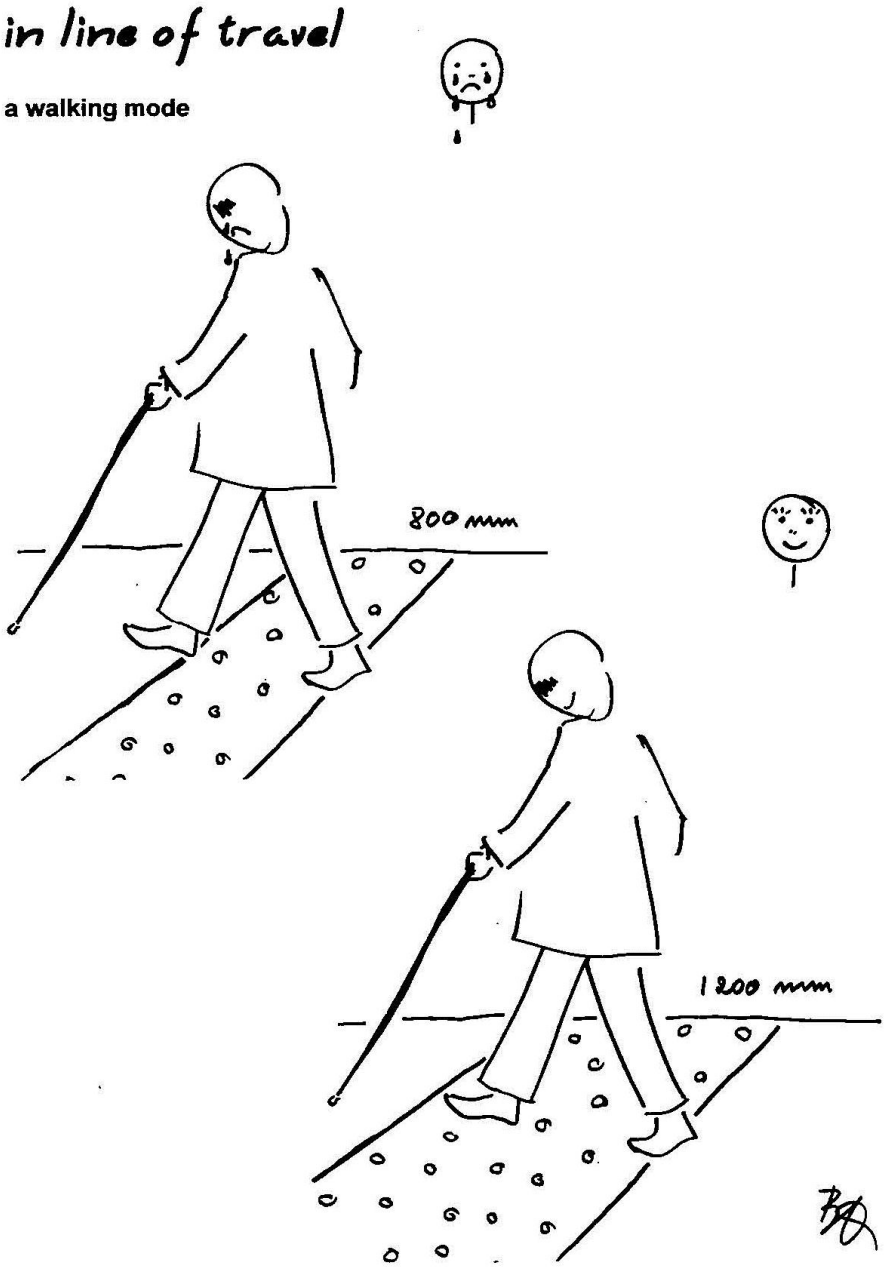
“Feeling along” sounds nice, but in fact what it really means is walking into the obstacles.

Unless the tactile paving is correctly laid across the path, a blind person has to walk into every obstacle to locate the crossing rather than finding the crossing at ease by stepping onto the surface.



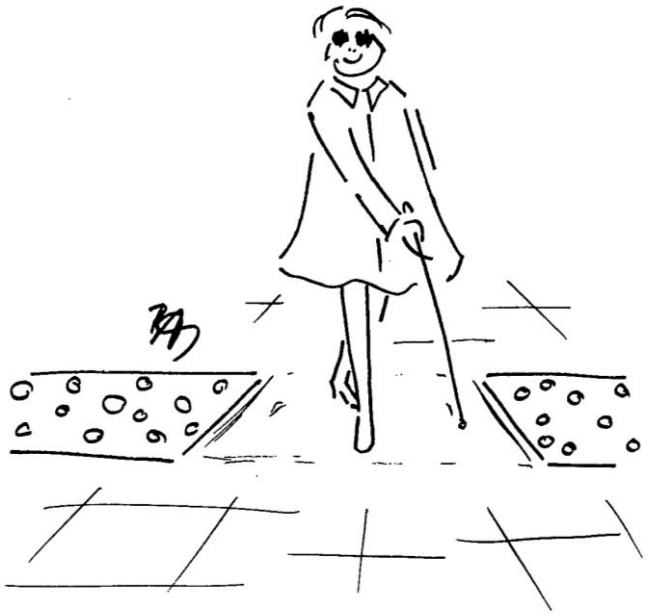
The width of the strip across the footway

The minimum width to guarantee that a passing blind person will step onto the strip and will be able to perceive and confirm the message, is three slabs (1200 mm). Anything less could be missed by a blind person. These details need to be appreciated by engineers when the drawings are made and when the directives are issued to the contractor who lays the surface.



Inspection covers

Inspection covers within the configuration also need to be covered by tactile paving, otherwise a blind person who walks onto the cover will miss the crossing.



At uncontrolled crossings

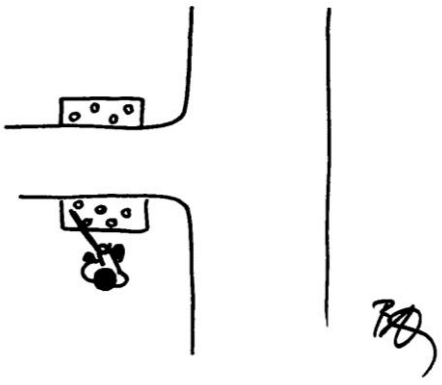
Unlike at controlled crossings, the absence of the strip across the footway at uncontrolled crossings is desirable.

Controlled and uncontrolled crossings cannot be marked by the same method if the difference between them is to be indicated to blind people.

Dropped kerbs at side road crossings do not need the “tail” in the tactile paving configuration. If they are in the line of travel, a blind person will come across them anyway. If she/he veers off the line and reaches the side road at a different point than the tactile paving, then he/she should find the kerb.

It is therefore crucial that the dropped kerb matches the width of the crossing and the tactile paving installation.

Crossings where a dropped or flush kerb extends beyond the width of the crossing and the tactile paving are extremely dangerous for blind people. At such crossings despite the tactile paving being in place, a blind person can walk onto the road without being aware of it.



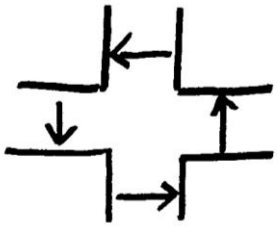
Installations of tactile paving taken across the width of the footway at dropped kerbs of ordinary side road crossings and other uncontrolled crossings are misleading and should be removed.

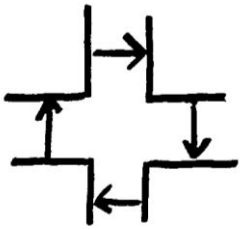
Tactile paving presents a limited number of elements to inform blind pedestrians. It is therefore important to apply these elements with a calculated approach. The idea behind reserving the strip of tactile paving across the footway for controlled crossings only is to preserve the clarity of information for blind people.

The purpose of extending the use of tactile paving to uncontrolled crossings was to indicate the “disappeared kerb” now called a dropped kerb. A blind person needs the message of a kerb, so where there is a dropped kerb, there should be a strip of tactile paving. But what a blind person does not need tactile paving to tell them is that, for example, there is a zebra crossing when there is not.

Giving blind people the impression that a crossing is a controlled crossing when it is not, undermines blind people's safety. Drivers are not obliged to stop for pedestrians at such crossings. A set of bollards in the middle of a road, for example, does not constitute a crossing and does not oblige drivers to stop. Yet more often than not, when bollards are installed, blind people are given a message that there is a controlled crossing when this is not the case.

Of course, like anyone else, blind people need to cross roads at different points. However, they usually choose these points by themselves. Usually these will be standard crossing places, but blind people travelling alone need to make their own individual judgement in the case of uncontrolled crossings. If they are not comfortable with the situation, they will find their own crossing points where they do feel comfortable and safe, have a landmark, know they will orientate themselves better upon reaching the other side, avoid a particular obstacle, etc. Choosing a crossing point will also vary according to how one feels, what the weather is like, the level of noise, traffic flow etc. Sometimes a blind person will choose one crossing point on an outward journey and a different one on the way back. Depending on how they were taught, they may consider anticlockwise crossings easier than clockwise crossings.



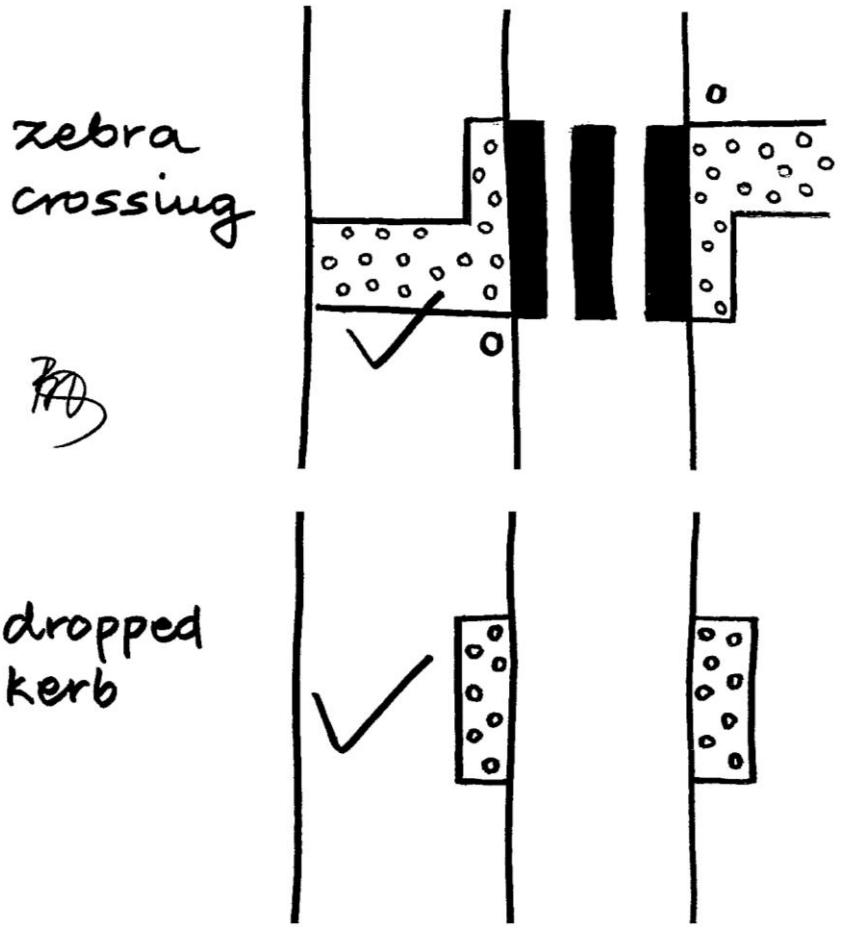


A blind person may want to “indent”, i.e. walk into the side road (again, how far down the side road will vary with the individual) on an outward journey when crossings are clockwise, but cross at the standard crossing point on the way back when crossings are anticlockwise. (See also page 68).

Clockwise crossings present a particular difficulty for a blind pedestrian because of the traffic turning from behind the right shoulder. Sighted people look back prior to crossing, blind people cannot do this and hearing the turning traffic is particularly difficult at this position.

Blind people may also want to cross at points along the road where there are bollards and little refuge areas in the middle of the road but they need to know what the score is to be able to judge the traffic accordingly.

It is dangerous when, for example, there is a zebra crossing marked correctly by the tactile paving extended across the path, and further along the path, the same method is used to indicate two bollards in the middle of the road, a dropped kerb or a speed table. Blind people who use the route regularly will need to memorise which is the real zebra crossing and which is not. Casual users of the route may be misled and exposed to danger. Unless of course, they have already learned not to trust tactile paving.



What is needed at such crossing points in order to assist a blind person, is a strip of tactile paving along the dropped kerb only and on the central reservation, if there is one.

Mistaken installations of tactile paving across the pavement at uncontrolled crossings are a disadvantage to blind people because they undermine the information these configurations are meant to carry at controlled crossings.

At speed tables

Speed tables need tactile paving at the kerb line just as any other uncontrolled crossings with a dropped kerb.

At an ordinary side road crossing the kerb is dropped to the level of the road. At speed tables the road level is brought up to that of the footway. This presents a blind person with the problem of a lack of kerb. Hence at speed tables tactile paving needs to be installed according to the same principles as at dropped kerbs at uncontrolled crossings: a strip of tactile paving along the kerb line only. No tail.

Should there be any difficulty in establishing where the kerb line is, it may be a good idea to observe sighted people using the crossing and install the tactile paving at the point where sighted people stop and look for the traffic. Blind people need to stop at the same points.

Speed tables are more difficult for blind people to negotiate than dropped kerbs at ordinary side roads. Dropped kerbs usually have a slope, sometimes have a kerb edge; all these elements give information to a blind person, however faintly. On a speed table the surface is all flat and there is no clue. Hence tactile paving should be installed as a matter of course at speed tables.

An additional difficulty at speed tables is their design. Currently a variety of different surfaces are being used at speed tables. A mixture of surfaces at such a crucial point of a journey as a road crossing does not help a blind person. It confuses the message and makes an already difficult situation worse.

See also the paragraph entitled “Designer-led crossings” page 72.

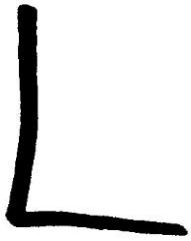
Another trend at these types of crossings is to install bollards on both sides of the crossing points as if to emphasise the space of the crossing. Yet tactile paving is often omitted at these crossings. Bollards are a common feature and can be found anywhere. Therefore they are not recognised by blind pedestrians as a marker for a crossing or an effective barrier between the footway and the road. Bollards should not be thought of as a feature suitable for installation in place of tactile paving.

Configurations

Since the changes to the legal status of tactile paving there has been an extraordinary increase in the variety of tactile paving configurations used at road crossings. This is a mistaken development.

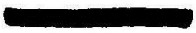
The basic principle of the configuration at controlled crossing is that one strip of tactile paving is laid across the footpath, and the other strip of tactile paving is laid parallel to

the roadway, at the crossing point. Both strips are joined at a right angle.



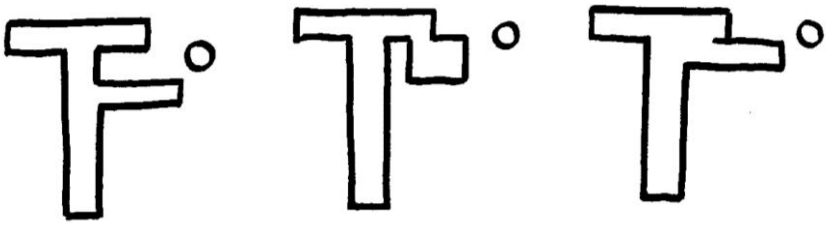
A blind person walking along the footway will feel the surface under the feet, will do a right angle turn towards the road and will find the crossing.

At uncontrolled crossings where there are dropped or flushed kerbs, the idea is to compensate for the lost kerb, so tactile paving is only needed along the kerb line. No other configurations which resemble the T or L shape should be used.

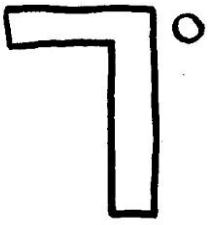


Configuration at pelican crossings

I have seen a major road with several pelican crossings all of which had a different tactile paving configuration, and were also different on each side of the road.

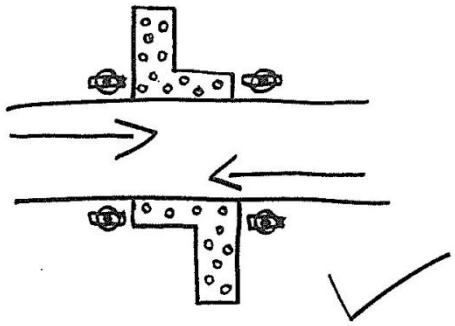


Could it be that the person responsible for these designs was trying to make a connection with the pole and its push button box? The recommended layout enabling a blind person to find a pole with the push button box is the L shape configuration: Clear, simple and regular.

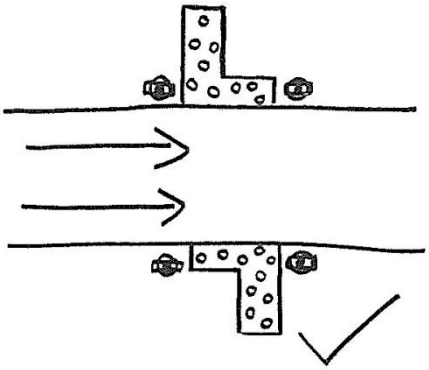


When there are two poles with push button boxes, one on each side of the crossing

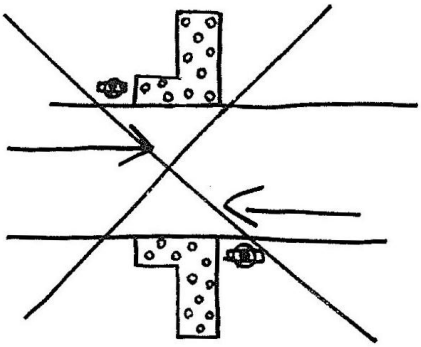
point, then the strip across the footway, i.e. the stroke of letter L, should lead to the pole on the right hand.



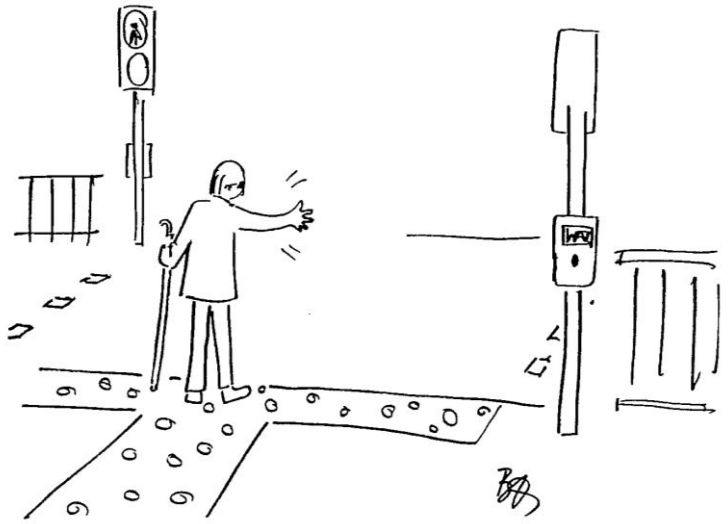
Since the 1998 guidelines, this also applies in the case of one way streets. It will benefit guide dog users who hold the dog in the left hand and have the right hand free to operate the button.



When giving instructions to people laying the footway care must be taken not to use such descriptions in relations to the layout as: “mirroring”, or “symmetrical”, as these may lead to correct installations on one side of the road, but not on the other. The layout at pelican crossings, for example, must not be “mirrored” on the other side of the road, but laid according to the same principle.



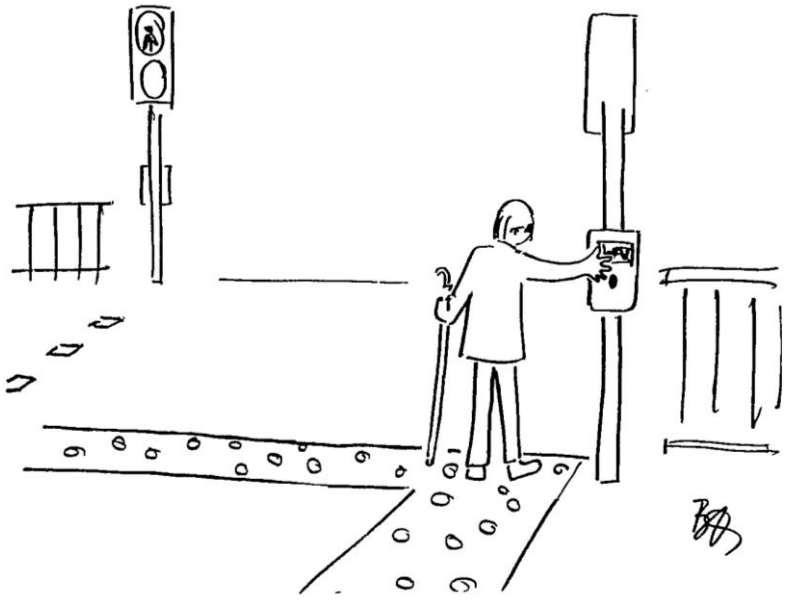
The T shape layout which used to be reserved for zebra crossings was not helpful when installed at pelican crossings.



With this configuration a blind person having reached the position to cross, has to search for the pole with the push button box, and by doing so, loses the position and alignment for crossing.

Reaching the correct position and alignment for crossing the road is a difficult process for a blind person, involving concentration and hard work. Incorrect configurations, rather than helping, cause a blind person to work twice as hard. For that reason, many blind people who know the route do not use the tactile paving to find the crossing but use their “old” methods for finding the pole.

The L shape at pelican crossings helps a blind person to identify the type of crossing on arrival bringing the blind person to the pole with the push button box.



Configuration at zebra crossings

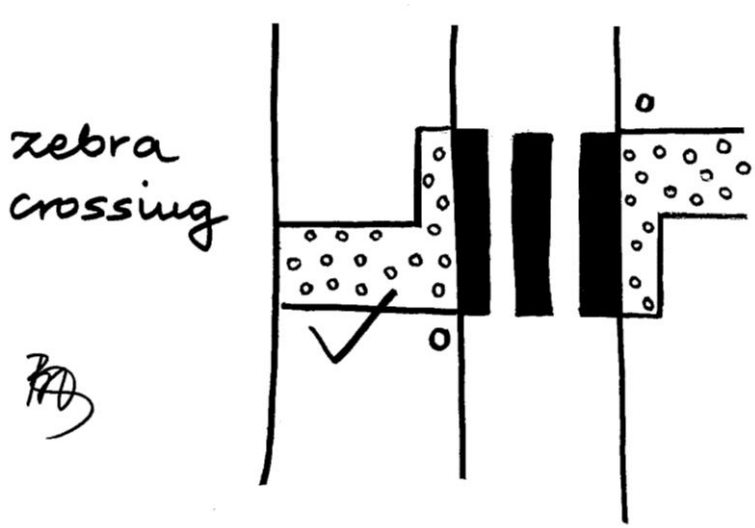
Since 1998 the recommended configuration for zebra crossings is an L shape.

The confusion regarding the T and L shape configurations led to incorrect installations of the T shape configuration at pelican crossings. This in turn has undermined the usefulness of this configuration at zebra crossings.

An increasing number of crossings have push button boxes which means one has to arrive first at a point where the pole with the push button box is.

There is a particular advantage in the L shape for the guide dog users, who keep the dog on the left hand side and have the right hand free to operate the crossing.

