Department for Transport

CIHT

CIVIC VOICE talking civic sense

PRIAN Public Realm Information & Advice Network

Street Design for All

An update of national advice and good practice

Prepared with the kind assistance of:

English Heritage, Institute of Highway Engineers, Living Streets, National Heart Forum, Transport for London, Urban Design Group.

2014

Department for Transport

CIVIC VOICE
talking civic sense

The way our streets are designed and managed is essential to our everyday lives and their quality affects everyone. Streets are not just a way for people to get about but are places in their own right, the centre of the community. Streets that look good can also be safer.

Decluttering is high on the coalition government's agenda. Unnecessary street furniture and signs not only make streets unattractive places but also increase costs for Local Authorities. Cluttered streets can also be confusing for drivers and pedestrians, affecting safety. I am pleased to see that *Street Design for All* provides advice on tackling clutter.
A small but vital step to make streets better places for people and one that we would like more local authorities take.

In recent years there has been a significant step change in attitudes to street design and management. A wealth of good practice advice has been published by the Department for Transport and other organisations emphasising and building on the core principles set out in the *Manual for Streets*.

Street Design for All draws upon the published advice and is designed to be used by a wide range of people. It reminds professionals of the new opportunities in the design and management of streets and is also intended to help local community groups understand how they can take part in the development and adaptation of their own streets and talk with knowledge to decision makers.

I commend *Street Design for All* to all those involved in designing and managing streets. It will help to promote a gradual but tangible improvement to all our streets, not just as conduits for movement but places to visit and spend time.

Robert Goodwill
Minister for Transport

What do we mean by "the public realm"? Well it's the bit we all share. It's the open park, the sheltered street, the pedestrianised square, the quiet enclave or tree lined verge.

These are the places that shape our feelings of well-being. They don't have to be "Heritage". They needn't be "olde worlde", but we know when they work, because we can feel it. I personally get excited by great urban space. I want to sit in it, enjoy it, explore it and then venture further. It can tempt me to explore or settle. It can lead me to enjoy the efforts that architects, councils and planners, but often just ordinary home owners have put into its appearance.

This is our shared kingdom, our collective realm. We need to love it to make it work for us. Quite simply if we can respect it as the "living room" of our towns and cities, "the parlour" of our home, we would go a long way to improving it.

These are difficult economic times but we believe investment in our public realm will lead to increased civic pride, and more attractive and safer towns and cities. It will lead to a stronger feeling of community.

This booklet is the latest Civic Voice campaign to support local communities to campaign for better open spaces. Let locals in. Let locals do it. Let local campaigning become a national issue.

There are many who want to help but don't know that they can. Here they can understand how they can get going and, perhaps more importantly, why they should - because they can get results, for all of us.

Griff Rhys Jones
President, Civic Voice

I am very pleased that, once again, CIHT is able to support the publication of up to date advice and to encourage the application of good practice.

Having guided the preparation and production of this publication, in conjunction with our colleagues at the Department for Transport, we commend it to both our members and to fellow built environment professionals.

Peter Dickinson
Chair of the Urban Design Panel
Chartered Institution of Highways and Transportation

This document is a joint endeavour and on page 25 we record our sincere thanks to those who have given their time and expertise. Much of the content stems from the work of the contributors to our annual PRIAN public realm courses which bring together multi-disciplinary groups of professionals as well as people interested in the appearance and function of their own streets.

The work continues. There is more on our website www.PublicRealm.info.

Colin J Davis RIBA RTPI FCIHT
Public Realm Information and Advice Network - PRIAN

Street Design for All by Colin J Davis
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Street Design for All

A fundamental change in attitudes to street design and management is taking place. The Manual for Streets by the Department for Transport was an important step in 2007. In 2010 the Chartered Institution of Highways and Transportation produced Manual for Streets 2, extending the principles to cover all roads except trunk roads. Both stress the importance of streets not only as conduits for movement but as places to visit and spend time.

New attitudes to street design

Pages 2 - 3 Design and manage the street for a sense of place as well as for movement.

It is important to understand how a particular street works as an individual place; particularly the human activities that give a street its character.

Pages 4 - 5 Design the street to enhance its sense of place.

People appreciate streetscape, not only fine vistas and historic buildings but the seemingly ordinary. It is important to cut street clutter so that disabled people can move about more easily and the special qualities of a place can be seen more clearly.

Pages 6 - 7 Encourage wellbeing through healthy, active lifestyles.

Wellbeing includes mental as well as physical health. Streets that are designed to be interesting, welcoming and safe encourage more people to walk and cycle as part of their daily life.

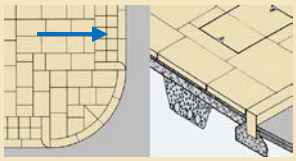
Pages 8 - 11 Design and manage the highway to make unsafe actions less likely.

A greater understanding of drivers' behaviour based on what they actually comprehend as they travel along a road helps anticipate how they are likely to react to various street conditions. If the road is self-explanatory, drivers are more likely to know what to expect in the road ahead.

Pages 12 - 13 Aim for total street design-not just individual uncoordinated components.

Quality streets balance the needs of all road users: pedestrians, cyclists, people with disabilities and drivers. In urban and rural areas, local character can be enhanced through good design.

Practical applications



Pages 14 - 21 Pay attention to detail.

These pages illustrate a range of practical applications relating to various aspects of street design. The examples include designing safe and convenient street corners for pedestrians, techniques to reduce unnecessary traffic signs, ways to improve the appearance of street lighting, methods to avoid broken paving slabs and make maintenance easier and less costly. Each aspect might seem quite minor on its own but together, they can have a significant impact on the success of the overall design.

Bringing it together

Pages 22 - 23 Improve the street in stages and check the design.

Start quite modestly – tidy up. Follow on with more tangible improvements. They need not be carried out at the same time. More complex traffic schemes need to be assessed to ensure they will fulfil their stated purposes. This process is known as the Quality Audit.

Pages 24 - 25 Get involved.

Individual councillors and interest groups can get involved in the design of their streets to better suit local needs.

Movement

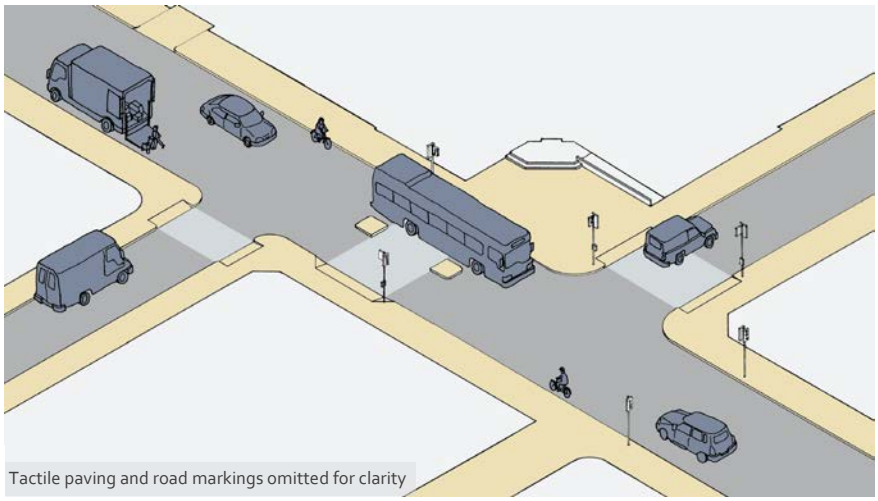
Make movement safe, efficient and pleasant for all

MOVEMENT IS ESSENTIAL

Most streets have been designed, or adapted, over the last fifty years or so primarily for the movement of motor traffic. This function continues to be important but it should no longer dominate in the way it used to – it needs to be balanced with the street's place function.