All these factors led to the conclusion that a single configuration for all controlled crossings is a better option for visually impaired pedestrians and has an uniformity which is easier to implement by the highways departments.



Configuration along the dropped kerb at controlled crossings

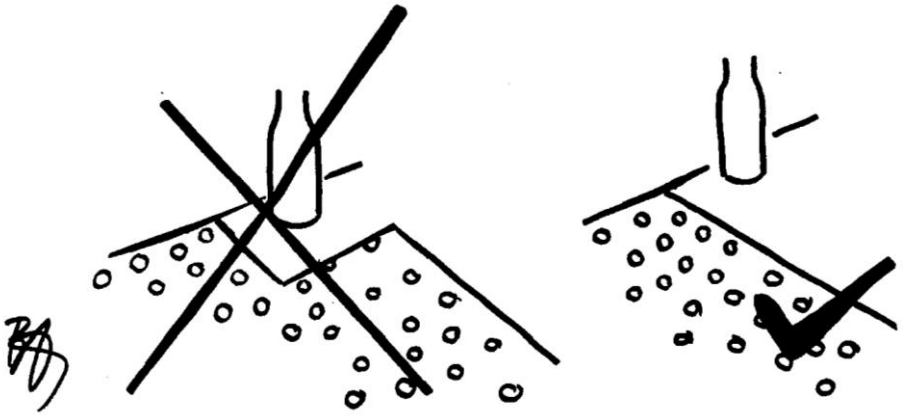
Unfortunately there is a lot of variety in the configuration of tactile paving laid along the dropped kerb of controlled crossings. Again, this is a mistaken development.

It seems there is an impression that the wider the footway the wider the area of tactile paving. This frequently results in huge rectangles of tactile paving at controlled crossings. Such installations are not helpful to blind people and are a nuisance for others.

A blind person will feel a mass of tactile paving under the feet but will not have the benefit of the information contained within the correct configuration, and other people will not have a blister-free pavement to stand on when waiting to cross.

Excessive installations aggravate public opinion and turn people against tactile paving. When installed correctly, it can hardly be called a discomfort to sighted people.

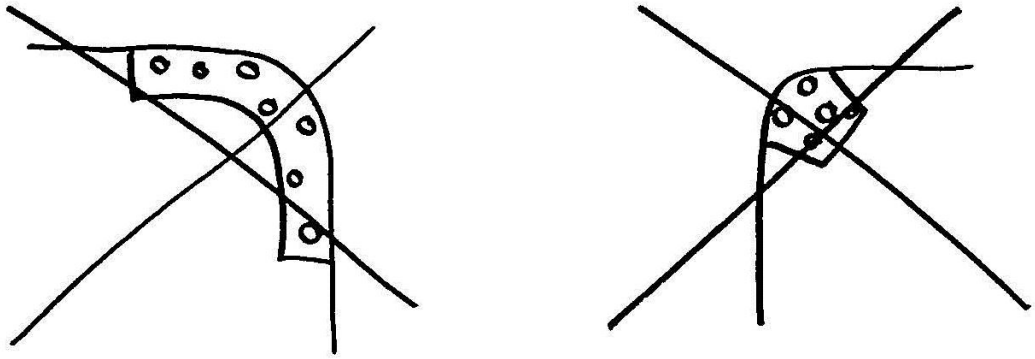
Equally there is no benefit in laying tactile paving carefully around the Belisha beacons. Just up to the beacons is sufficient.



Working together with mobility officers will help highway engineers understand the intricacies of blind mobility and knowing what is important will, in fact, save public money. Many of the complaints about tactile paving from sighted pedestrians are due to its excessive use.

Configuration at uncontrolled crossings

At uncontrolled crossings tactile paving should only be laid along the dropped kerb line in a straight line square to the direction of the crossing. Never, never! on an apex of a corner.

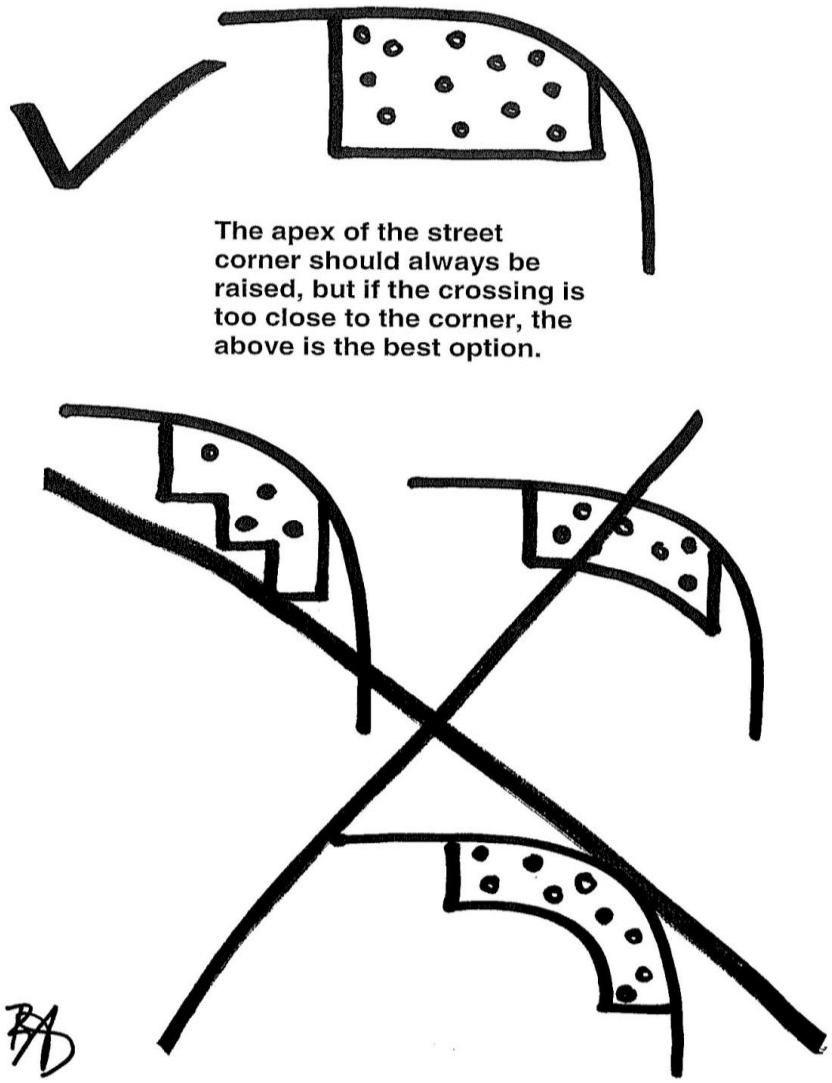


Tactile paving on the corner's apex can direct a blind person into the middle of a junction and thereby into serious danger. All such installations should be lifted and dropped kerbs relocated.

Care must also be taken at crossings where sighted people are systematically stepping back to avoid having their feet run over by the turning traffic. In such a case

the tactile paving also has to be set back. A blind person standing on tactile paving waiting to cross ought to be able to feel safe.

Tactile paving layouts at side crossings have recently been under discussion. Some people propose changes which are to the disadvantage of blind pedestrians.

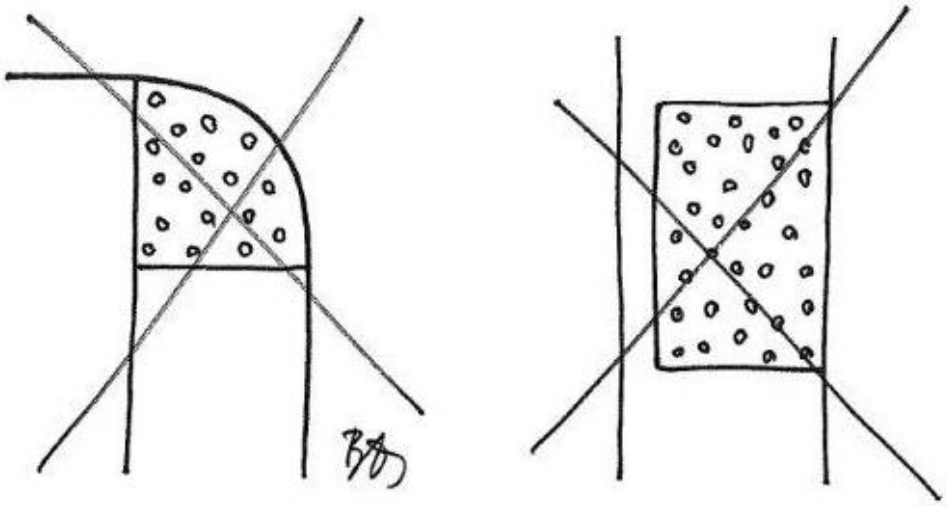


A corner is a place where a blind person is particularly vulnerable. The frequent slopes on corner apexes where gradients point diagonally to the centre of the junction, add to the difficulties. There is an increased risk that a blind person may veer into the road parallel, rather than across the side road.

Tactile paving laid parallel to the curve will worsen the situation particularly for blind people who may be misled by the slope and set off in the wrong direction or step forward too close to the traffic.

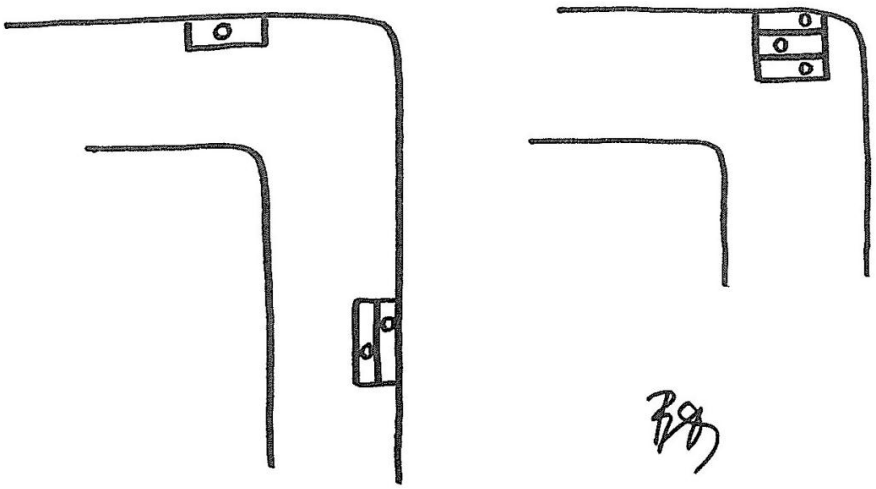
The current advice, for the back edge of tactile paving to be square to the direction of travel ‘repairs’ an already difficult situation when the corner is rounded, and it should not be made worse by a parallel layout of tactile paving.

The excessive use of tactile paving should not be allowed. It is usually the result of incorrectly applied existing guidelines, or from proposals which are not thoroughly thought out.



Greater awareness of the needs of visually impaired people is needed to eradicate these problems, rather than a push for new layouts to excuse poor practice or to accommodate the latest trends in highway design.

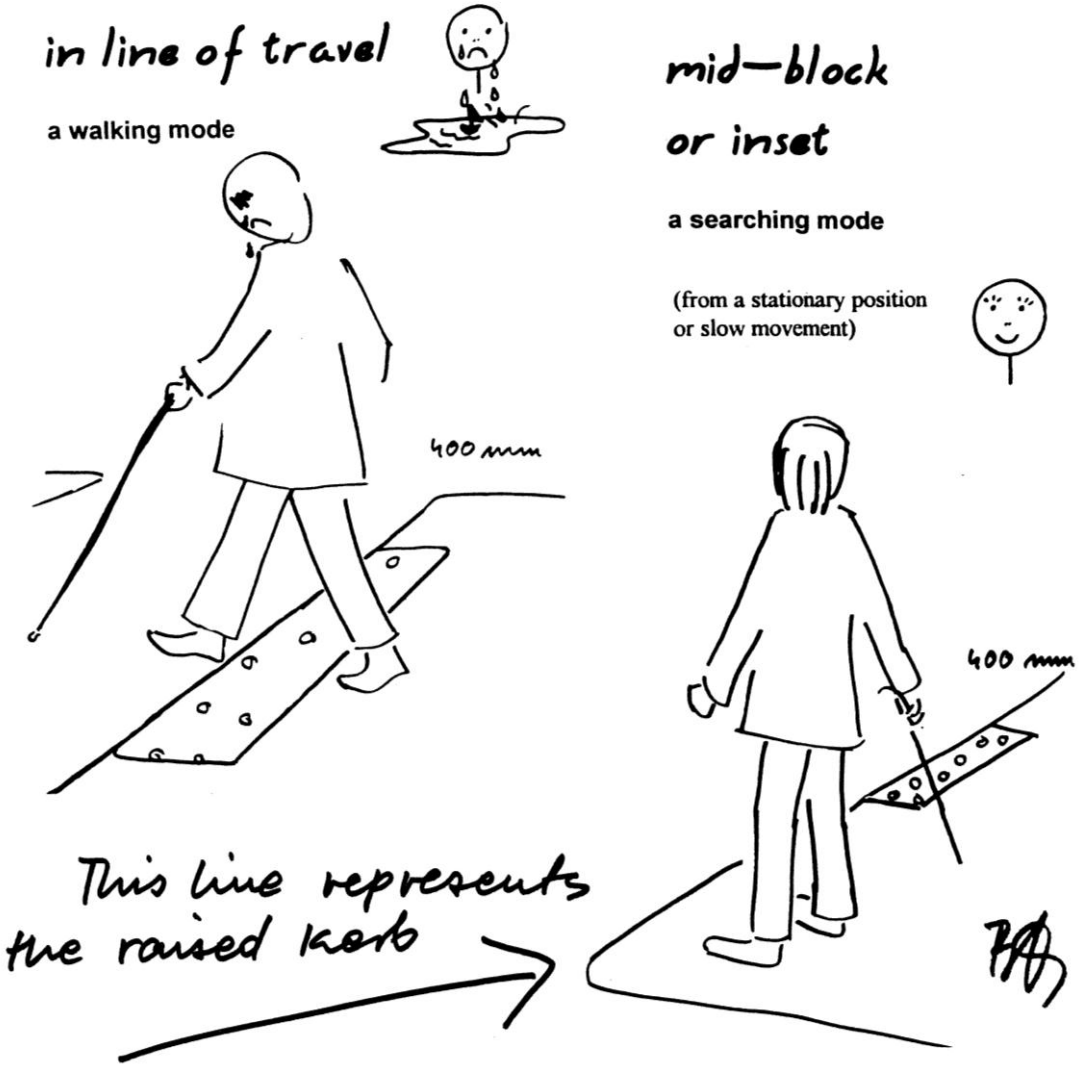
There are variations in the recommended depth of tactile paving laid along the dropped kerb: 1200 mm for in-line, 800 mm for mid-block, 400 mm for inset crossings.



This is because on a large footway with an in-line crossing a blind person may be walking at some speed and may step over tactile paving if it is too narrow or not “register” it, so an installation with the depth of 3 slabs (1200 mm) is needed. In other words: the stopping distance needs to be extended. No more though, than the 3 slabs, or “tails” will be created which will imply a controlled crossing.

These differences are related to the environmental circumstances, the needs and the mobility techniques of blind people.

Dropped kerbs that are not in the line of travel do not present the same problem and a strip of a lesser depth, to indicate the dropped kerb, will be enough. At these crossings, also called “inset” crossings, a blind person having already stopped at the kerb**,** will be in a “searching mode” so to speak, rather than walking.



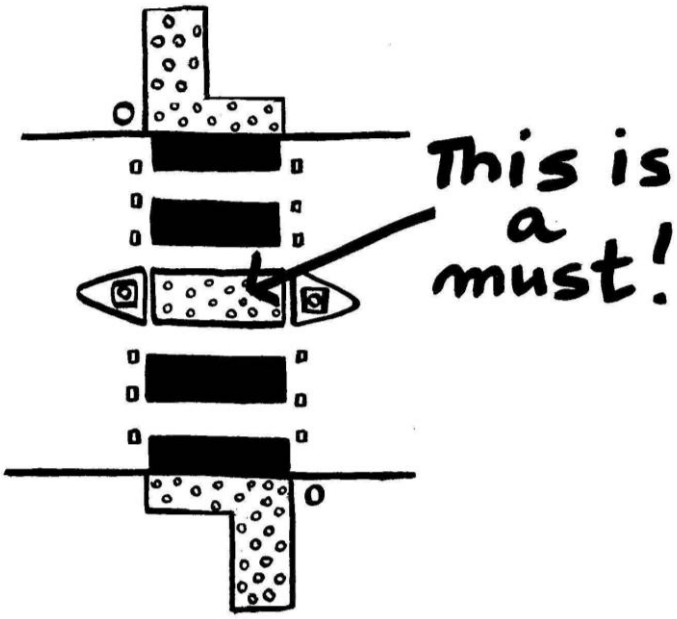
Central reservations

Tactile paving in the middle of a crossing acts as a stop sign for blind pedestrians and is installed at central reservations of double crossings.

The crucial distinction is not whether the crossing is controlled or uncontrolled but whether the crossing is single or double; for example: double and single zebra crossings.

Installations of tactile paving at central reservations of double crossings are essential to blind persons’ safety when they are travelling alone.

Central reservations at double zebra crossings



On a single zebra crossing the pedestrians cross the road in one go whereas a double zebra crossing must be treated as two separate crossings. So, to complete the crossing safely on a double zebra crossing, pedestrians have to stop and look when reaching the central refuge area.

Sometimes, in addition to the central refuge features, there is a huge sign painted on the ground: “stop, look left” to remind sighted people what to do at this point in order to be safe. For blind people tactile paving at the central refuge area acts as such a sign: stop and look. It informs blind people that the crossing is in fact a double crossing and alerts them to the next lot of traffic. It also aids blind people's orientation as to their position on the road and reduces their anxieties about the crossing.

Mistakes related to the installation or omission of tactile paving at central reservations seriously undermine the tactile paving system and endanger the safety of a blind person. In the case of zebra crossings this is particularly apparent, where for example, lack of tactile paving at a double zebra crossing may cause a blind person to proceed as at a single zebra crossing where different rules apply. Such omissions can result in accidents to blind people.

Here, a lack of information equals incorrect information.

A blind person having found the crossing by using the tactile paving method should be able to trust that, from this moment onwards, all the information about the crossing will be accurate and complete. What tactile paving says to a blind person is not only: “here is the crossing” but also: “I will tell you all about it”. This of course ties in with the issue of installing tactile paving on both sides of the crossing at the same time.

Special attention needs to be paid when there are two zebra crossings in close proximity to each other and one is double, one single. Lack of the surface at the central reservation of the double zebra crossing may present a danger even to those

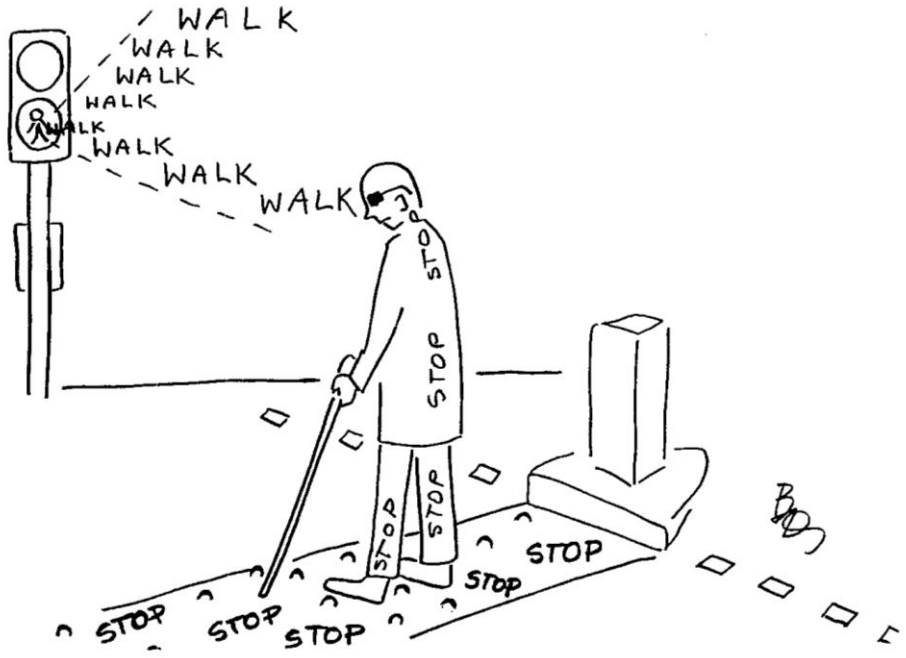
blind people who use the crossing daily and know the route and the discrepancy; they can get the two crossings mixed up. This is because people's orientation and ability to concentrate varies, and in the case of a blind person orientation is much more difficult at the best of times.

Central reservations at pelican crossings

Pelican crossings with auditory signals are single crossings. Pedestrians cross from one side of the road to another in one go and the traffic, controlled by lights on both sides of the road, has to stop during the pedestrian phase. The auditory signal corresponds with the lights, both those for drivers and those for pedestrians, and by bleeping, encourages pedestrians to complete the crossing as soon as possible and in one go.

Installing little central reservations at these crossings and covering them with tactile paving while the rest of the crossing works as a single crossing can be misleading for blind people.

Tactile paving and an auditory signal are the two elements that give information to blind people and have to work together at one and the same crossing. At single pelican crossings where a reservation with tactile paving has been added, one element says one thing while another element says the opposite.



When the road is wide and a double pelican crossing is needed then a staggered pelican crossing should be created with a sheep-pen-like central reservation.

Creating crossings that are half double zebra and half single pelican is confusing. Installations of tactile paving in central reservations of single pelican crossings, and

non-installation of tactile paving in central reservations of double zebra crossings, undermine the meaning of tactile paving and affect the teaching of mobility. In areas where such mistakes are present mobility officers cannot teach the correct use of tactile paving.

These mistakes are avoidable. The DETR, formerly the Department of Transport, Traffic Advisory Leaflet 4/91 says: "Site Preparation - Before installing audible or tactile signals at any crossings, a critical examination of the site should be made, bearing in mind the special needs of people with visual impairments. The opinion of local visually impaired residents should be sought through the local mobility officer, before any decision is made to provide tactile and/or audible signals at such sites."

Central reservations at traffic light crossings

Traffic light crossings are the most difficult crossings of all for a blind person, hence a blind person needs all the assistance he/she can get. Tactile paving provides such assistance.

At traffic lights a blind person needs to be aware of the entire situation: the layout, the traffic situation on the road to be crossed and on the parallel road, how they relate to each other, what traffic phases there are etc. Awareness of all these factors and good mobility techniques give a blind person confidence to cross at traffic lights.

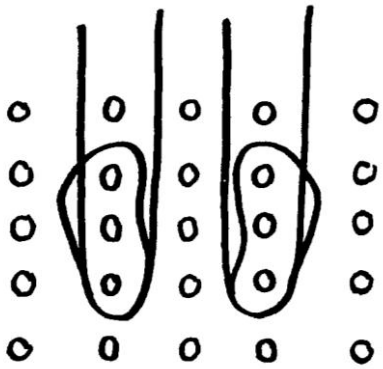
A blind person will cross the road with the parallel traffic and will be continuously assessing the situation as he/she moves along paying attention to the turning traffic. A clear message about the central reservation will help the blind person in this process.