Enhancing the sense of the place and maintaining efficient and safe movement of traffic can be achieved by careful design.

High streets are places where such an approach can work well. There is frequently a mixture of land uses, types of vehicle and pedestrian activities that all need to be accommodated while still respecting and enhancing the context and character of the place.



Tactile paving and road markings omitted for clarity

A road junction needs to provide for safe and efficient movement of many types of vehicle

SAFETY

Managing the interaction between vehicles and pedestrians is critical. In practice this means ways need to be devised to help people cross a road or share a road safely and in comfort.

Conventional methods rely on concentrating pedestrian crossing movements and regulating traffic by signs, signals or traffic management.

There is now a greater inclination to reduce traffic speed so that people have more freedom to cross the road where they want to.

In the design process, the assessment of risk involves a balance between the likelihood and severity of a specific event occurring. This in turn needs to be balanced with other objectives such as pedestrian movement, quality of life, etc.

Buses, taxis, cars, lorries and cycles all have separate moving and stopping patterns

CONTEXT

A prime task in designing or adapting a street is to encourage drivers to drive appropriately. In the past there has been a significant reliance on signs and other street equipment to bring this about.

However there is increasing evidence that drivers alter their driving style and behaviour in response to the form of the street, regardless of the presence of signs. They tend to drive at what they consider to be a safe speed. If the street is designed so that drivers feel comfortable travelling at an appropriate speed, many signs and items of traffic related street furniture become unnecessary.

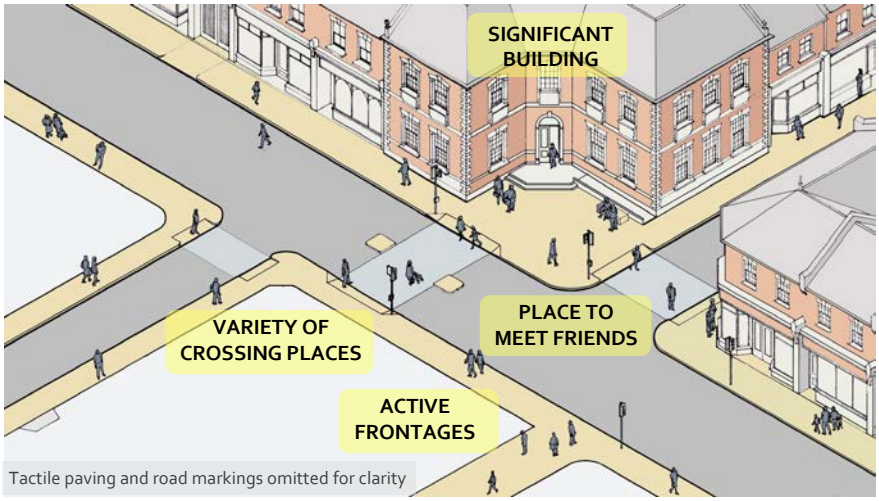
The advantage of removing street clutter is that the physical character, or context of a street: its buildings, spaces and local landmarks can be seen and appreciated more easily.

Courtesy crossing on a direct desire line

Roundabout with all signs removed

Place and Movement

Design and manage for place as well as movement



The same road junction is also a place where people expect to meet in pleasant surroundings

It is often the spaces between buildings that we subconsciously react to and remember

Streets that are attractive allow us to make our own choices on what to do and where to go

PLACE AND MOVEMENT

Manual for Streets published by the Department for Transport in 2007 reminds us that a street performs two functions: as a distinct place with its own characteristics and as a conduit for movement. One of Manual for Streets' key recommendations is that increased consideration should be given to the place function of a street.

The design or adaptation of a street can enhance its individual character or sense of place. It can help emphasise the qualities that local people appreciate such as the setting of important landmarks and the contrast between a narrow intimate passage and the bustle of a high street.