Having said that, I should add that some such central reservations, though correctly laid with tactile paving, are too small for pedestrians to wait safely on them while traffic passes. Special attention needs to be paid to this, particularly at crossings on busy and fast roads with heavy goods vehicles. It can be extremely frightening and dangerous to be caught between heavy goods vehicles passing fast on either side of you. Some such islands are too small even for a guide dog to stand straight.

The "blisters"

The alignment of blisters in the direction of travel is a helpful feature for blind people but should not be treated by the engineers as a navigation device that will solve the problems of "crooked crossings".

An arrangement of tactile paving slabs with the blisters aligned in several directions at short distances apart, are sometimes laid in central reservations of "crooked crossings" in the belief that it will navigate a blind person across the crossing; this is not so. A blind person will not be probing the ground with the feet while walking. A blind person may do that however, when standing on the surface and getting ready to cross; then the alignment of blisters in the direction of the crossing may prove helpful. Proficient use of blisters only comes with training and cannot be achieved by everyone.



The alignment of blisters and the direction of the slope at a crossing point should both point the same way, towards the direction of crossing.

The slopes are a significant feature for blind pedestrians at road crossings and “second in ranking” after the kerb. Therefore it is important that they point in the direction of crossing. Absence of the slope makes the situation more difficult for blind pedestrians hence correct tactile paving installations are that much more important at such crossings.

Modifications

The very broad application of tactile paving necessitates its modified installations in some cases.

Ideally, any modifications should be made in consultation, including a site-visit, with the local mobility officer who will be able to advise whether the modification will aid blind people's mobility or make the facility an ineffective or even a dangerous feature.

Modifications which are carried out entirely by those who are not familiar with the issues of blind mobility often lead to very serious errors and undermine the entire system.

For some situations, indeed, there are no clear-cut guidelines. In complex areas, the temptation is to aim to achieve a perfect solution but this often leads to extraordinary and imaginative layouts of tactile paving hardly helpful to blind people.

Very complex areas require simple solutions. The safety of a blind person and clarity of information are the two points that should not be compromised. If there is too much information then the information needs to be reduced to the bare minimum with the safety aspect intact. However, this must be done from a blind person's point of perception rather than from a sighted person's drive to achieve a “visually sensible” pattern.

Modifications at central reservations

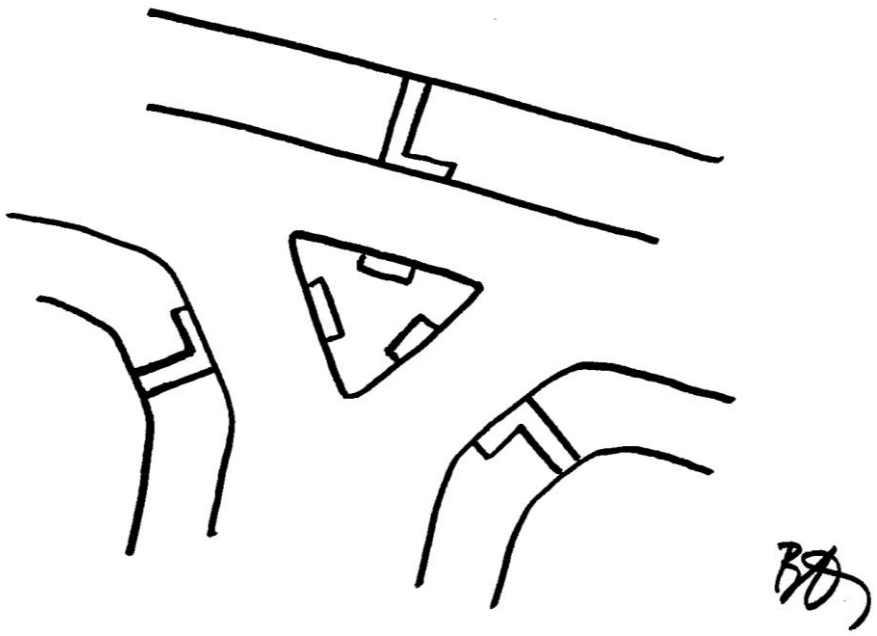
Central reservations of triangular or other shape, at large junctions, where a change of direction is required to go from one section of the crossing to another, are areas where

it is quite difficult to implement the tactile paving system and maintain the clarity of information.

In such cases of complex crossings it may be better to simplify tactile paving messages and install tactile paving along the dropped kerb only. It may be helpful to use railings, or similar methods, to block off the other parts of the reservation, rather than create lots of zig-zaggy paths in the hope that they will “lead” a blind person to the crossing point.

At such complex junctions it is very difficult for a blind person to establish the direction of the crossing by the tactile paving method. A blind person standing on tactile paving will be working out his/her position in relation to the traffic and tactile paving. Therefore there must be clarity between these two positions: feet on tactile paving facing the traffic flow, and feet on tactile paving parallel to the traffic. On a traffic island of a complex junction with the traffic sounds coming from all around, and with lots of tactile paving paths, it is difficult to work out which path of tactile paving is which and at what angle one should stand on it. Identifying the crucial part of the tactile paving at this point, which is the strip along the dropped kerb, is made even more difficult. Having arrived at the kerb line, the blind person may not be sure that this is it. Therefore it may be better at such junctions to do away with the “tails” of the configuration and lay the tactile paving along the kerb line only.

While minimising the tactile paving installation is a better alternative at a central island of a complex junction, the corresponding crossings, those on the “mainland” so to speak, need the standard treatment of tactile paving. A blind person walking along the footway will need the information to locate the crossing in the first place.



All such situations differ. It is crucial to view every situation individually and preferably consult a mobility officer at the planning stage.

The “Guidance on the Use of Tactile Paving Surfaces” (1998) give very clear advice on installation of tactile paving on central reservations.

Modifications at uncontrolled side road crossings or large open spaces

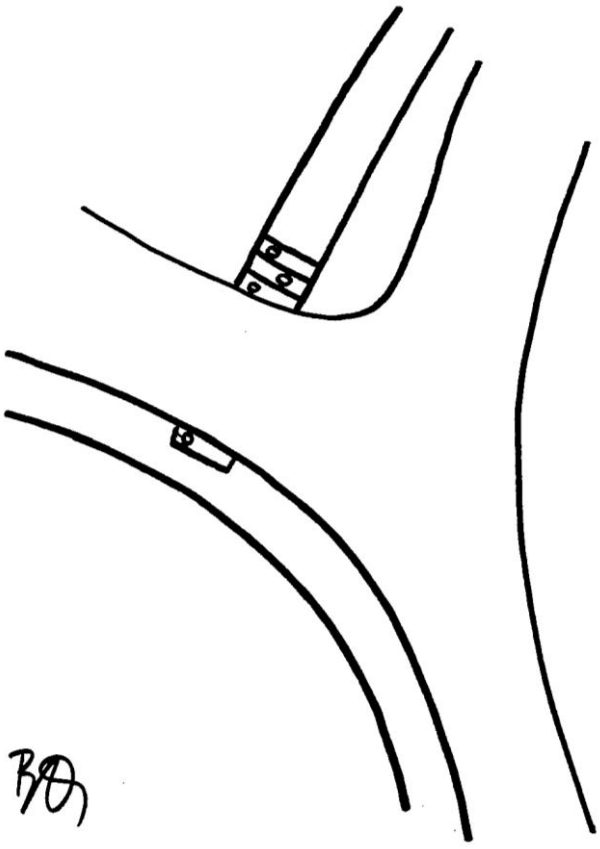
Modified installations of tactile paving are sometimes also required at uncontrolled side road crossings or at large open spaces.

A good example of such installation is tactile paving between John Lewis and the Bentalls Centre in Kingston-upon-Thames.

There is a large open space between the two building blocks, part of a pedestrianised area still open to some traffic. In the centre, which used to be the road and where now one expects the main flow of pedestrians, there is a huge, slightly curved, line of yellow tactile paving. It is at the point where, in this pedestrianised area, one might walk into the limited traffic. Later on, upon request from the community, railings were added to give the flow of people more direction.

I thought this was an excellent, truly thought out provision of tactile paving: clear, simple, with all the components a blind person needs at an uncontrolled crossing and in that particular situation.

Sometimes the installation of tactile paving will need to differ on one side of the crossing from the other. For example, the crossing on one side of the road may be an inset crossing or mid-block and an in-line crossing on the other side.

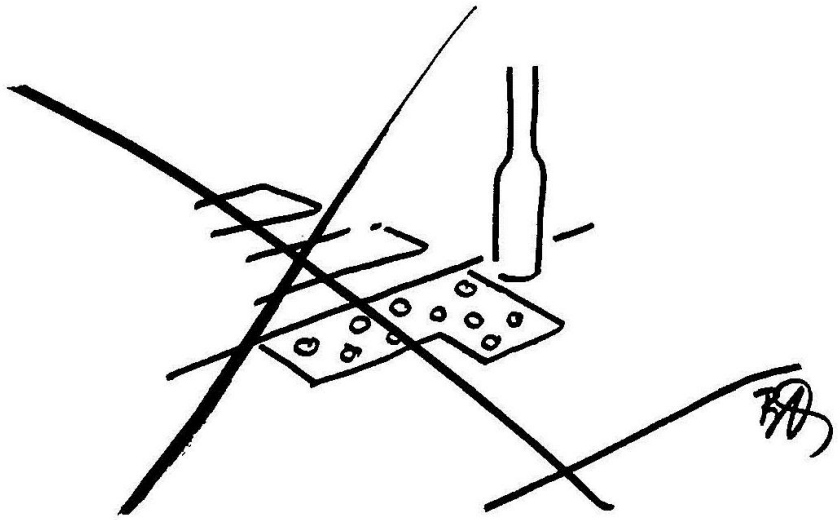


Again, advice from a mobility officer will prove valuable here as he/she can look at the situation from a blind person's perspective and point out the mobility techniques blind people are likely to depend on.

Modifications to the strip across the footway

Sometimes the length of tactile paving strip across the footway needs to be adjusted. Again, this is an area where advice from a mobility officer can prove to be of value.

Short tails, one slab long, do absolutely nothing to aid the orientation of a blind person.



Long tails across large, open spaces are not needed, but on a wide pavement, where blind people are likely to walk close to the wall at a particular location, tactile paving should extend all the way to the wall.

Rigid rules for a cut-off point are not helpful, when, for example, just two more slabs could make all the difference.

It is important to note however, that any modifications in tactile paving provision should always be tailor made. A change that is working successfully in one situation may not work well in a different set of circumstances.

The key to successful modification of tactile paving is understanding the principles of the tactile paving system and knowing what information blind pedestrians need, where and why. A local mobility officer will be able to assess the environmental features of the place from a blind person's point of view and give advice.

Learning the principles of tactile paving is just as important as learning the rules of its application. Understanding how the system works for blind people will reduce the instances of misinterpreting the guidelines, it will enable people to install tactile paving successfully in situations which are not illustrated in the guidelines and will enable people to make successful modifications as and when required.

TACTILE PAVING - Element by element - Check List

Summary of the principles

Tactile paving ('the blister surface') is a mobility aid for visually impaired pedestrians, which tells them about road crossings. It is a nationally accepted system of information. All elements of tactile paving have a meaning and all relate to the specific ways visually impaired pedestrians orientate themselves. Hence every element of tactile paving has to be applied correctly.

The basic principle of the configuration at controlled crossings is that one strip of tactile paving is laid across the path, and the other strip of tactile paving is laid parallel to the road at the crossing point. Both strips are joined at a right angle. A blind person walking along the footway will feel the surface under the feet, make a right angle turn towards the road and will find the crossing. The strip of tactile paving laid across the footway enables the blind person to find the crossing. A different principle applies at uncontrolled crossings, which by the same token helps to differentiate between controlled and uncontrolled crossings.

At uncontrolled crossings where there are dropped or flushed kerbs, the idea is to compensate for the lost kerb, so tactile paving is only installed along the kerb line. No other configurations which resemble the T or L shape should be used. Here tactile paving acts as a warning device and in the absence of a kerb, prevents a blind person from walking into the road without being aware of it. Here tactile paving is not about finding the crossing but about preventing an accident.

In central reservations of double crossings the surface acts as a stop sign.

Controlled crossings such as zebra and pelican crossings

1. Tactile paving at controlled crossings, such as zebra and pelican is installed so that a strip of the surface is laid <u>across</u> the footway.

This gives a blind person, walking along the footway, tactile information that a controlled crossing is there, and it enables him/her to locate it.

2. At controlled crossings the strip of tactile paving is laid across the whole width of the footway all the way to the building line.

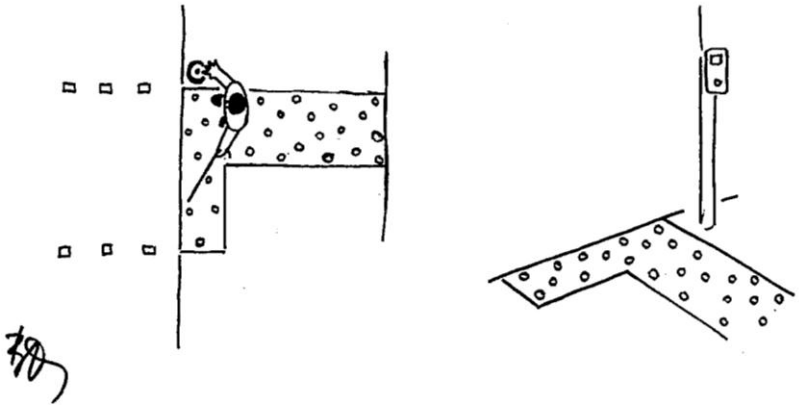
This guarantees that a blind person will be able to find the crossing using the tactile paving method irrespective of his/her position on the footway at the time. Blind people cannot navigate visually hence their position on the footway will vary.

3. The width of the strip across the footway is 3 slabs – 1200 mm.

This is the optimal minimum that ensures that the tactile paving will be stepped onto and noticed by a passing blind person.

4. **At controlled crossings the strip of tactile paving across the footway, together with the strip parallel to the road form the shape of a letter "L".** Since 1998 this includes zebra crossings.

   The stroke of the letter L leads a blind person to the pole. It enables a blind person to locate the push button box and to identify a type of crossing.



5. **In case of pelican crossing when there are two poles with push button boxes or in one way streets, the L shape configuration is laid so that the strip across the footway leads to the pole on the right hand side.**

   This is to benefit guide dog users who keep the dog on the left and have their right hand free to operate the button.

6. **The strip of tactile paving parallel to the road is 2 slabs deep (800 mm) or 3 slabs (1200 mm) if the crossing is an in-line crossing.**

   This tells a blind person where the footway ends and the road starts and where to position oneself while waiting to cross. In-line crossings need greater depth to allow for reaction time.

7. **The strip of tactile paving parallel to the road corresponds in length to the width of the crossing.**

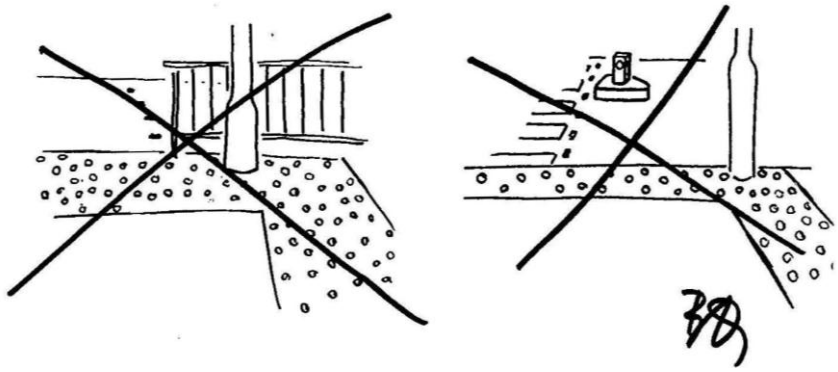
   This gives a blind person information about the width of the crossing and helps him/her to cross the road within the boundaries of the crossing.

8. **The strip of tactile paving parallel to the road corresponds to the dropped kerb and in turn, the dropped kerb corresponds to the width of the crossing on both sides of the road.**

   Dropped or flush kerbs that extend beyond the tactile paving installations and the width of the crossing are dangerous for blind pedestrians. They may cause a blind person to walk into the road without realising it.

9. **Tactile paving installations do not include street furniture.**

The surface is to guide a blind person clear of obstacles not into them. A blind person must be able to be sure that while standing on tactile paving facing the road, he/she faces nothing else but the crossing.



10. At double crossings the tactile paving is laid at the central reservation.

This tells a blind person that the crossing is a double crossing where one needs to stop and wait for the next lot of traffic, an equivalent to a “stop and look” sign.

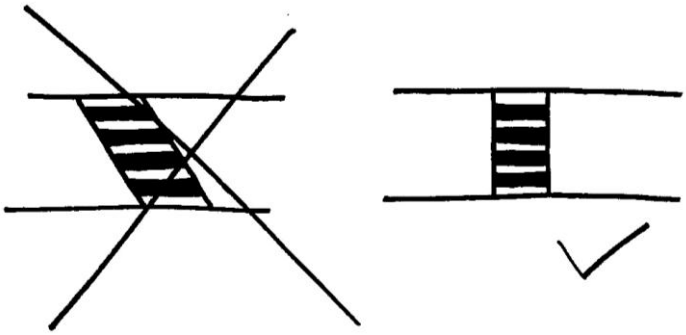
It is essential to one’s safety to know whether the crossing is single or double, hence provision of tactile paving in central reservations of double crossings such as double zebra crossings is a must. Omissions of tactile paving in these circumstances when it is provided at the outset of the crossing, may mislead a blind person into thinking that the crossing is single and is to be crossed in one go.

11. The tactile paving is installed on both sides of the crossing and is laid according to the same principles.

This gives a clear message to the blind person upon crossing the road that he/she is back on the footway, provides the facility on the outward as well as inward journey and gives a blind person a standard situation to deal with and interpret.

12. One side of the crossing is directly opposite and parallel to the other side and square to the direction of crossing.

This helps a blind person to cross the road in a straight line.



A blind person who cannot navigate by visual means depends on tactile and auditory clues to establish the direction of the crossing. Hence the crossings need to be arranged so that the tactile and auditory features are standard and regular.

13. The colour of tactile paving at controlled crossings is red.

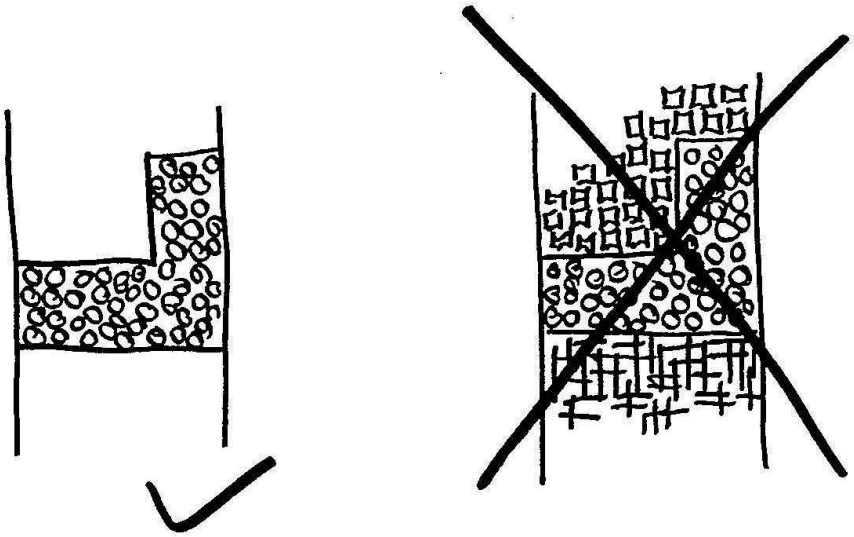
This is to create colour contrast helpful to those who have residual vision.

Because of the significance of this colour at controlled crossings, red surfaces should not be used on the footway adjacent to the crossing or on the traffic islands.

14. The textured surface of tactile paving has a distinctive pattern of blisters.

This is to create a tactile contrast and pattern at ground level that can be perceived and recognised by a totally blind person feeling it with their feet and with a cane.

Use of surfaces similar in texture to tactile paving, with lots of edges and grooves, next to tactile paving reduces the tactile contrast blind people need to recognise the surface.

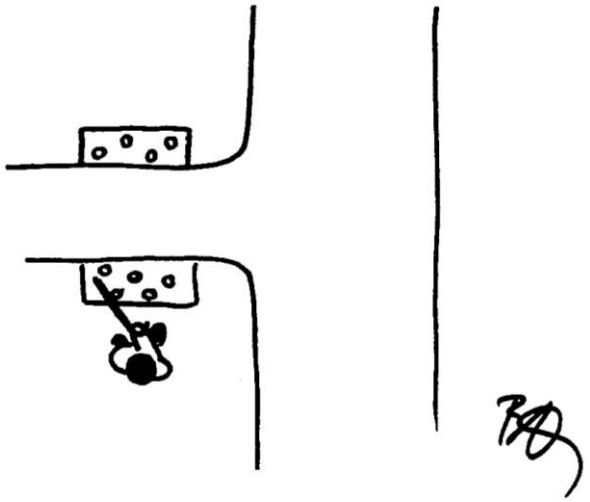


15. The slabs of tactile paving are set so that the blisters are aligned with the direction of crossing.

Alignment of blisters in the direction of crossing may help a blind person to establish the direction of crossing.

16. Inspection covers which fall within the tactile paving area need to be of a type which will allow for fitting of tactile paving surface.

Uncontrolled crossings/dropped kerbs



A. At uncontrolled crossings such as side road crossings and anywhere else where the kerb has been dropped, tactile paving is laid only along the dropped kerb.

In these situations tactile paving substitutes for the kerb and indicates to a blind person the borderline between the footway and the road.

B. There is no strip of tactile paving across the footway, no "tail", at uncontrolled crossings.

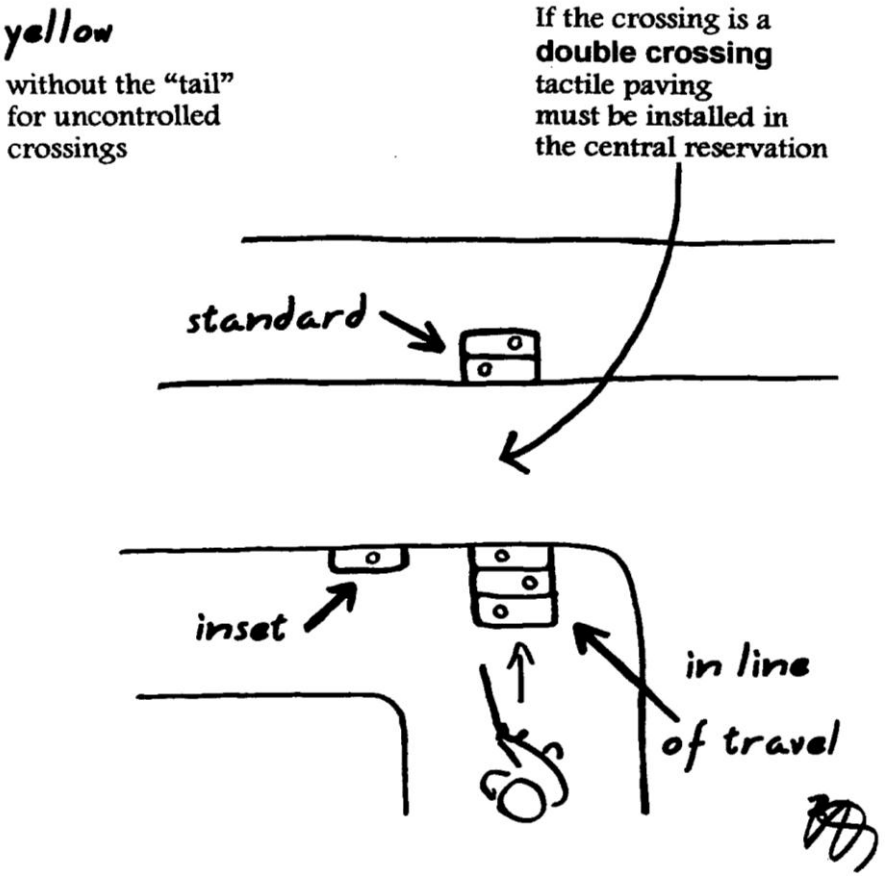
The configuration with the strip of tactile paving across the footway is reserved for controlled crossings only.