It is possible to significantly enhance the place function of a street without compromising safety.

QUALITY OF BUILT FORM

To respect the place function of a street, we need to analyse what contributes to its quality. Though the design and architectural style of individual buildings is important, their position in relation to the street and to other buildings may have more effect on the character of a place and be more memorable.

Seen at the corner of a busy high street, a building might appear to have command over a formal paved area, perhaps a town square. In a narrow passage the same building could simply contribute to a delightfully small scale intimacy.

It is often in the spaces between buildings where human activity and social interaction take place. These spaces should be designed or adapted to respect or enhance a street's sense of place.

HEALTH AND ECONOMIC WELLBEING

Given the opportunity, people will engage in a very wide range of activities and movement patterns within a street. Streets that are interesting and pedestrian-friendly allow people to make their own choices on what to do and which route to take.

The greater variety of activity that a street can accommodate – walking, sitting, chatting with friends, browsing and window shopping - the more successful it is likely to be. Streets that are interesting (and not dominated by motor vehicles) can encourage people to walk more or cycle as part of their daily routines leading to a healthier lifestyle.

Streets should be comfortable for pedestrians to use. This includes places where people can cross the road or share spaces with vehicles without feeling intimidated.

Streetscape

Use the street to enhance the place

THE POWER OF PLACE

Most people value our historic environment and, in particular appreciate buildings such as cathedrals, castles and palaces.

Many of our towns and village centres are made up of buildings that remind us of our national heritage and local culture: medieval churches, Georgian pubs and inns, and Victorian civic buildings such as libraries and town halls. The way they are seen together helps create a sense of place and makes one town centre distinct from another.

Economic regeneration projects usually rely on emphasising and enhancing these distinctions.

The quality of the historic buildings is enhanced by simple robust ground surfaces

THE ROLE OF THE STREET SURFACE

A street forms the foreground and setting for its buildings to create a composite view. The overall appearance of buildings, either individually or in groups, may be enhanced by careful attention to the choice of surfacing materials in the street and the way the materials are used.

For example car parking in a market square can be arranged to leave a clear view of a focal point such as a locally cherished historic monument.

Another example is the positioning of a pedestrian refuge. If it can be aligned with the middle doors of a historic building's symmetrical façade while still being on pedestrian desire lines, the building can be given greater prominence. Designing a street around its buildings so that they look as though they belong will improve the whole appearance.

A monument at the focal point

Central refuge related to historic building's symmetry

VISUAL RELATIONSHIPS

Pavement surfaces should be visually appropriate and require minimum maintenance. In historic settings in particular, it may be desirable to retain the existing visual proportion between the pavement and road.

Kerbs and flagstones should be accurately cut and well laid. Colour, texture and the standard of workmanship combine with less visually intrusive signing can strongly influence the impression of quality in the streetscape.

A rule that works in many places is to keep designs simple so that the architectural details of the surrounding buildings are shown to best effect.

Options are available that, together with variations in style and colour of practical street furniture, can relate visually to the setting and context of a particular street

Paving materials, whether natural stone or man-made need to be set out and laid with care

Streetscape

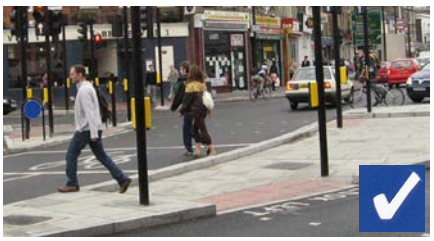
Cut clutter

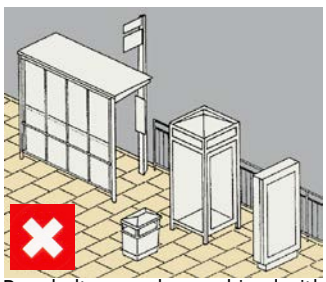
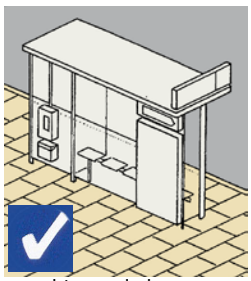
Street clutter increases as new equipment is put on our streets

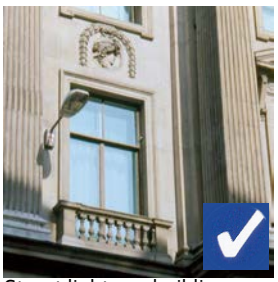

Most can be removed or replaced with tidier, or elegant alternatives


Removing clutter makes a place feel safer


Posts, bollards and cameras can be relocated



Guardrailing has little or no effect on road safety and so is very seldom necessary



Bus shelters can be combined with seats, bins and phones


Street lights on buildings



Pavements can be set out tidily with neat edges to man-holes

Signs can be put on railings

THE ERODING EFFECT OF CLUTTER

The economic wellbeing of a city, town or village may depend significantly on the appearance of its streets and public spaces. Clutter has an eroding effect on the appearance of a street. It can reduce the full quality of cherished views and local vistas which distinguish one place from another.

Possibly the most visible form of clutter comes from over use of traffic signing and traffic related equipment. But clutter can also arise from poorly placed street furniture, inappropriate use of guard-railing, or insensitive treatment of paving around access covers.

Clutter constantly accumulates. Changes to car parking arrangements, new traffic management systems and better directions for tourists often result in new signs or street equipment.

CONSIDER EACH COMPONENT

Each component that makes up potential street clutter has to be considered separately.

Obvious signs of neglect should be addressed first. Graffiti, fly posters and overgrowing vegetation should be removed. Benches and bins may need to be repaired or replaced. If guardrailing is not needed, it should be removed. Street lights can be put on buildings. Bus shelters can be combined with seats and bins. Traffic signs might be reduced in size and complexity and it may be possible to fix some to walls and railings rather than to separate posts.

Pavements should be neat and tidy and strong enough to resist any anticipated heavy vehicles.

Some local councils have a design champion to take these ideas forward. Some delegate to locally based panels or working parties. In other places local people in community groups take the initiative.

Wellbeing

Encourage wellbeing through healthy, active lifestyles

HEALTHY LIFESTYLES

According to the World Health Organisation, "Health is a state of complete physical, mental and social well-being and not just the absence of disease or infirmity." There are factual links between regular exercise and good physical and mental health.

Regular physical activity helps prevent and manage common conditions and diseases such as: coronary heart disease, stroke, diabetes, some cancers, overweight and high blood pressure.

A walk in the country is known to lift the spirits but a walk along a town street which has variety, some greenery, interesting things to do and people to meet also has mental health benefits.

Walking can be fun as well as healthy. Walk to School Week is organised by Living Streets

WALKING EVERY DAY

Walking is good for our heart and lungs. It improves cardiovascular fitness. Most of the work is done by the muscles of the lower body, and it's a weight-bearing activity, so it can improve bone density. It's also low impact, so it won't strain our joints.

Walking 10,000 steps a day, which is equivalent to about five miles, can give us a healthy heart and reduce body fat. Most people manage 4,500 steps.

People walk more when they feel safe in their neighbourhood and when it is well maintained and lively, and when they have somewhere to walk to. Rural areas need to be walker friendly too.

Investing in everyday walking environments, including ordinary streets, can reduce the significant societal and economic cost related to poor health.

People like to walk. Robert Goodwill (right) the Transport Minister in Walk to Work Week 2014

AN INTERESTING WALK

Streets that are welcoming and interesting encourage more people to walk. In London, people usually go by tube from St Pancras station to Trafalgar Square. But it is more pleasant and often quicker to walk.

From St Pancras to the steps of St Martin in the Fields at Trafalgar Square takes about 25 minutes to walk compared with 27 minutes by underground, if a ticket is already bought and the wait for trains is 3 minutes. The total number of steps is 2,500, a quarter of the total daily number recommended.