C. The strip of tactile paving laid along the kerb line is 2 slabs (800 mm) deep but it must be increased to maximum 3 slabs (1200 mm) at in-line crossings, or can be reduced to 1 slab (400 mm) at crossings set into the side roads, so called in-set crossings. (See the cartoon on page 54)

D. The colour of the tactile paving slabs at uncontrolled crossings is yellow.

This is to differentiate between controlled and uncontrolled crossings and benefit those people who have residual vision.

The points 6 - 12 and 14 - 16 from the previous paragraph also apply.



Points to note

- Tactile paving must not be installed where there are no crossings.

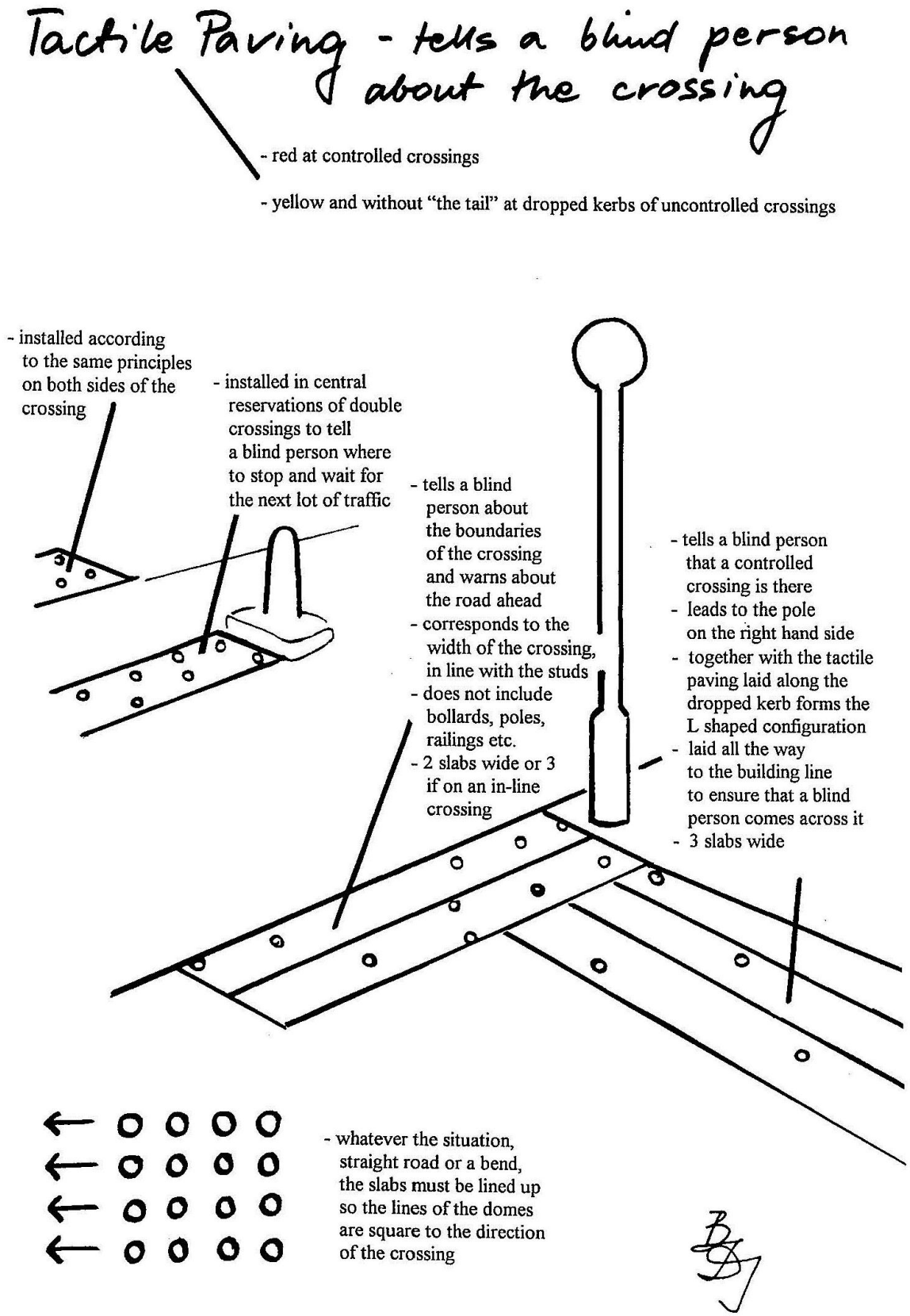
- Tactile paving must not be laid and left exposed for use by blind people while a crossing is being built and is not yet operational.

The above point is clearly understood in respect of drivers. For example, when there are motorway developments and some road signs do not apply until completion of the works, all such signs, which could misinform drivers, are carefully covered up.

Tactile paving must be treated in the same way as road signs.

Whether such a treatment of tactile paving is specified by law or not, the surface carries a message to blind people and in that it is a sign, with or without the law; Braille on the footway, if you like.

One page whole system diagram



PART 3

THE REMEDY

If there is tactile paving provision in a borough or county, even if the paving is installed incorrectly, the authority has good policies on access for disabled people. The problem lies with the implementation of the policies.

A quick, simple remedy, involving no extra cost is readily available to the highway engineering departments. Organisations in the field of visual impairment, such as the Royal National Institute for the Blind, Guide Dogs or local, specialist, voluntary organisations for visually impaired people will offer expert help and guidance. The answer may even lie closer to home with the mobility/rehabilitation officers within the authority's own Social Services Department.

Mobility/rehabilitation officers have been trained in mobility skills and teach visually impaired people of all ages, abilities and degrees of visual loss. They are able to describe the techniques a person with visual impairment will have to employ in order to negotiate any or a particular, crossing.

Apart from specialising in mobility, the locally based specialist will know the area and be are aware of the trouble spots from a blind person's point of view; for example: a difficult roundabout, a "crooked crossing", any obstacles affecting the route, traffic flow patterns etc.

It can be highly beneficial for the engineer responsible to walk with the mobility officer through the area of the proposed crossings and discuss the details on site. Few committee meetings or reports can match the value of such an exercise.

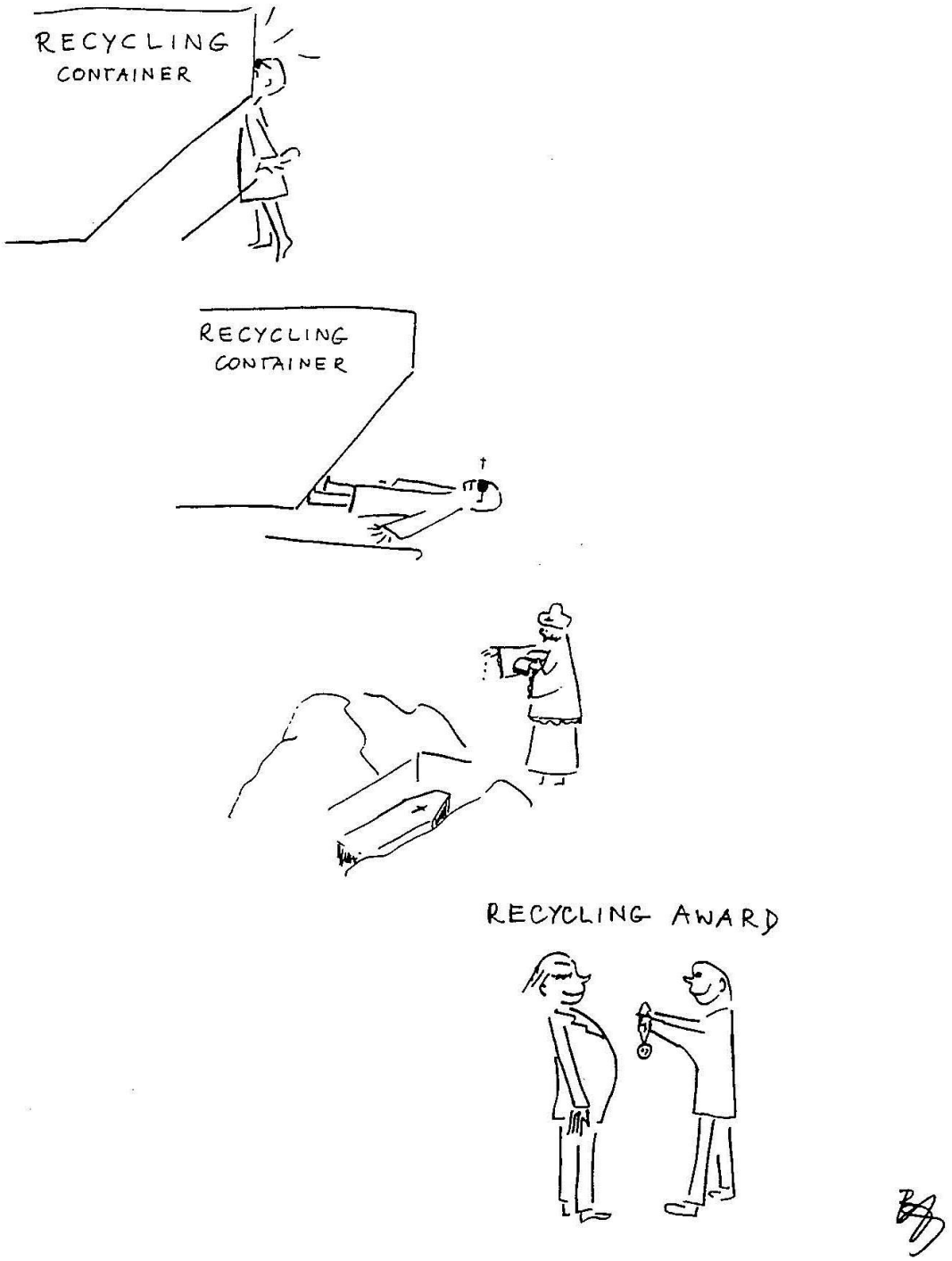
A lot of problems to do with tactile paving would be overcome if there were greater understanding of how people with visual impairment use it.

"Understanding Tactile Paving at Pedestrian Crossings" is an awareness building exercise and as such, cannot answer all the questions, or give examples of all the possibilities. What it does, I hope, is alert people to the problems which exist and give enough insight to allow people to find the right solutions.

Consultation

There are consultations and consultations. Some consultations are undertaken at great investment of time and money but very little is achieved as a result.

Some consultations fail to reach the right people and the results are such that while they may benefit some groups of people or causes, they may disadvantage others.



Hierarchy

There are a few points worth bearing in mind. Within local authority structures, the decisions regarding access policies and environment are usually taken at a high level by officers responsible for a wide variety of issues who may not necessarily have the detailed knowledge about the mobility of visually impaired people. Mobility officers on the other hand have the specialist knowledge but are generally at the bottom of the hierarchy within the local authority structure and are few in numbers hence their input into formulation of policies may be a slow process.

Access officers

One of the successes of access policies for disabled people is the creation of the access officer profession and the availability of degree courses in this field.

People appointed draw on their own resourcefulness and experience. Some access officers may have considerable experience in dealing with the needs of people with visual impairment, others have specialised in different areas of disability. But all will be asked to advise on environmental issues and the needs of people with visual impairment, including tactile paving. Ongoing co-operation between access officers and mobility officers is therefore essential.

A very useful practice which gives depth to understanding mobility issues of visually impaired people is actually observing mobility lessons: walking with the mobility officer behind the trainee and observing what is happening.

Since 1982, following a government report recommending the employment of access officers, some local authorities took a leap forward in employing access officers, but not all and there is a shortage of this valuable resource. Access officers are usually employed by Environment / Planning Departments whereas mobility officers by Social Services / Community Departments. However, employment of access officers should not remove the local mobility officer from the consultation process on environmental issues. Access officers are not meant to replace the role of mobility officers in the consultation process but to strengthen the case for disabled people. Working together is the key to success.

Road safety officers

A group of people who could well be brought into the arena are Road Safety Officers. Their advice may prove helpful particularly in relation to the location of crossings, their design and safety. Some crossings are built against the principles of the green cross code, which the road safety officers advocate and teach.

Some road safety officers are engaged in teaching school children the green cross code or giving talks to elderly people. The majority of elderly people have visual impairment. Children, after all, are the future generation of visually impaired people. An understanding of the issues of traffic and road safety gained at school lasts throughout adulthood.

Road safety affects everybody. There is a lot of scope in the role of the road safety officers tackling the issues of road safety on both environmental and social levels.

People with visual impairment

Visual impairment and mobility

There can be no successful consultation without understanding a few points about visual impairment and visually impaired people themselves.

People with visual impairment are all individuals and so are their impairments. They vary. This of course relates to mobility issues.

For example; at a zebra crossing a blind person with residual vision, the degree of useful residual vision varies with each individual person, will primarily look for the pattern of black and white contrast and may disregard the textured paving altogether. Such a person may not even know what the surface is for. A different person without such usefulness of residual vision will find tactile paving a blessing.

There may be two totally blind people seemingly with the same condition but their mobility may differ. A blind person using a guide dog as a mobility aid will use different environmental features for orientation than a blind person who uses a long cane. Both these blind people may not be aware of each other's needs for successful travel. One may disregard tactile paving, the other may depend on it.

Some people with visual impairment may have to depend on the tactile aspect of the facility when it is dark while during daytime they will be able to use the visual clues.

Some people will have additional problems closely related to being able to use tactile or auditory signals; for example: diabetes which affects the sense of touch (diabetes is one of the major causes of loss of sight), or hearing impairment.

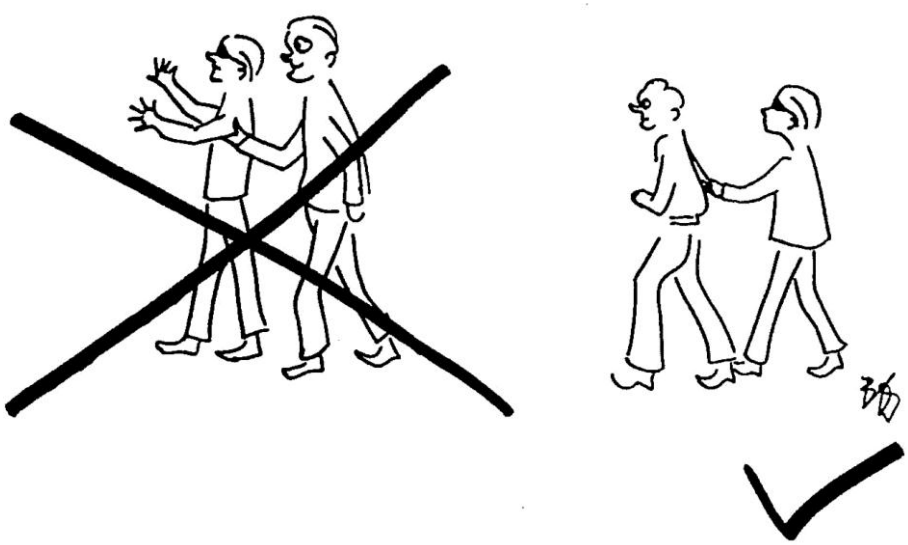
It is therefore important that the visually impaired **users** of the facility are consulted and a **cross section** of the visually impaired population.

Involving people with visual impairment in testing the facility

Tactile paving has been designed to assist blind people when travelling alone. Therefore, when blind people are invited to inspect a site and test the facility, care must be taken that they are actually given the opportunity to do so. Sometimes a blind person is brought to a site only to stand and listen to other people's conversations.

A blind person needs to walk over the facility and listen to the traffic as if he/she was there alone. Perhaps to walk at different speeds, with and without interruptions and so on. A mobility officer will be able to help in such circumstances.

I add at this point that a useful thing to remember when taking a blind person somewhere is to offer him/her one's own arm to hold when walking, rather than holding the blind person and projecting him/her through space.



By holding onto the sighted person's arm, the blind person will be able to walk freely and follow at the same time. He/she will read the movements of the sighted person felt through the grip and will pick up the information about the walk, i.e. turns, speed, stops etc. However, it is always a good idea to **<u>say</u>** when approaching descending stairs.

Further information and leaflets on guiding a blind person can be obtained from the Royal National Institute for the Blind, Guide Dogs or a local mobility or rehabilitation officer can demonstrate the guiding techniques when required. Asking visually impaired people themselves, how they would like to be guided is always a good idea.

Difficulties in making complaints visual impairment presents

Frequently when there are incorrect tactile paving installations, or there are some footway hazards, people responsible are satisfied that there is no cause for concern because there have been no complaints from visually impaired people.

Such interpretation of silence from people with visual impairment is misleading. Silence from blind people does not necessarily mean all is well. It could be that they suffer in silence.

Making a complaint involves seeing: seeing the fault and other provisions to be able to

compare, seeing to write and seeing to correct one's own writing, seeing to read up background information, seeing to look up the town hall departments and addresses. Of course, a blind person can, one way or another, accomplish all of this, but it is a task which requires a lot of time and effort. A sighted person can help. The problem is, however, that sighted helpers are not as easy to come by as one might think. Also, what often happens is that a blind person who has access to a sighted helper has to use him/her in the time available for more pressing tasks such as private correspondence, bills, shopping, checking clothes etc., etc. rather than looking up Town Hall officials.

Therefore when a letter from a visually impaired person does arrive, it should be taken very seriously and statistically valued to a greater degree.

Confidence in relation to access to information

A visually impaired person may not have an overview of a situation and may not therefore have sufficient confidence to take a stand on an issue.

A sighted person learns a lot about the world in an instant, simply by looking. In most cases a blind person has to explore item by item, or be told about it. For example: by driving across London I can tell a lot about tactile paving provision in several authorities, a blind person may have the experience of two or three tactile paving installations only, those on his/her regular route.

Age of the majority of people with visual impairment

The majority of people with visual impairment are elderly. They are of a generation which considers an accepting attitude towards ones misfortunes a virtue. They are not likely to telephone the town hall to say that they were forced off the footway onto the road by a recycling container, or that they tripped over a 12 inch high bollard which they did not see. Many are likely to think it is their predicament, not seeing things, and it may not occur to them that footways should be free from hazards.

Many people have severe additional difficulties which make coping with daily living a main preoccupation – there is no room for campaigning. Working out ways of making a cup of tea without scalding oneself may well be a priority for the day.

There are many reasons why people with visual impairment are not very vocal in expressing their needs. It is good to be aware of at least some of these issues so that the forcefulness of the presentation or number of complaints are not the factors on which decisions affecting safety of visually impaired people are based.

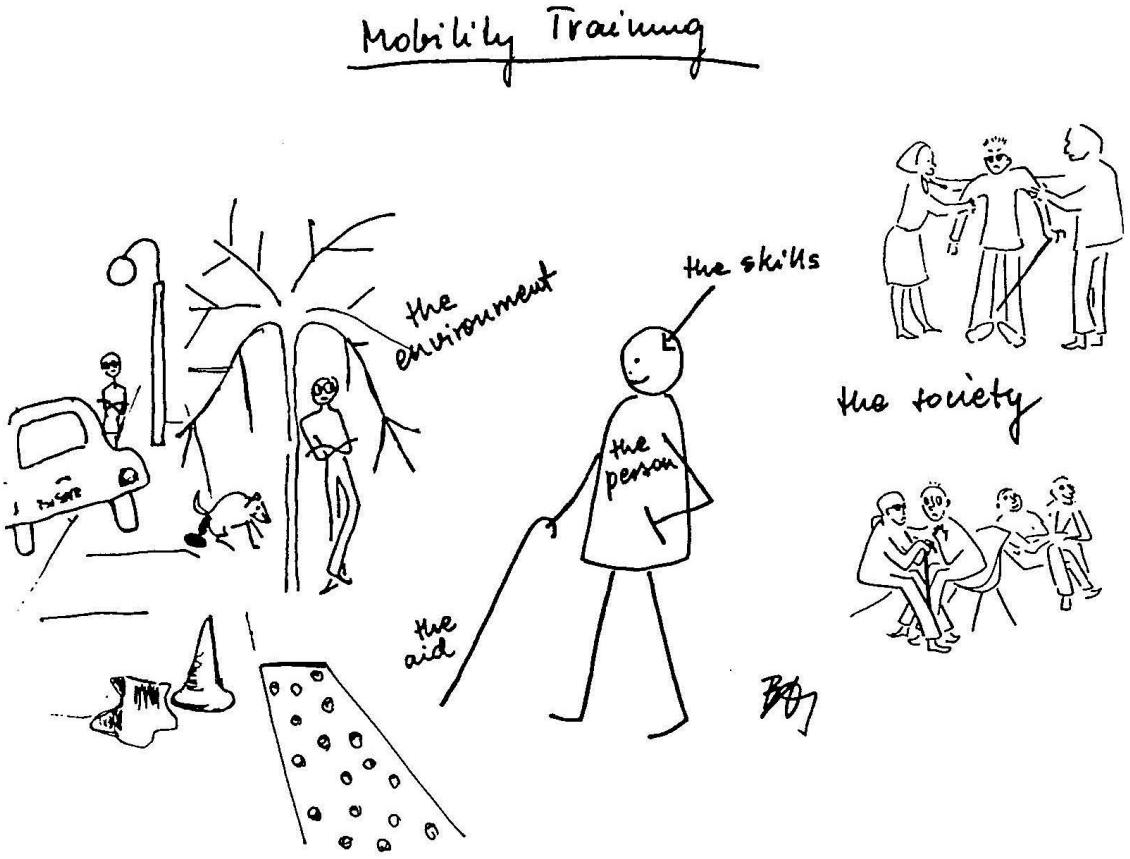
National mobility standards

Any major changes to the tactile paving system need to be made at national level and communicated to the mobility and rehabilitation officers and the guide dog mobility

instructors, together with the suitably adjusted techniques for teaching it to visually impaired people.

The mobility of people with visual impairment is a very complex and completely individual process. Teaching mobility is always tailor made. The seeming uniformity in mobility that is achieved derives from the needs of people with visual impairment themselves. A blind person walking along the footway needs to know what is in front of him or her. A mobility officer will be teaching this person techniques which will give him/her this information but at the same time will be taking into account all the variables concerning this person and the environment.

Environmental issues are part and parcel of every mobility officer's job. So is education of sighted people about ways by which they can help people with visual impairment.



There are not enough mobility officers employed across the country. Only a proportion of people with visual impairment receive full mobility training. However, no mobility officer can teach a blind person a technique for “reading” incorrect tactile paving provisions, or for avoiding obstacles at head level. It is therefore that much more important for the environment to be hazard-free and easy to follow. Then more people will be able to cope with it, irrespective of whether they had or did not have mobility training.

An environment which is safe and easy to follow for blind people will always be the same for the rest of the population.

Information for people with visual impairment

People with visual impairment need to be informed about works which are going to affect their mobility.

The need to do so in relation to drivers is understood. There are huge systems of information operating across the country to inform drivers about road works. Such information is passed on to drivers in advance of the works and while they last by a variety of means: over the radio, local and national television, internet, newspapers, leaflets, stickers, posters and sign boards on the route!

There is also an in-depth understanding of how a driver functions. Drivers are lost without road markings, so reminders are placed along the route to remind them to switch to a higher level of concentration. Needless to say such notices are often placed to the inconvenience of pedestrians.

There is also a backup system should drivers fail to get the message. I have seen a board with a sign about a diversion on the road pushed aside and drivers were entering the road. Shortly, a couple of very concerned men in yellow jackets arrived by car and secured the sign in place!

There needs to be equal level of concern about blind pedestrians who, unless informed about repositioning of crossings, suffer great distress when they are looking for a crossing or a bus stop which they know was always there but seems to have disappeared.

Informing visually impaired people about relevant environmental changes is in fact quite easy and not expensive. But for that to work there needs to be an ongoing co-operation between the environment and social services departments who have contact with the visually impaired population in the area. Also they will be able to advise on the appropriate format of the information.

There is no need to print large numbers of notices for random distribution. Identifying the few individuals in a particular locality may be a more fruitful exercise. Technology makes it possible to send notices to individual people in the required format. Major works of course will need wider publicity.

There are already excellent information schemes operating in many authorities using talking newspapers produced by local voluntary organisations. In one local authority, a highway department is involved in organising weekly shopping trips for disabled people, including those with visual impairment, by providing transport facilities and in turn get feedback for their environmental endeavours and suggestions for further improvements.

The way in which the information is presented to people with visual impairment requires attention. For example, a statement about “improvements for the local community”, or “changes to the gyratory system” means nothing whereas: “the footway in front of the post office will be dug up” does mean a lot.

Informing people with visual impairment about environmental changes in the area should be standard practice for an authority and planning for the distribution of information should also be built into the process of planning a particular scheme.

Advanced information about the relocation of controlled crossings or their change from one type to another is a must.

For example, a zebra crossing which has stopped being a zebra crossing may still feel the same to a blind person; the change may only be obvious to sighted people. Not knowing about such a change and not being able to perceive it, will have serious repercussions for the safety of blind pedestrians travelling the route alone.

Framework for a programme of tactile paving installations

- Reading the literature on tactile paving until it clicks and establishing contacts for further enquires and interdepartmental links with the specialists.

- The government guidelines which are to be followed when installing tactile paving are: “Guidance on the use of tactile paving surfaces” (1998).

- It is important to **understand** the guidelines in every detail; what, why and how a visually impaired pedestrian is to use a particular element. If there is any doubt about any of the elements, then it is essential to clarify the points with mobility specialists.

- Setting up training programmes and ensuring that everyone involved in the provision of tactile paving, including the contractors, understand the subject.

- Correcting all existing misleading tactile paving starting with the elements which present most danger to blind pedestrians.

- Setting up a program of installing tactile paving which incorporates elements of good practice such as:

    - co-operation with specialists in the field of blind mobility and service users, joint site-visits.

    - analysis of needs

    - development of a strategy for tactile paving provision

    - keeping track of tactile paving installations on a colour coded map
      It would help people who deal with enquires or complaints about tactile paving to be aware of their locations.

- Connecting the programme of tactile paving with other relevant issues, for example: the problem of vegetation overhanging footways, the issue of street furniture, street lighting, pavement parking, refuse collection and road maintenance. This will necessitate co-operation across the department’s sections to create a barrier and hazard free environment.

- Publicity and information designed to benefit visually impaired people, including addressing public attitudes towards tactile paving, as well as suggesting ways by which members of the public can help to keep footways safe for visually impaired pedestrians, for example, cutting back bushes overhanging the footway from their front gardens.

  When major changes take place and new routes and crossings are being created it may well be the responsibility of the highways department to go as far as to arrange for individual training sessions to teach blind individuals the new layout and crossing systems.

PART 4

OTHER ISSUES

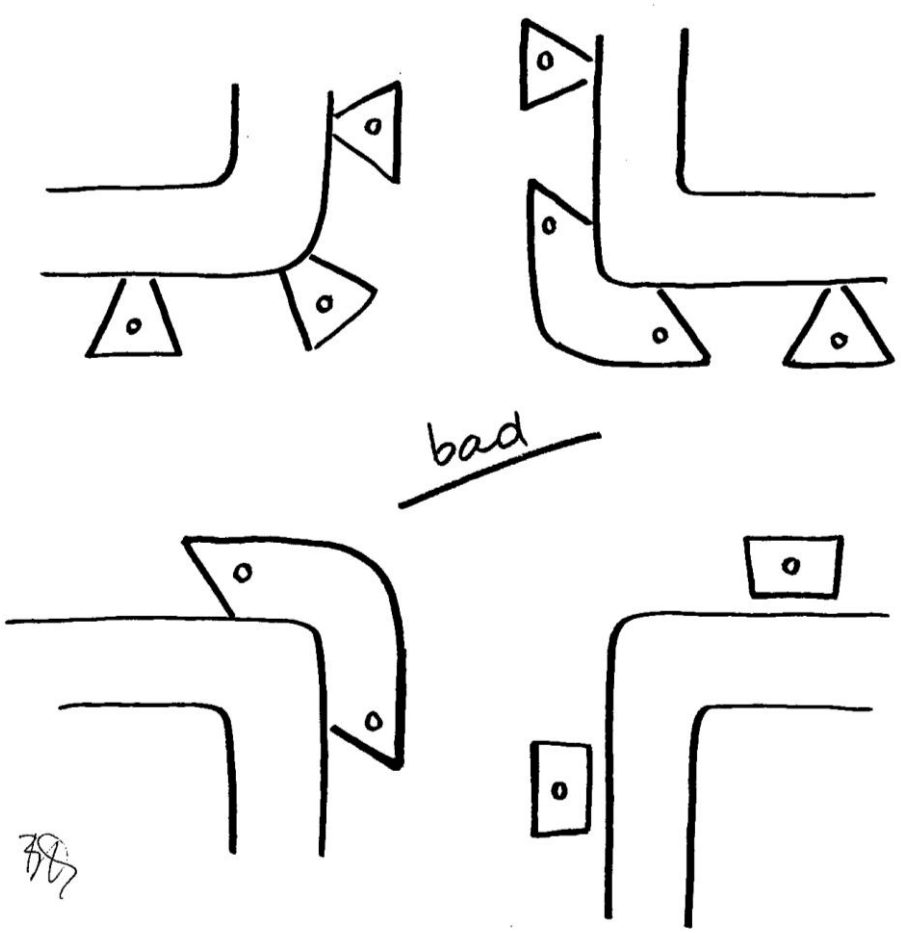
I could not talk about the mobility of people with visual impairment without raising some of the other issues affecting visually impaired pedestrians. As people learn about blind mobility and tactile paving, they must also become aware of what presents the greatest hazards to visually impaired pedestrians and why. What follows is my selection of those issues, there are, of course, many more.

Build-outs

Build-outs are extensions of the footway at street corners which were invented to prevent parking at corners and thereby creating a much safer situation for both pedestrians and drivers.

Some build-outs may present a difficulty to a blind person, some are no problem at all and these should be made popular.

Build-outs of different and odd shapes, small, with added street furniture and flower containers are not helpful.



The added furniture obscures the driver's view and the white cane or a guide dog of a blind pedestrian may not be visible. The build-outs, which are made up of segments, require the pedestrian to cross the road in a perfectly straight line and come onto the footway between the segments. A blind person may not be able to do this, may find the edge of the segment thinking it is an up-kerb and may try to get onto it only to find a bollard and yet another down-kerb. An extremely confusing situation. It may be quite a struggle to find the footway.

Build-outs, which retain the concept of an ordinary corner, do not present a blind person with such problems. He or she may not even be aware of it, as it will feel as normal as an ordinary corner.

Such a build-out is built as one piece, is flush with the footway, has no added street furniture, has standard treatment of the kerb, and by being extended sufficiently into the side road, takes into account the fact that a blind person may veer when crossing the road. Of course, the dropped kerb and tactile paving go without saying.

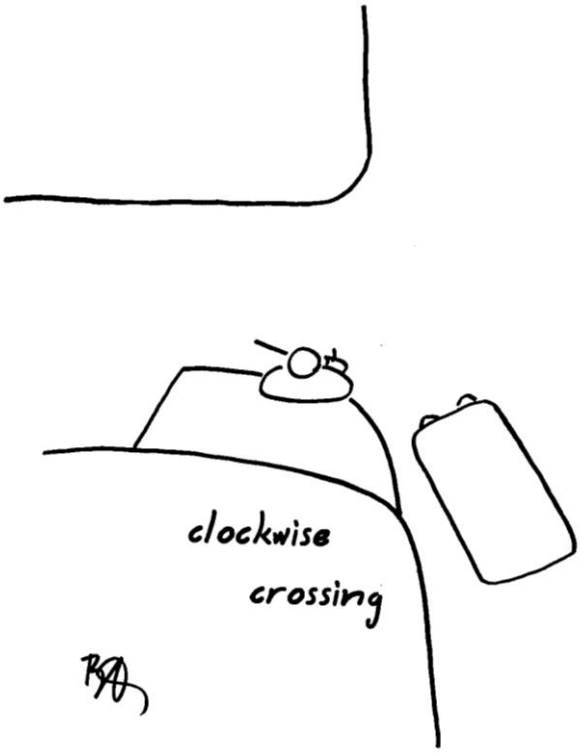
It has to be stressed here that tactile paving needs to correspond strictly to the dropped kerb. Then, if a blind person arrives at a crossing point slightly off the point where the tactile paving is, he/she will find the kerb. When, however, a dropped or flushed kerb extends beyond the tactile paving, a blind person may walk into the road without realising this. Tactile paving at dropped kerbs is supposed to prevent precisely such situations.

See also the paragraph “Designer-led crossings” page 72.

Clockwise crossings are more difficult for blind pedestrians than anticlockwise crossings.

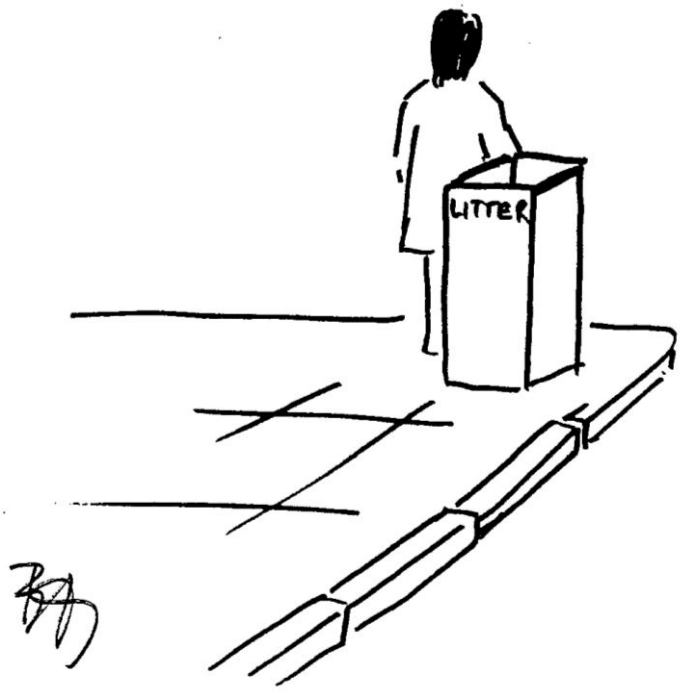
On a clockwise crossing a blind person has to cope with the traffic turning in from behind the right shoulder. The cars, which are already slowing down, are quieter and are difficult to hear. In addition the insignia of blindness i.e. white cane or a guide dog which will be on the left of the blind person may not be visible to the driver turning in until the last moment.

Build-outs at clockwise crossings are not safe for blind pedestrians. They increase vulnerability of a blind person at the start of the crossing and make an already difficult situation more so.



Build-outs at anticlockwise crossings actually increase the safety of a blind person. The blind person has a clear auditory position (hears the traffic coming from the right), is visible to the drivers of both traffic flows and has a shorter distance to walk on the road while crossing.

Since I am talking here about treatment of street corners, I would add that placing street furniture at street corners should be avoided. For example, a litterbin positioned on the corner will obscure the driver's view, and should the driver want to turn in, he/she will only see the white cane of a blind pedestrian at the very last moment. Street corners and crossing points should be left as clear as possible.



Equally, litterbins should not be placed at bus stops where people get on and off the bus. Colliding with a litterbin when getting on and off the bus is a serious problem for blind travellers.

Bollards

Bollards need special attention. There are so many different designs. Bollards ought to be visible and suitable for the area.

Bollards need to be visible at night. Black bollards are not visible at night. People returning from work in the evening, walking home from a station or a bus stop, have to be kept in mind when colour schemes are created for the area.

The need for bollards to be visible is understood and accepted by everyone when the needs of drivers are considered. Bollards that are to be seen by drivers are made exceptionally visible. Many are illuminated.

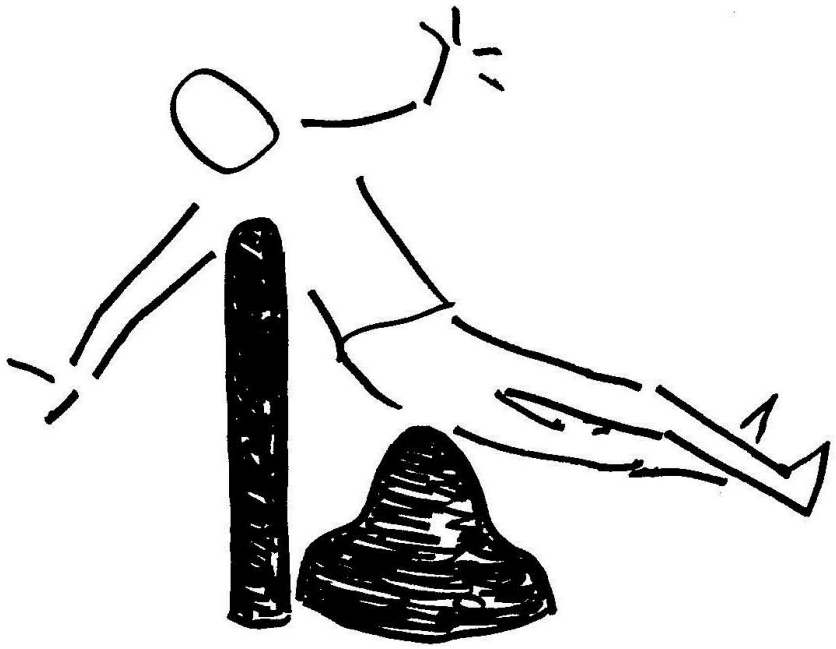
Some bollards, with a wider base, bell-shape like, are totally unsuitable for visually impaired pedestrians because they throw a blind person off balance should he/she walk into them and can cause falls.

Bell-shaped bollards are very dangerous tripping hazards and should be a thing of the past yet are still spreading in congested pedestrian areas; particularly dangerous at crossings. I know a few people who have fallen over bell shaped bollards, including visually impaired people. In one case there were particularly serious consequences; a blind man fell on such bollard placed next to tactile paving and broke his femur and had to undergo an emergency operation. He was on crutches for 3 months which had a detrimental effect on his life including the loss of job. When he turned to a lawyer for advice, he was told that he has no chance in courts, since the bollard itself was not faulty (was in perfect condition) – a silly thing to say.

The government advice is for the bollards to be 1 m high. This means that if anyone bumps into it, they will not fall. If the bell shape bollards were encased with a wide tube taking it to the waist level (1 m as in guidelines) there would be no problem.

Bell shape bollards placed next to the ordinary 1 m high bollard are twice as dangerous for everybody. Hurrying pedestrians may only register the bollard with peripheral vision and may notice the taller bollard while being unaware of the low one and trip over it. The effect on visually impaired people will be the same, they may be able to see a fragment of the surroundings and indeed, notice the high bollard, then fall over

the one completely unexpected. I am talking from experience as I have witnessed such falls.



It is also worth mentioning here that bollards on the footway are street furniture imposed upon pedestrians because of the behaviour of drivers; they exist to prevent drivers from driving onto the footway. It is only fair to have bollard design which does not present a hazard to pedestrians otherwise we have a situation where one group of people is penalised over another's wrong doings.

"**Crooked crossings**"

All types of road crossings should be straight, i.e. at a right angle to the road.

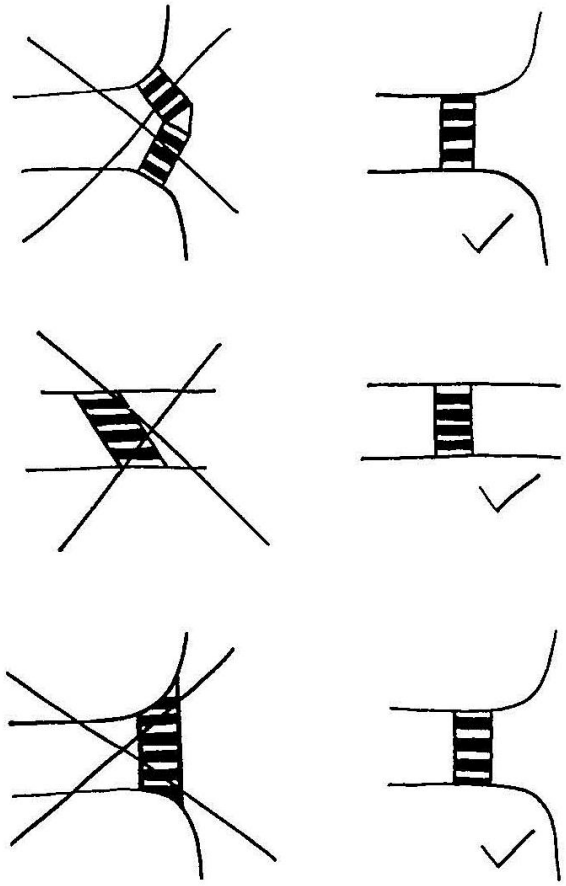
The new proposals currently in consultation with the Department for Transport suggest a tactile arrow placed on the push button box showing the direction of crossing. If this development if approved, it should not be seen as an OK for "crooked" or diagonal crossings.

"Crooked crossings" or crossings which lead diagonally across the road are dangerous. Yet such crossings are still being created either at new sites or when junctions are redesigned.

Such crossings present a particular trouble to blind people who cannot navigate by visual cues. A blind person will have serious problems in changing direction half way through a "crooked crossing".

At a crossing that leads diagonally across the road a blind person will not be able to establish the direction of crossing. In addition diagonal crossings extend the length of the crossing and increase the difficulties for blind pedestrians, particularly those resulting from veering.

Equally, crossings at the mouth of the road with a curved kerb line are difficult and hazardous for blind people. They may not be able to maintain the correct direction at such a crossing and may be misled by the slope and the kerb line pointing towards the centre of the junction and veer into the main road. This can result in being run over, or at best, getting disorientated by ending up on the wrong side of the crossing and in the wrong road.



Designer-led crossings

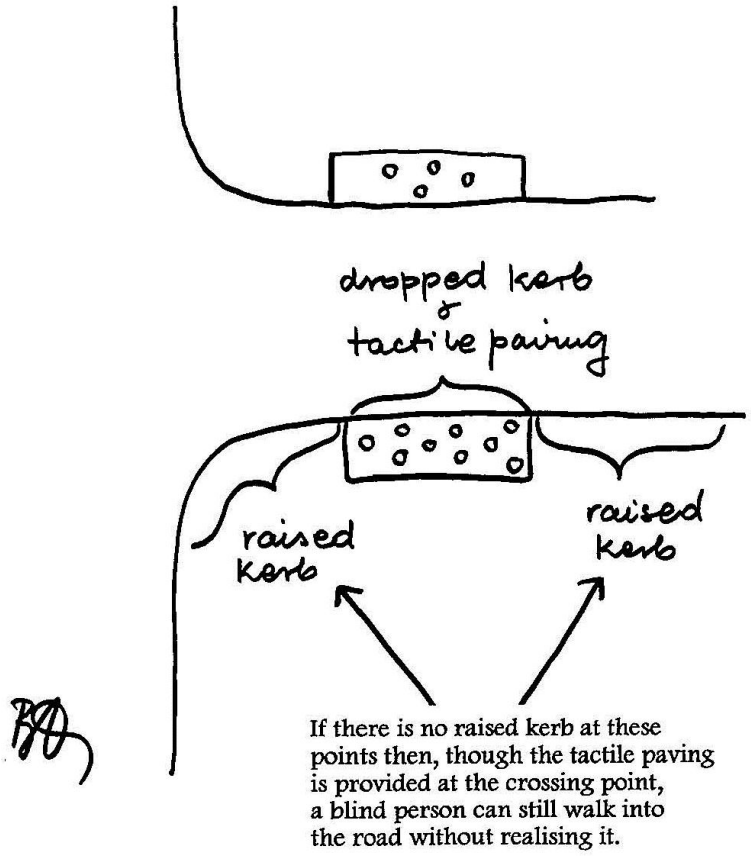
There has been a boom in road crossing designs, particularly side road crossings.

Many new crossings incorporate tactile paving but undermine its purpose at the same time.

For example, many of the more elaborate new side road crossings, speed tables in particular, have tactile paving installed at the crossing points but at the same time have flush kerbs extended over the entire corner and beyond the crossing point.

In these crossings the need for tactile information for a blind person is recognised but the issue of navigation without sight is overlooked. As a result these designs, though include tactile paving, do not benefit blind people and in fact are dangerous for blind pedestrians.

Tactile paving at uncontrolled crossings, i.e. dropped or flushed kerbs of side road crossings, was to compensate for the lost kerb. Without a kerb a blind person can easily walk into the road without realising it. Tactile paving at the crossing point is to prevent this. This however is on the understanding that the rest of the pavement is raised. So, if a blind person veers and approaches the side road off the crossing point, he/she will find the kerb. If however, the kerb is taken away from the area surrounding the crossing, a blind person who cannot navigate visually and can approach a side road at any point of the corner, has a very high chance of walking into the road without realising. This is despite the fact that the tactile paving is in place.



Visual impairment is a sensory loss and not easy to imagine. Many new crossings tackle only the more visible mobility problems and meet the need for dropped kerbs for wheelchair users but leave out the needs of blind people.

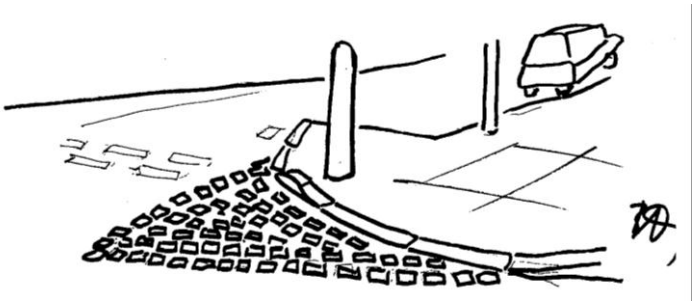
Examples of this are the designs which omit the tactile paving altogether and flatten the entire area of the crossing including the corner apexes. At these crossings, having no kerb, no slope and no tactile paving to detect, a blind person is in real trouble.

For these crossings and corners to be safe, there must be a raised kerb where there is no crossing. Blind pedestrians need tactile information about the border between the road and footway and there is no getting away from this.

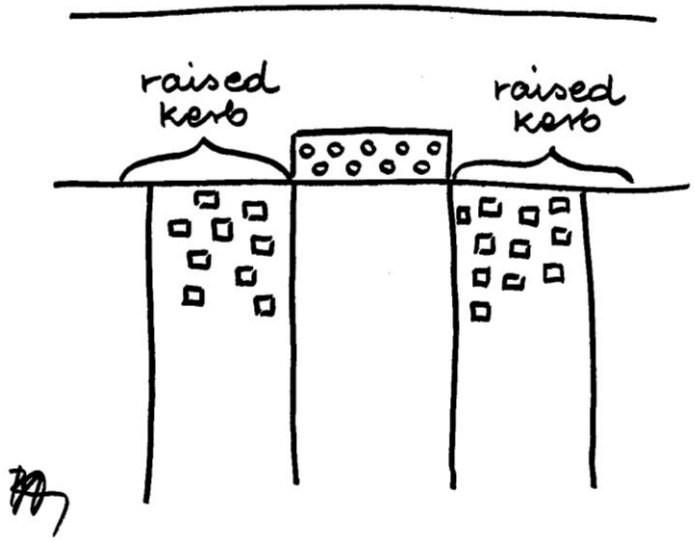
Tactile paving was established as a result of cooperation between groups of people with conflicting interests: wheelchair users need dropped/flat kerbs whereas visually impaired people need a physical barrier between the road and footpath. Tactile paving became the solution. However, if a flat kerb extends beyond the area of the crossing indicated by tactile paving, then the danger for a blind person still exists.

There is also no consistency in the approach to the issue of orientation of blind people. On one hand the facility is duly provided; on another the blind person is expected to navigate by sight in order to come to the correct place where the tactile paving has been laid.

Some crossings have granite blocks fitted onto the road surface at the very point where a blind person would expect tactile paving. This confuses the message to a blind person. Apart from immediate danger there is a long-term repercussion that a blind person may learn in time that the granite block surface is a sort of tactile paving and a safe place to stand on.



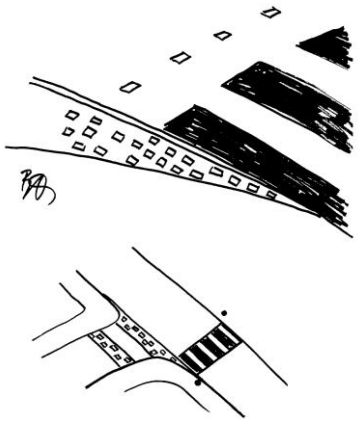
The granite blocks need not be a dangerous feature if only there was a proper kerb separating this road surface from the footway.



Some designs do away with the kerb at the corner and fill the area with the granite blocks. This encourages drivers to cut the corner when turning. If “the cut corner” happens to be on the clockwise crossing it exposes the blind person to the turning traffic while the symbols of blindness may not be visible to the driver turning in. The driver may well expect the pedestrian to step back or rush forward which is what sighted people normally do. A blind person having found no kerb at this point may not even be aware they are already on the road.

Sometimes the design of one crossing interferes with the design of another. These are very serious problems and infringe on the legal parameters of the crossings. Some crossings have features that are legally binding and should not be interfered with by the designs of adjoining crossings.

Great care needs to be taken to ensure that features of one crossing do not give the wrong message to a blind person at an adjoining crossing. This particularly applies at street corners where there can be two crossings next to each other. For example, sometimes where there is a zebra crossing, the granite blocks of a side road crossing extend onto the main road. A blind person may well take the granite blocks for tactile paving or even worse, set off into the middle of the junction rather than across the intended path.

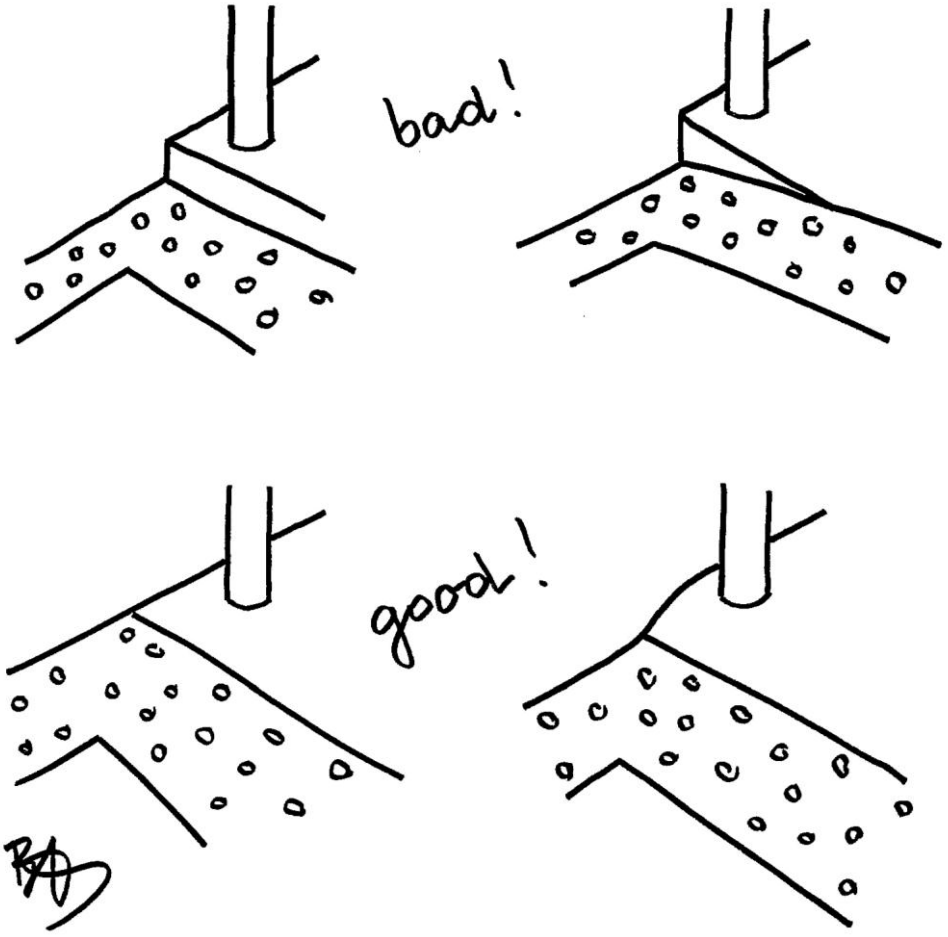


The L shape tactile paving configuration for controlled crossings evolved from understanding the techniques visually impaired people employ at such crossings, particularly pelican crossings, where the pedestrian needs to find the pole with the push button box first.

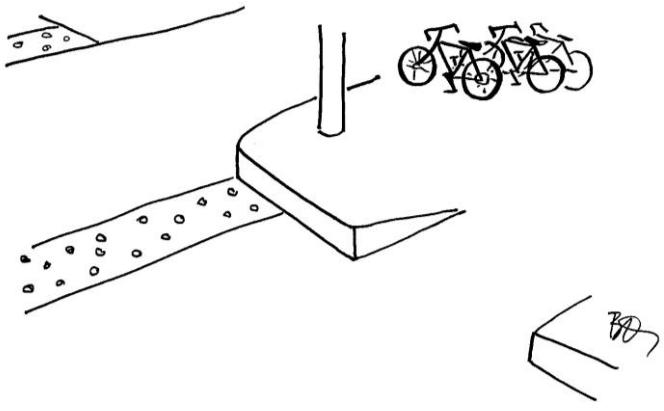
There was national agreement about this solution following a consultation of all interested parties and the system worked very well. A blind person, a long cane user, having found the tactile paving laid across the footway, would turn and move towards the road sweeping the cane to the right searching for the pole. Normally, in two or three paces and extended movements of the cane to the right, the pole would be found. This is no more. New designs for zebra and pelican crossings emerged, which do not conform to the agreed solutions and make the techniques visually impaired use an ineffective exercise.

At these crossings the pole is blocked at ground level by the kerb and cannot be found by normal means. For people who are blind since birth this is particularly difficult and dangerous, as they may move forward searching for the pole.

I have had cases where in my lesson a congenitally blind person continued walking into the road searching for the pole. Of course, I had to intervene to prevent an accident, but what was I to say to their question of why the pole could not be found? - blame the highway engineers?



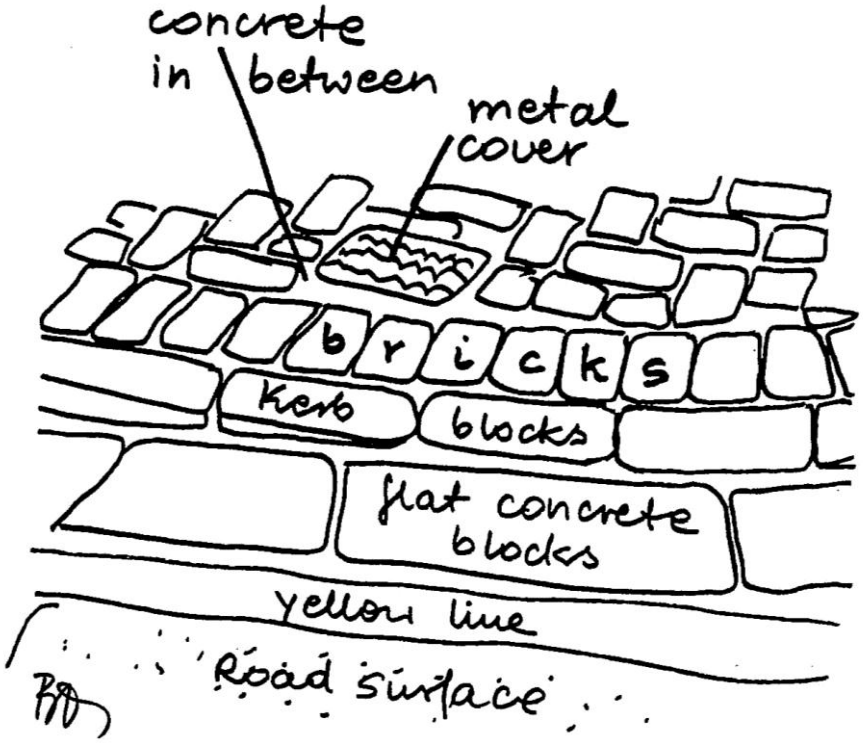
I analysed the crossing and could see that, at this location, cyclists' need for ramped paving was understood and met; as there was a space for locking bicycles on the pavement, yet the need of visually impaired pedestrians overlooked. This clearly shows that the issue is not lack of good will or resources but lack of awareness.



While on the subject of finding the pole with the push button box, attention needs to be paid to not placing any street furniture in the space between the crossing and the pole, or that the pole is not placed too far for the blind person to reach it with the hand.

Trends in highway design need to be more scrutinised for the effect they have on people, particularly those with visual impairments, rather than forcing continuous compromises in the tactile paving provision. Tactile paving will work if installed correctly. The guidelines on tactile paving were formulated following an agreement by all sides, to name but few: people with physical disabilities, visually impaired people, highway engineers and other groups with varying needs and specialist opinions. A lot of research and discussion took place to reach the consensus and to accommodate all those specific needs. These should not be broken singularly by one side privileged to design the environment, by designs which stray from those agreements and put a group of people which was a party to the original consultation, at disadvantage. The examples where this happens are crossings with blocked access to the pole with the push button box or crossings where the tactile paving is provided but the area surrounding it has footway flush with the road and a blind person cannot tell where the footpath ends and the road starts.

General surfaces



The above jamboree of lines is an actual representation of a street corner.

At a street corner a blind person searches for a kerb. Dropped kerbs without tactile paving present a problem for a blind person. Nevertheless a blind person still tries to find the edge of the kerb, dropped though it may be.

Small stones or bricks at crossing points present a particular problem for long cane users. A cane at its tip can be only 1cm wide and easily gets caught in between bricks or different surfaces. For a blind person probing the area with the cane at this point, every edge of a brick will feel like the edge of the footway. (I believe surfaces like these are not favoured by people travelling in wheelchairs either).

In the above example there are seven different types of surfaces in a small area which a blind person has to interpret. Should there be an additional drain cover or two, it would mean two or more different textures added to the situation. Some corners may have as many as nine to twelve different surfaces. Such an accumulation of different surfaces presents difficulties for a blind person using a cane.

A much easier situation for a long cane user is a smooth surface of concrete or ordinary paving and the kerb, where there will normally be only one edge to deal with.

The blind person who will slide the cane forward will have a better chance to detect the edge of the footway.

Using such a variety of surfaces in conjunction with tactile paving makes positive detection of tactile paving more difficult. Equally, using surfaces which under the feet feel similar to tactile paving as “deterrent surfaces,” near crossing points, create a puzzle for a blind person.

The expectations sighted people have of blind people's abilities to detect with the feet while walking are often far beyond the reality. The concept of contrast is often foregone in the search for new designs. Sometimes the patterns created make sense but only from a visual point of view. Textured surfaces are used to compensate for hazardous designs of crossings or building features. All these points, and more, need to be carefully thought out, particularly since there are more surfaces with specific meaning for visually impaired people being introduced, such as warning and guiding surfaces. These surfaces can prove a great help for blind pedestrians, provided their application is well thought out and follows the government guidelines.

Use of sounds by people with visual impairment in street environment

Sounds as cues for crossing

Sounds are signals that take priority over tactile information. This needs to be appreciated when choosing the type of crossing and selecting signalling devices to be installed. Particularly when changes are made and one type of a crossing is swapped for another.

When a crossing with a definite sound cue for pedestrians, is changed to a crossing which has no definite sound cues, this is to a blind person's disadvantage and there are many aspects of this disadvantage.

For example, changing a zebra crossing into a “two bollards in the middle of the road”

crossing represents a change which is to a blind person's disadvantage. At a zebra crossing a blind person has a sound cue – the sound of the idling engine of the waiting car on the right hand side. But this only works in combination with the knowledge that the crossing is a zebra crossing. On an uncontrolled crossing there is no such combination of factors and the sound of a waiting car on such a crossing is not a helpful sound. It is a confusing, “masking” and pressurising sound. At uncontrolled crossings a blind person, on the whole, prefers, and may have been taught, to wait and let the car pass.

Controlled crossings which do not have an audible signal are difficult and potentially dangerous for blind people. It is not easy to work out the pedestrian phase at these crossings.

When there is no positive audible signal to indicate the pedestrian phase, a blind person will use all sorts of cues to determine a crossing phase, including behaviour of other pedestrians. When sighted pedestrians see a gap in traffic, they frequently take chances and cross on red lights. A totally blind person will hear this, or a person with some degree of useful vision may see the moving people and in the absence of a bleep, they both may interpret it as a pedestrian phase. Of course, using such unreliable cues can have disastrous consequences for blind pedestrians.

One of my colleagues knows of two people who were involved in a serious accident while attempting to use such a crossing. Sadly one who was totally blind died shortly after the incident and the other who was partially sighted lost the confidence in go out without a sighted escort.

At crossings, which do not have auditory signals, or when the signal's volume is set too low, “masking sounds” interfere with picking up the right cue.

For example, the approaching traffic may be very heavy and able to act as a useful cue to a blind person (an idling engine of a lorry will produce a louder sound than an engine of a small or luxury car). However, if at a crucial point someone standing next to the blind person sneezes, or an aeroplane flies over, or a louder vehicle appears, then the cue is lost and a blind person has to wait for the next phase and start all over again.

Sometimes the traffic situation itself interferes in picking up the correct cue by the blind pedestrian. For example, the approaching traffic may be blocked off by the traffic from another flow. This creates a situation that is impossible to work out correctly by auditory means alone. A blind person may interpret the blocked traffic as a pedestrian phase and decide to cross at the very moment the drivers escape the congestion and drive off at an increased speed.

At regular crossroads with traffic lights, the sounds of the parallel traffic pulling away is the cue for a blind person that the pedestrian phase is on.

Traffic lights crossings which have a common pedestrian phase at all four sides but no audible signal are very confusing for a blind person. He or she may want to start crossing with the parallel traffic only to walk into the oncoming traffic. Or, on the other hand, may interpret the silence of the pedestrian phase as a gap in traffic, or a gap in traffic as a pedestrian phase, and again, step into the fast approaching traffic.

For all these reasons audible signals at road crossings are greatly valued by visually impaired pedestrians and much preferred over other types of cues.

Sounds at pelican crossings

The audible signals at pelican crossings themselves are set at varied volume levels. Some are set too high and as with any excess, are a nuisance to people. Some are set far too low and sadly do not benefit people as they should. Audible signals at pelican crossings that are set too low can easily be compared with a too steep ramp: it is there, but it is a struggle to use.

The sound should be “just right” if it is to help people to make a safe crossing. Very often the audible signals are set far too low.

People who make decisions about setting the volume level should bear a number of points in mind. Firstly they are listening to the sound while looking, which helps them to hear the expected sound. And secondly, they do not experience the stress of the situation in the way a person with visual impairment experiences it at a road crossing. This lack of stress helps them to hear and unlike blind or elderly pedestrians they will be happy with a very low volume.

Care must be taken though, that the signals are not set too high and are not able to be heard at nearby crossings as this could have tragic consequences. The assessment of the site in relation to the signal’s volume needs to be carried out at different times of the day so a true auditory picture of the situation is considered. The signal of one crossing may seem to be OK at certain time of the day when it is noisy, but during the quiet periods it may be heard at other crossings nearby.

Revolving knob

A useful tactile device to indicate a pedestrian phase at controlled crossings is the revolving knob. It is widely used at pelican crossings or where an auditory signal cannot be implemented. At such sites it is essential for people with visual impairments. Deaf-blind people particularly appreciate this device.

Revolving knobs should be checked regularly by highways maintenance staff and faults reported for immediate repairs. Some people rely on these signals and would not be safe without them.

It would help if the manufacturers produced the knob with more pronounced grooves which would be easier to feel.

Traffic sounds for orientation

In a street environment traffic is the main source of information for blind people. Blind people use traffic sounds to orientate themselves, to stay on the footway and of course, to cross the road.

Traffic sounds can influence a blind person's position on the footway. For example, any overpowering sound, such as sound of a heavy lorry passing by, or of a pneumatic door being shut, may push a blind person off his/her line of travel temporarily towards the shoreline.

This is an example of only one factor (there are many) relating to the irregular position of blind people on the footway and tie in with the need for tactile paving to be laid across the whole width of the footway at controlled crossings.

When crossing the road, a blind person uses traffic sounds not only to determine when to cross but also to determine the position for crossing and the direction of crossing.

Depending on the purpose of a particular manoeuvre, a blind person will be using “spots” of sound or the “sound lines” the traffic makes and will either try to keep parallel or square to these lines. Hence, crossing at or near to a roundabout is particularly difficult for a blind person. The “sound lines” on a roundabout are not straight and are not suitable for squaring off. The “spot sounds” are misleading as they seem to be coming from all over the place. A blind person will have problems with establishing the direction of crossing at such a location.

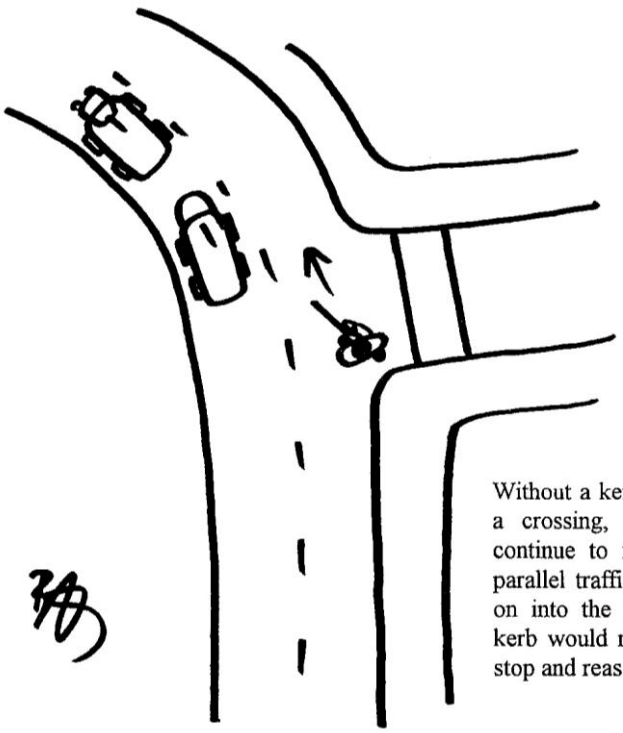
For these reasons crossings at or near to roundabouts should always be correctly designed and laid out, should lead straight across the road and the slope and blisters should point in the direction of the crossing and there should be tactile and audible signals (if appropriate for the site) in operation.

These elements are in fact standard elements, not “special”. It is worth bearing in mind, that when crossings are properly installed, this in itself is a help to people with visual impairment.

Side road crossings, which are at the point where the main road bends, also present a difficult auditory situation for blind pedestrians and need special attention from the highway engineers.

It is crucial that these crossings have proper (raised) kerbs at the apexes of the corners.

Blind people learn to walk parallel to the traffic and follow it to navigate. They continuously adjust their position on the footway according to the traffic. The sounds of traffic at a bend in the road do not "move off" the line drastically enough to alert the blind person about the turn. Hence, when there is no kerb at the apex of a corner of such a side road, a blind person may continue to walk parallel to the traffic, follow it and walk head on into the oncoming traffic of the main road.



Without a kerb at the apex of such a crossing, a blind person will continue to follow the sounds of parallel traffic and may walk head on into the oncoming traffic. A kerb would make the blind person stop and reassess the situation.

Having explained how visually impaired people depend on traffic sounds for orientation in the street environment, I add that care must be taken by local authorities not to create or allow for situations where other noises interfere, making navigation by sound impossible. For example, street musicians, who position themselves at large traffic islands or other open spaces in the vicinity of crossings, may mask the crucial sounds which a blind pedestrian needs to hear in order to navigate through this space or cross the road safely. In such situations the music should be treated as a footway hazard and the musician relocated to a more suitable place where the music will not have the effect of an obstruction on visually impaired pedestrians.

Colour schemes

Tactile paving systems established the use of red and yellow colours at crossing

points. Therefore it makes sense to think carefully before using red or yellow on footway surfaces.

For example, resurfacing footpaths in traffic light areas with red tarmac while the rest of the path remains black or grey, undermines the effectiveness of any future tactile paving which, at controlled crossings, will be red.

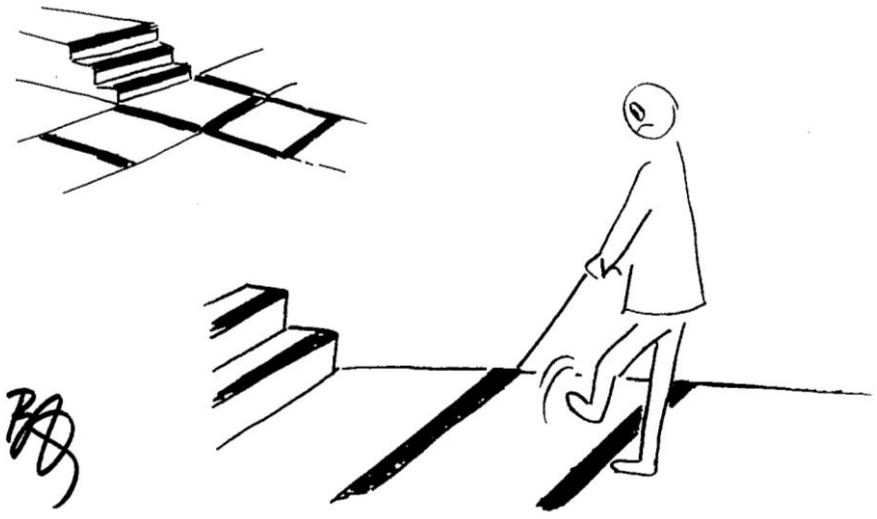
Another example is the use of red at crossing points, parking bays or delivery points on the same route. A visually impaired person can misinterpret the red of a delivery bay, for example, and take it for a crossing point.

I often see specific changes to the surface surrounding tactile paving or street furniture which weaken the colour contrast needed.

Colour schemes need to be carefully thought out during the planning stage if they are to help people with visual impairments.

For example, placing black recycling containers on the paved footway and subsequently changing the surface surrounding the containers from grey paving slabs to black tarmac. This removes the colour contrast: the black containers blend with the colour of the black tarmac and cause visually impaired people to bump into the containers, particularly in the evening.

Below is a different illustration where good use of colour contrast extended from its original purpose, again, probably to “finish off” a pattern. The black lines are used to emphasise the edges of stairs, which helps a visually impaired person, but when they are extended onto flat ground they give a false impression, confuse the message and cause stress.



Recently I saw a new design of a build-out/speed table without yellow tactile paving at the kerb line but with the entire corner filled with yellow bricks. I thought this design had its roots in the tactile paving system and the recommendations to use yellow at uncontrolled crossings. However, there is no advantage in the whole area being yellow. A visually impaired person cannot take a birds-eye view of the crossing. It is the patch of a different colour a visually impaired person will look for (see also p. 20).

People with visual impairment are very likely to have their field of vision affected and see only a limited part of the whole picture.

Visual impairment often combines loss of acuity with loss of field of vision. So "seeing" is not as straightforward a process as sighted people know it to be. It is through careful scanning, backed up by experience and expectations (hence the importance of consistency in the designs) that a visually impaired person can locate something by visual means.

The example of the yellow build-out illustrates to me that the problems with environmental provision for people with visual impairment, particularly tactile paving, come from a lack of understanding of the nature of visual impairment. It is this lack of specialist knowledge that leads to misinterpretations of the recommendations regarding tactile paving.

It is therefore important for people who create the street environment to acquire some basic knowledge about visual impairment. This should include the main eye diseases and how they affect one's vision and the concepts of sight substitution and sight enhancement. Mobility officers are able to do presentations on the above topics.

Footway obstacles and hazards

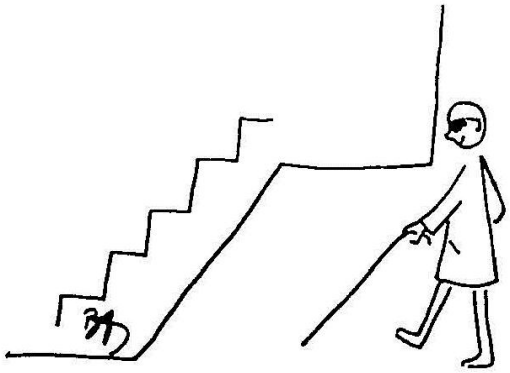
The two main problems for visually impaired people, whether indoors or out, are obstacles protruding at face level and low objects on the ground.

Not all street furniture is dangerous. Some are useful features which people with visual impairment use as their landmarks for orientation. Often the things which sighted people consider as obstacles are OK with visually impaired people and those which are considered "safe" or "useful" by sighted people are in fact dangerous for visually impaired pedestrians. Discussing the issues of footway obstacles with mobility officers will prevent a lot of misunderstandings about the subject and may help to create a better environment for everybody.

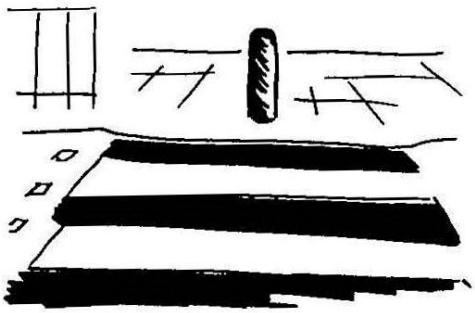
Protrusions at face level and other footway hazards

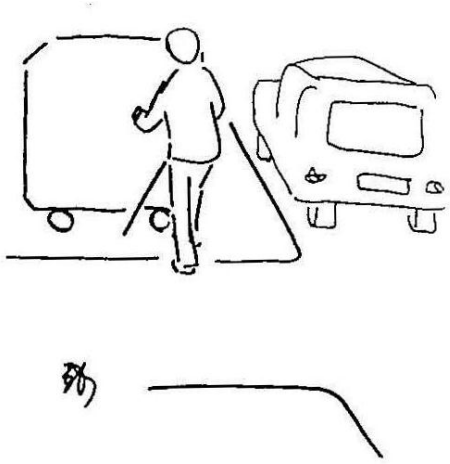
Blind people do have accidents but these go unreported. Often they injure their faces, break glasses, hurt shins, dislocate shoulders etc. Injuries to the eyes are particularly catastrophic as they can damage the precious little vision left. I know of a few fatal accidents, whilst my colleagues throughout the U.K. could produce some alarming statistics of accidents that simply need not have happened.

Anything at face level that overhangs the footway, any unexpected drops of the ground and low protrusions are the worst hazards for those with visual impairment. This is because a cane will not offer protection in these circumstances. A cane easily misses drops in ground level and low obstacles, while overhanging obstacles cannot be detected because the cane is operated at ground level.



Some items of street furniture that are normally acceptable, when placed in an unexpected position present a serious hazard. For example, placing things on the footway in the path of a crossing creates an obstacle for people with visual impairment.





A blind person completing the crossing is particularly vulnerable upon reaching the footway: he/she has some momentum and may bump into things at this point. Additionally, at this point concentration is at its minimum as it is temporarily overridden by the feeling of relief following successful completion of the crossing.

Another factor is stress.

Blind people are taught techniques for protecting themselves from obstacles in front of them. However, crossing the road is the most stressful part of a blind person's journey and stress interferes with the individual's technical ability at road crossings. Often he or she will use the white cane in a way that is least advantageous or, having found an obstacle with the cane, will not immediately perceive the message coming from it.

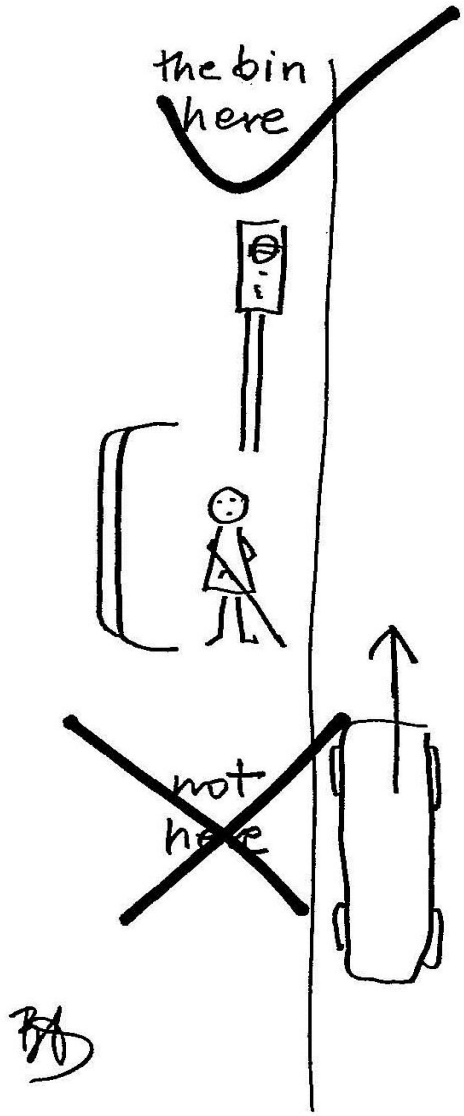
Litterbins do not present a problem in themselves but can become a serious hazard when they are placed at road crossings, by Belisha beacons, at street corners, in

narrow passages, in places where footpaths are made narrower by other street furniture, at the bottom or top of steps or at bus stops where people get on and off the bus; then they can present a serious hazard to visually impaired pedestrians.

The problem is exacerbated when people put rubbish bags next to the bins. But rather than blaming the public this problem needs to be foreseen and prevented. People put the rubbish by the bins only to be helpful and to make the collection easier. It is the placement of the bins that needs to be thought out.

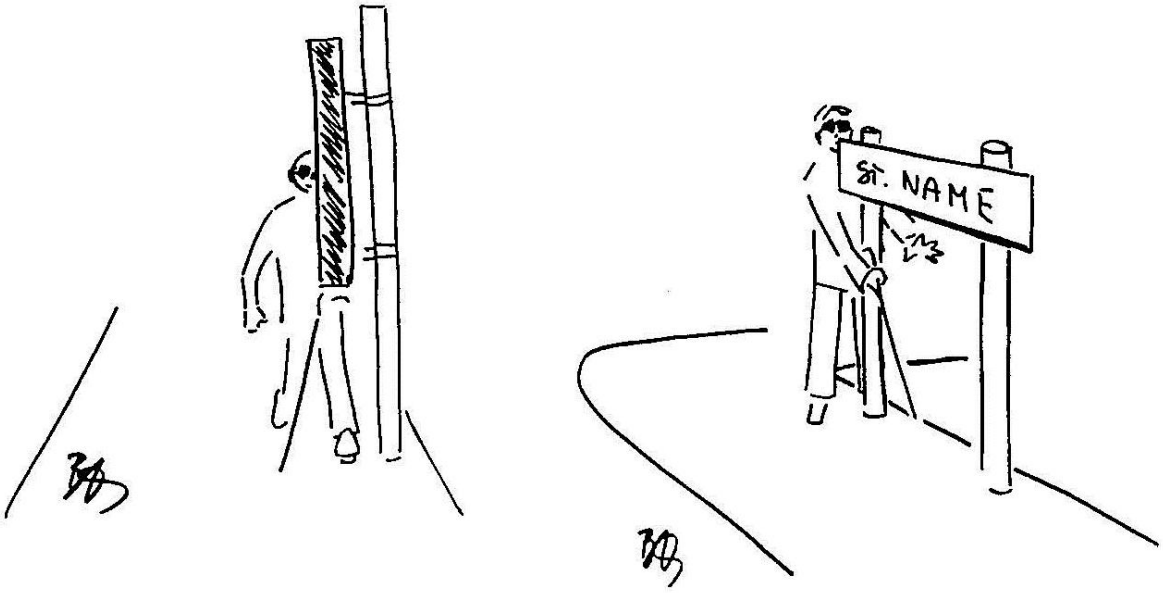
If the bins are placed where they do not cause an obstruction or hazard to blind pedestrians, neither will the rubbish bags surrounding the bins.

A particularly unfortunate placement of litterbins is at a bus stop. A blind person getting off the bus is likely to bump straight into the bin. The bins, therefore, need to be placed a few yards <u>past</u> the bus stop.

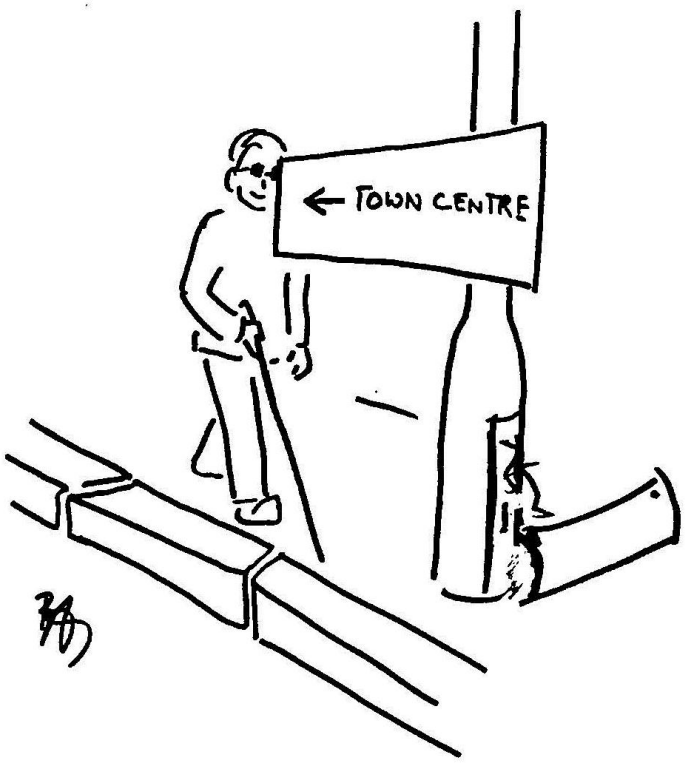


Some street furniture that seems to a sighted person safely on the side of a path presents an exceptionally serious hazard to a blind person and results in horrific facial injuries. These are signboards which hang at face level, whether along the block or at street corners. A board that extends in any way beyond the lines of the poles to which it is attached is dangerous.

Metal plates with the name of a street, mounted on low, metal poles at street corners, though on the side of a path, are particularly dangerous for blind pedestrians. At street corners a blind person may walk particularly close to the shore line, as if not wanting to miss it, and can cut his/her face on the metal blades protruding from the poles.



Road signs mounted on lampposts by two metal strip fixings can slide down the post if the strips break or loosen. This presents an exceptionally serious hazard to blind people. The metal blades extend over the footway at face level and can point in any direction.



Sometimes casing plates fall away from lamppost bases and create nasty hazards at foot level.

Highways departments inspect streets regularly, so any cracks or holes in the road surface can be fixed quickly for the drivers' safety and convenience. It would help if

these inspections were extended to other issues, specifically those features likely to be hazardous to blind pedestrians.

There is no reason why someone else, not necessarily a mobility officer, should not be able to notice these hazardous situations. It is only a matter of awareness and training and should be seen as part and parcel of policies on access and equality across the boroughs.

Sometimes “softer” noticeboards, made of corrugated plastic, are attached to lampposts. These boards are usually hung at face level and indeed are often aimed at pedestrians, for example, to inform about forthcoming footway works. They may even have features that increase visibility, i.e. large print on a bright yellow background. However, if they stick out over the footway at face level they will still cause a hazard to blind people. Being made of softer material as opposed to metal will be no consolation to someone who walks into such a board. The most reliable way of testing the material for suitability of hanging at face level would be for the person responsible for placement of such boards to poke his or her face with it. If the sensation is unpleasant then it will be equally unpleasant to a blind person who walks into it.

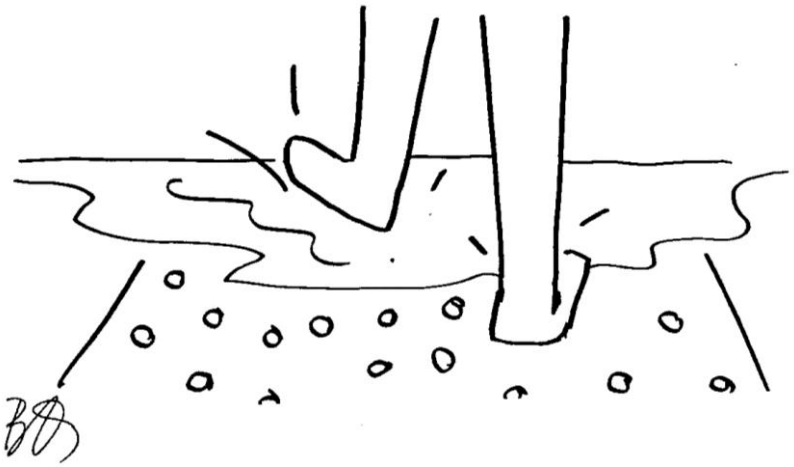
Blind people do not have the “sixth sense” or “facial vision”. If things protrude at face level, they will, sooner or later, walk into them.

If blind people seem to be avoiding obstacles at face level this is usually coincidental or because they know about the obstacle and make a great effort to avoid it. BUT, every now and then a blind person forgets about the familiar obstacle or misjudges the distance and walks into it.

The injuries received this way are nasty as the blind person, not expecting an obstacle, could be walking at speed at the point of impact.

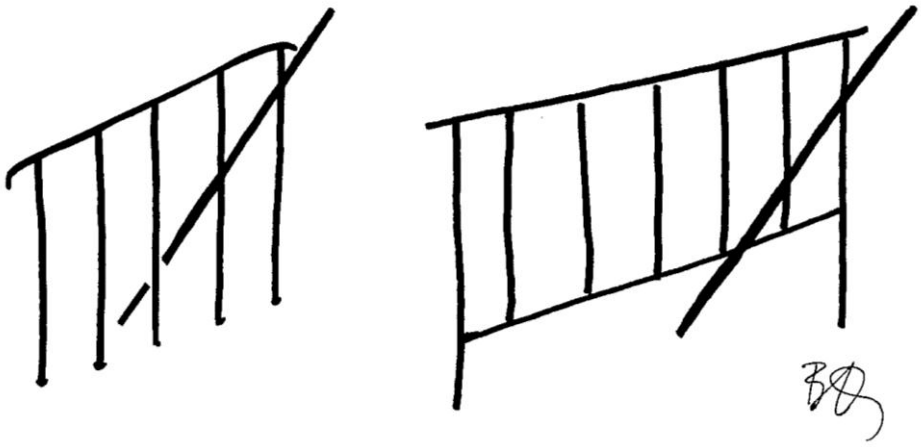
The surface immediately around trees needs attention. If the earth subsides there can be a sudden drop of surface in relation to the adjoining paving stones. Or, the roots of the trees may lift the paving stone and create an unexpected edge. This causes problems to blind pedestrians. Sighted people can see the hazard. Blind people cannot.

Puddles of rainwater at crossing points are of course a problem to visually impaired people who have no choice but to stand in the water, especially when, for example, following resurfacing of the road, the central reservation of a crossing gets flooded.



Railings are a very useful feature for blind people, both for safety and orientation reasons.

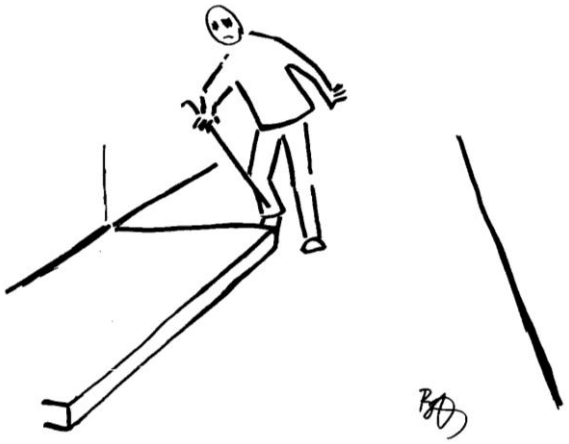
Some railing designs have no horizontal bar at the bottom and the uprights are fixed directly into the ground. Such railings cause difficulties to blind people who want to use the railings to follow. The cane gets stuck in between the bars and it is impossible to follow with a cane. Standard railings that have a horizontal bar at the bottom are much easier to follow.



An extremely hazardous feature on the footway for blind pedestrians is the raised surface of a forecourt that forms a raised platform alongside the footway on the shops' side. Such platforms do not usually run along the whole length of the footway but appear in front of individual shops causing a nasty tripping up hazard for a blind pedestrian. Any low obstacles on the footway will have the same effect.

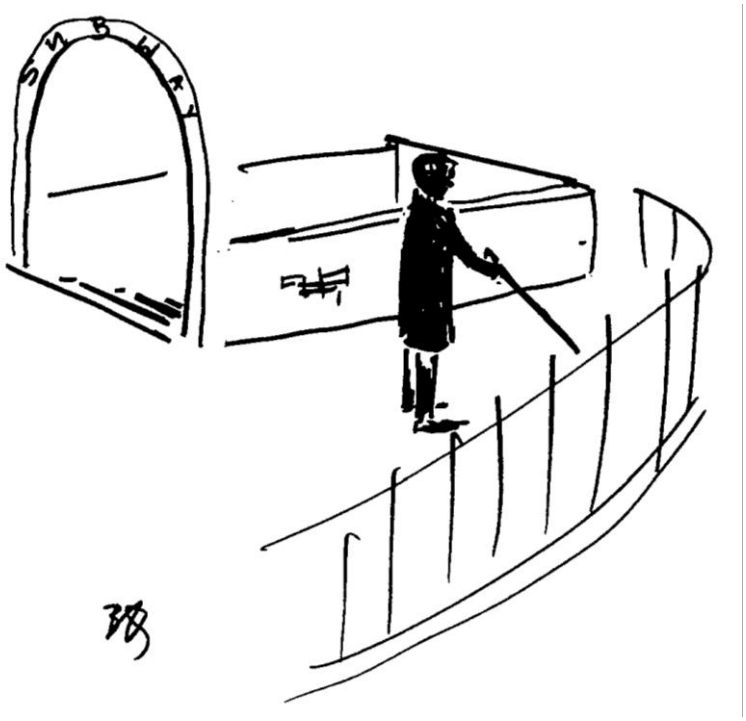
If there is no wall, fence or other marked difference between the footway and the forecourt, a blind person walking along considers the whole space between the kerb

and the wall as footway. Hence a sudden protrusion at feet level will be a nasty surprise. Because I observe blind people as they walk, I see people tripping over edges like this all the time.



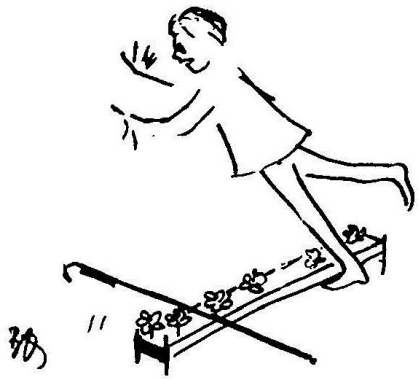
If these features cannot be removed then landlords could be asked to fence off their forecourts or build a wall. Some sufficiently tall flower or shrub boxes may also be suitable, and would be an attractive addition to the streetscape. Many authorities already recommend such solutions particularly for pavement cafes where the difficulties for blind pedestrians caused by scattered furniture are more obvious.

Attention needs to be paid to various “dead ends” in the line of travel where a blind person can get boxed in and disorientated.



For drivers, cul-de-sacs are clearly marked at the point of entry. Blind pedestrians also need some indication of “no-go” areas.

Street furniture can be used for blocking off such areas, though care must be taken that these measures are not in themselves hazardous.



It is possible to determine the design and then placement of street furniture so that it does not cause concern to visually impaired pedestrians. A good example to prove this point are parking ticket machines. In Hammersmith and Fulham for example, where there are plenty of these machines, I have not yet seen a case where they would in any way obstruct a blind pedestrian. They have a broad base and are all placed off the critical points on the footway as far as blind pedestrians are concerned, such as corner apexes, crossing points, bus stops, narrow parts of the footway, entrances, stairways.

Most of these, or other problems which I use as examples, would be avoidable if there was a greater awareness of the difficulties of people with visual impairments among everyone involved in environmental issues; from the men laying the tarmac to the bosses who tell them what to do.

When the street environment is safe and easy for people with visual impairment, it is the same for the rest of us.

Trees and bushes

Trees and bushes also need a second look with people with visual impairment in mind.

For example, planting trees with 1-2 inch long thorns along the footway will add to the problems of people with visual impairment. Likewise holly and gorse can produce scratches to the face and hands and should be reserved for non-pedestrian areas. Uncontrolled growth of weeds, thistles and nettles will inflict painful stings and scratches.

The problem of overhanging branches is very serious.

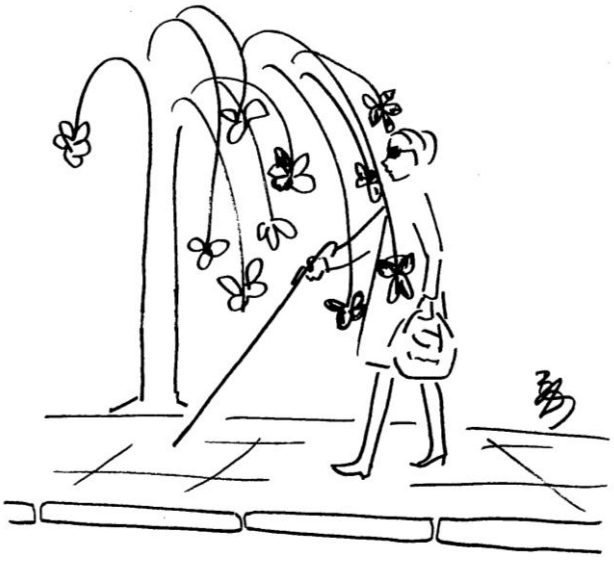
Visually impaired people regularly receive injuries from walking into overhanging branches of bushes and trees over the footway. I know a person who walked into a bush and had a twig pierce her eye. She lost her better eye and is now totally blind. Doctors said that the twig only just stopped short of causing brain injuries.

On rainy days people with visual impairment get unpleasantly wet when walking into bushes. By walking into the vegetation overhanging over the footway they also damage their clothes.

Much more attention needs to be paid to this issue and regular inspections of trees and bushes need to be made on equal terms with the other inspections local authorities undertake.

This is also an area where local authorities might engage with the residents as the majority of overgrown bushes extend onto the footway from private gardens. If the danger this causes for blind people was pointed out by the authority, individually, or through an awareness campaign, I feel sure most residents would act to remove the hazard. My experience is that people respond positively once they know their action will benefit a blind person.

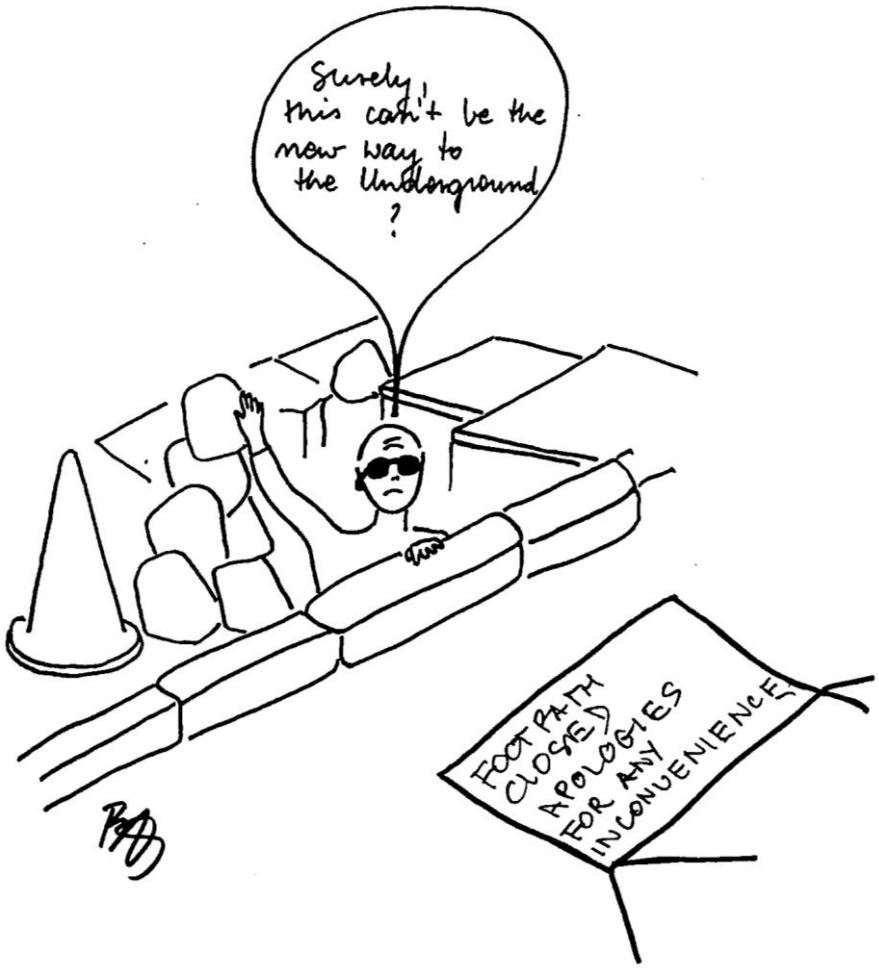
Progress with overhanging branches would be a gigantic step forward towards the hazard-free environment, as far as visually impaired people are concerned.



Road and footway works

Road and footway works are inevitable. What would help, however, is better protection of the works, so that people with visual impairment would not risk walking into them, falling into the holes, injuring themselves etc.

There would be a great deal of improvement if people working on site check their progress on the supposition that a blind person <u>will</u> be passing there. People installing the barriers around an excavation need to ask themselves: would a blind person passing by fall into the excavation or would he/she be able to detect the barriers first?



The regulations regarding the protection of road works are not enough. There has to be a commitment and motivation on the part of the workers involved who need to realise the significance of their work.

Awareness training for people who dig up the streets and install protection barriers would go a long way towards raising the quality of site works. People would feel more involved and more responsible. I believe some contractors are already moving in this direction.

Quality standards improved through awareness training would also benefit people who need dropped kerbs and ramps. Sometimes the way in which the dropped kerbs are laid does not benefit anybody.

I once saw a new development, where the pavement and dropped kerb were already laid, but workmen were still working on the site and had to push their wheelbarrows over the dropped kerb. They couldn't do it. They had to create a mini ramp from blocks of wood for themselves and feel the difference between the height of the "dropped kerb" and the surface of the street. How extraordinary, I thought, these fit men, used to physical work could not manage the dropped kerb. How then could a disabled person in a wheelchair manage it alone?

Awareness training, which might incorporate walking with a blindfold and pushing oneself in a wheelchair, would make people realise how important it is to pay attention to detail.

The argument usually put forward against such training is the cost. But the question is how to prioritise resources. People who sweep the road are equipped with radio controlled pagers, company cars are getting more "up-market", the road schemes themselves, such as traffic calming measures, for example, are getting more expensive. The cost of a training session for contractors does not look to be something very expensive when put against those costs, especially when the returns would go a long way, benefit everybody and prevent the need for remedial work.

A lot of people with visual impairment, particularly among the elderly do not go out for fear of not being able to cope. Among older visually impaired people the percentage of people not going out is actually higher than in the same age group of people with general disabilities (RNIB Survey 1991).

Visual impairment does affect personal mobility and when frailty is added, the difficulties are considerable. I frequently see how, due to all kinds of installations on the footway, people are forced onto the roadway. Often vans belonging to these services make the situation worse when blocking the space where one could cross over.

Only recently I saw a very frail woman, using a four wheel support trolley, trapped on a crossing point between deep, unprotected excavations on the footway, heavy traffic on a narrow road and the wide open, back door of a van. There were no people about. She could see, nevertheless she faced serious difficulties. If she had coped with the road works and escaped the traffic, she could still have been crushed by the van she used as her shelter.

One of my colleagues told me how a very frail, elderly, partially sighted woman was crushed to death, because a driver reversed into her whilst attempting to avoid a road works site.

Situations like this contribute to the fact that such a large number of people with visual impairment do not go out, due to fear of similar occurrences.

Footway hazards and environmental policies across local authority departments

The problem of obstacles and hazards needs to be tackled across local authority departments and at all levels of service delivery.

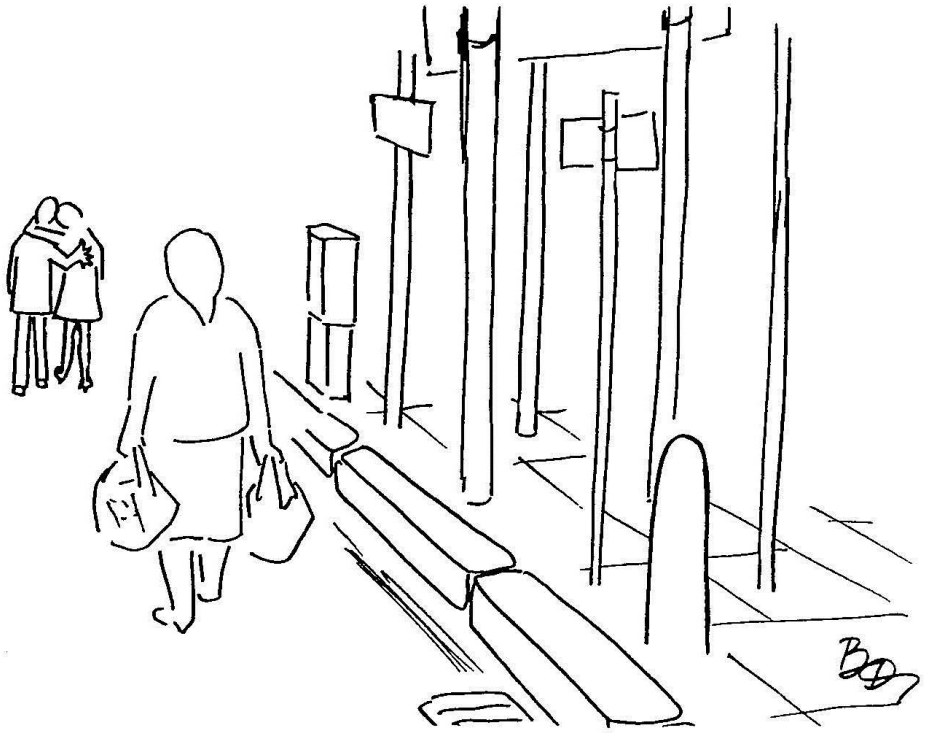
For example, there may be a policy introduced to reduce traffic and create a more pedestrian friendly environment. This may involve putting new notices up about parking restrictions, new meters etc. If care is not taken these can intrude into the space on the footway and create an infinitely more difficult environment for pedestrians.

The same is true of the metal poles that hold large signboards, which sometimes appear to have been placed indiscriminately in the middle of footway.

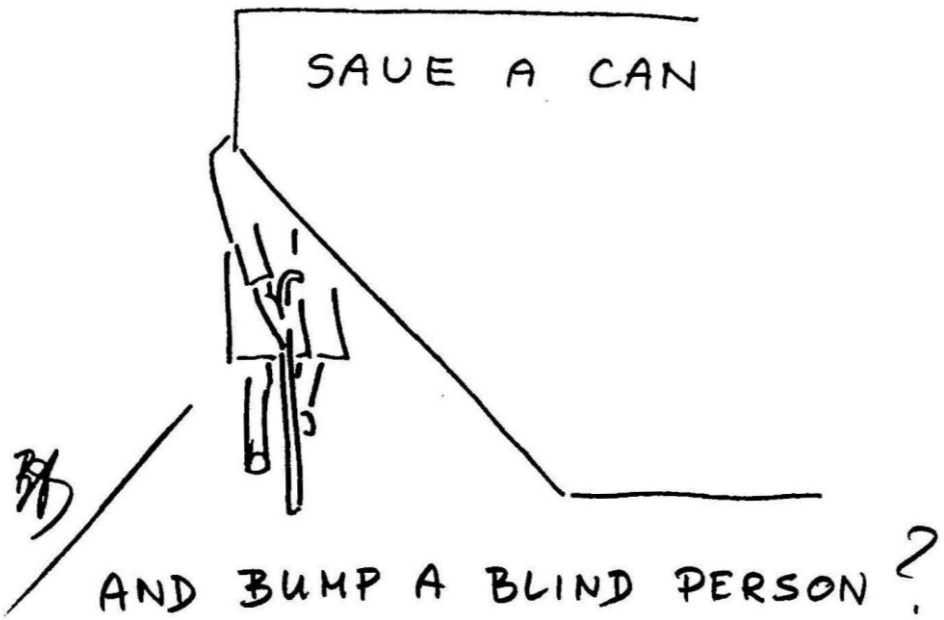
I know a visually impaired man who has great problems with the slim metal poles that hold parking notices. He uses his residual vision effectively and in fact manages to see the lampposts but the thin poles are just too narrow and indistinctive for him to notice. A coat of white paint at face level would make all the difference for him.

What a visually impaired person can see is an individual matter, but the overall conclusion can easily be drawn: footways should remain obstacle free. It is the understanding of what constitutes a potential hazard and why that needs to improve.

The “why” is very important. Often it is not the item of street furniture that is the cause of obstruction but its position. The most vivid example is the case of placement of litterbins (see pages 87 - 88). It is not the elimination of the bins that is needed, but wiser positioning.



Areas assigned for recycling containers and the type of containers used need to be looked at to check that they do not interfere with the safety of blind pedestrians.



In the case of recycling, attention needs to be paid to the regular emptying of the containers. Build-up of recycling material on the footway will create difficulties for visually impaired pedestrians.

In general, the design of containers has improved since the type illustrated by the cartoon, but there are other street furniture or features which are highly unsuitable and can cause serious problems for pedestrians, not necessarily just the visually impaired. These are litter bins and boxes attached to lamp posts at face level, protrusions at ground level or low walls of triangular shape with sharp and pointed corners projecting onto the footway. The last ones are often a part of the building design hence the need for a greater scrutiny of the designs by the planning authorities.

Refuse collection is also relevant to visually impaired pedestrians. When refuse is being collected, the footway is used as a temporary storage space forcing pedestrians onto the road.

Even car clamping and removal operations have relevance. For example, the need to prioritise calls for car removal services involves a decision as to which car to remove first: a car parked on a yellow line? or a car blocking the only ramp and access to a building?

Keeping the knowledge in the department

When experienced employees leave an organisation they often take their expertise with them. It is important to have a system that will retain the expertise even though the person leaves.

Social services departments have done well in this respect, largely thanks to the work of mobility/technical and rehabilitation officers, home teachers and social workers for visually impaired people. They have been building awareness about the needs of people with visual impairment across the social services departments for years. For example, there are no care assistants these days that would not know that in the home of a blind person you cannot move objects without telling a blind person you have done so.

It is essential to extend this type of awareness across other local authority departments, particularly environment, planning and highways.

Most of the hazards are not a natural occurrence, they are created and therefore avoidable.

The cost of tactile paving

There is no extra cost involved in providing tactile paving when it is installed at the time of a crossing being built.

Apparently the cost of tactile paving slabs is on par with the ordinary paving slabs. The labour and transport costs in the relation to handling tactile paving are no different to the cost of handling ordinary slabs and get cheaper the more are installed at a time.

Making corrections or adding tactile paving after the crossing has been built does create extra cost. It is therefore in the interest of an authority to install tactile paving correctly the first time round. Or, to put it differently, it is expensive to omit the installation of tactile paving.

Co-operation with the mobility/rehabilitation officers

Mobility officers teach people with visual impairment how to use what the highway engineers provide. It is essential to work together. Without such co-operation tactile paving is often being installed incorrectly and the only losers are visually impaired people themselves; the very people for whom the facility is provided.

The other group of people affected are the mobility officers - only by frustration though. There is nothing sadder for a mobility officer than having to instruct a blind person to feel for some odd brick in a wall or a pillar, to identify a zebra crossing where tactile paving exists, but is laid in the wrong place.

Often tactile paving is provided in a way that is precisely the opposite to how it should be. In this case mobility officers cannot teach blind people to use tactile paving as a system of reliable information. They have to actually warn blind people against using it correctly and then help them to memorise every single crossing as a separate entity. This is not of course what tactile paving is designed for.

People with visual impairment employ different techniques at different crossings. It would be helpful to highway engineers responsible for the provision of road crossing facilities, to be made fully aware of these techniques. Through appropriate co-operation, particularly viewing the sites together, mobility officers are able to pass on to the highway engineers this specialist knowledge, so essential for designing road crossings and choosing technical devices for these crossings.

People with visual impairment use different environmental elements to orientate themselves. The way these elements are used however, depends on the context of the situation. Awareness of these issues could greatly reduce errors in tactile paving and other environmental provision.

Frequently the nature of the errors is that the elements which are useful to blind people are applied in the wrong context. Unfortunately, when this is the case, only visually impaired people and those with specialist knowledge are able to recognise such errors, which may be invisible to the most people. Hence the rectification of such problems is a very slow process.

Co-operation with mobility officers may prove helpful in many other areas of environmental provision and road and footpath safety. Mobility officers can advise on all sorts of issues and by the nature of their job, should be able to point out the hazardous or the less helpful features of the environment. If such co-operation starts at the planning stages rather than becoming remedial action, there will not be any need for remedial action.

Whatever happens to tactile paving, there will always be people with visual impairment and they will always have special needs. Awareness of what these special needs are will always be fundamental to any progress on access, equality and social integration.

In any case, the environment is going to be more complicated as technical developments become more varied and specialised to cater for a greater number of people with specialised needs. This in itself calls for more co-operation across departments and professions and an exchange of skills and knowledge.

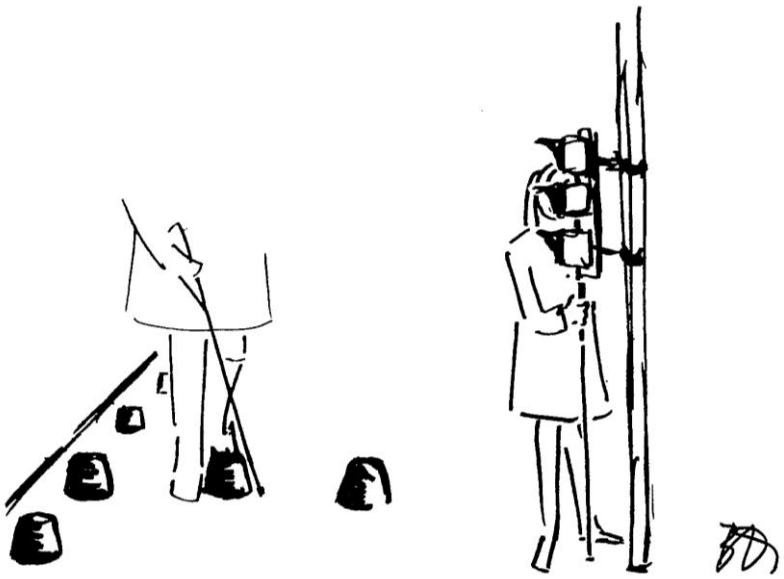
An accessible and hazard free environment can be achieved for everybody if people work together towards it.

A European perspective

Our ties with Europe are continually strengthened by the European Union and with international travel a more common occurrence for everyone, it makes sense to aim for international standards in access for disabled people. Work to such effect is already ongoing, but still there are different solutions in different countries. The variety in fabric and design of street furniture and other features in the environment, have an effect on accessibility and the safety of visually impaired people.

When abroad I usually look at the streets with a blind traveller in mind and my observations put the British endeavours way ahead of what I see in other countries.

Low obstacles and objects protruding at face level, appeared to be the standard on one of my visits abroad but will always be dangerous for visually impaired people, whatever the country and one should strive to eliminate them.



Equally the systems meant to carry information for visually impaired people need to be uniform, just as they are for drivers.

Our UK rules governing the design of road crossings and the tactile paving system itself are – despite the few problems which need to be sorted out – excellent! We are in the best position to show Europe the way forward.

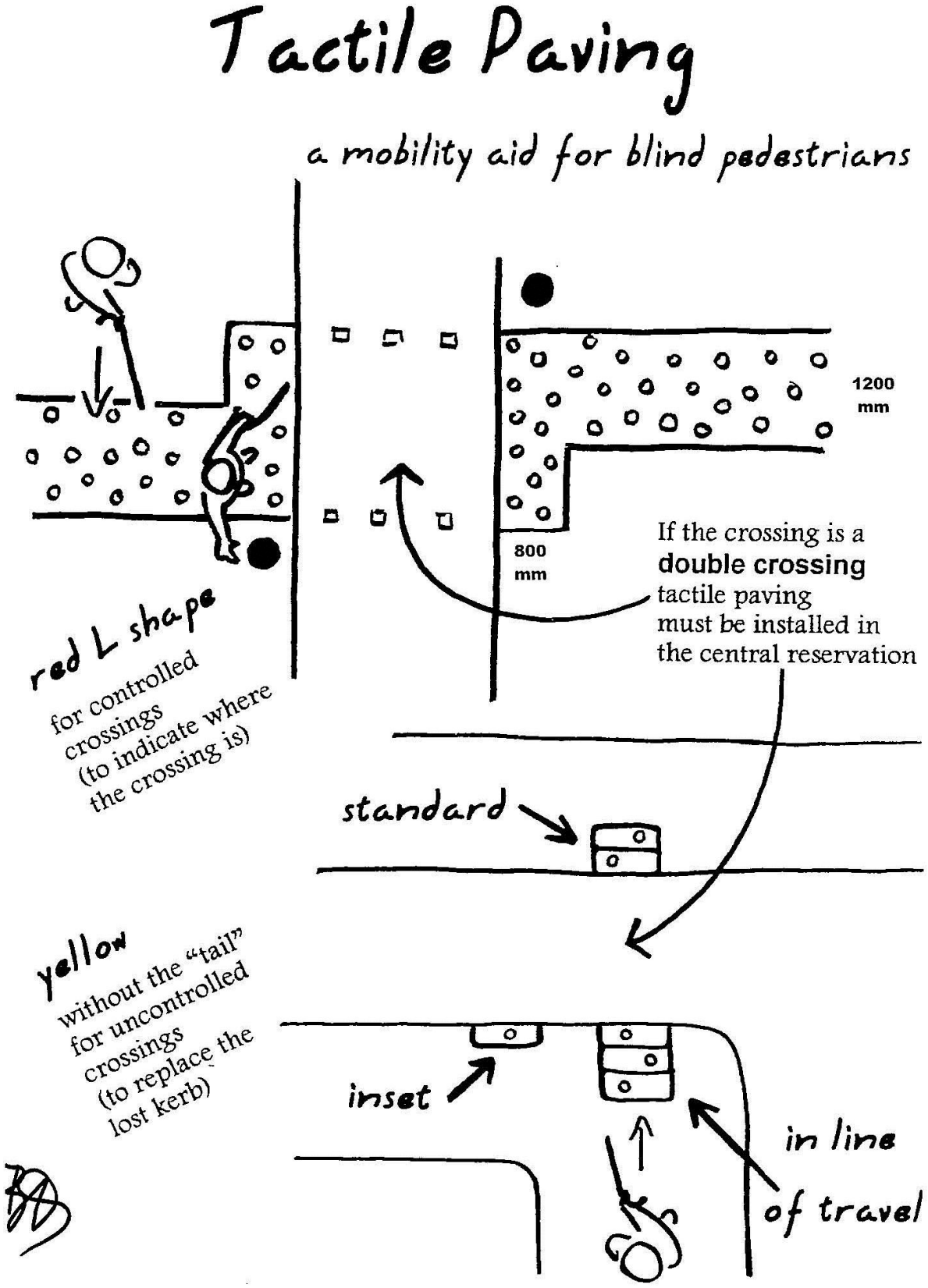
Many of the technical specifications are agreed at a European level. We must ensure that the U.K. representatives understand the issues involved and are able not only to safeguard the excellent British designs and reject the bad ones, but put them forward as European standards for adoption across the continent.

Let's get our act together and export a tactile paving system that gives reliable information to visually impaired people not only across this country, but also across Europe!

Beata Duncan-Jones
Mobility and Rehabilitation Officer for Visually Impaired People
London Borough of Hammersmith and Fulham, Community Independence Service

Internet Version 2015

WHOLE SYSTEM DIAGRAM



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