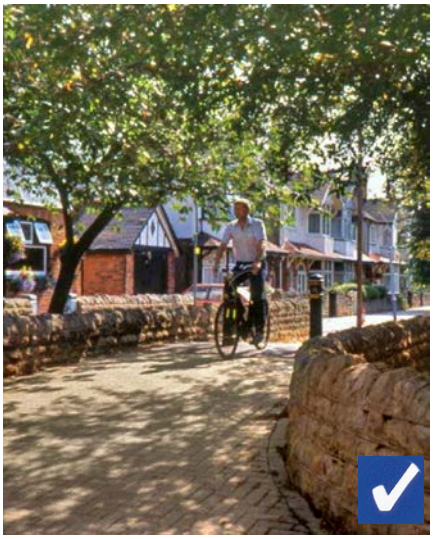
The route is varied and interesting. It takes in well known sights, open spaces, active street frontages of shops and places where people come together, as well as paths and connections to other streets and alternative interesting routes.

The interesting walking and cycle route from St Pancras to Trafalgar Square

Wellbeing

Encourage cycling through attractive, safe, direct routes

Cycling can be fun, healthy and time saving



People would cycle more if streets were cycle friendly

Cyclists need to be safe.....

but prefer places to be pleasant as well

WELLBEING AND CYCLING

The National Health Service promotes regular cycling because it can reduce the risk of chronic illnesses such as heart disease, type 2 diabetes and stroke. "It can also boost your mood and keep your weight under control," the NHS states. "Whether you're cycling to work, to school, to the shops or just for fun, the humble bicycle is an easy way to get more active."

The best way to build cardiovascular fitness on a bike is to ride for at least 150 minutes every week. For example to cycle to work a few days a week or do a couple of shorter rides during the week with a longer ride at the weekend.

"Cycling is one of the easiest ways to fit exercise into your daily routine because it's also a form of transport. It saves money and gets you fit."

CYCLING EVERY DAY

Our increasingly motorised existence means that there has been a dramatic decline in cycling since 1949. Then some 30% of miles travelled using a mechanical mode were by bicycle, today it is less than 2%.

Around 70% of all trips made by car are of five miles or less - distances eminently suitable for cycling. We own more bicycles than ever - an estimated 27 million in the UK.

Six in ten people who are able to ride a bicycle are deterred from cycling to work because they believe it's too dangerous for them to cycle on the roads. Of those who do cycle, 63% find it stressful.

To encourage more to cycle there will need to be changes to street design and support services.

STREETS FOR CYCLISTS

There are advantages for cyclists in areas where traffic speeds are 20 mph or lower. Low speed roads are more comfortable for cyclists and allow them more freedom to use the full width of the street.

This does not necessarily require a formal 20mph speed limit. Lower vehicle speed can be achieved by subtle traffic calming, see page 11.

Permitting cyclists to use streets and other places where motor vehicles are prohibited, allows them to take convenient short cuts. Providing convenient and secure cycle parking is also important.

Designs to help cyclists can be quite subtle. Gentle gradients and smooth surfaces may be more attractive to cyclists than a plethora of information and instruction signs. In well designed streets cyclists should not need bright and reflective clothing.

Road safety

Understand what a driver actually sees and understands

WHAT A DRIVER ACTUALLY SEES

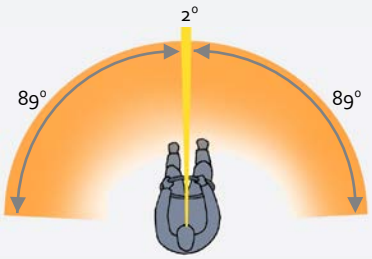
There are considerable limitations to what a driver is able to notice and safely respond to.

Our eyes only have the ability to analyse in detail central vision: a very small part of our total vision. We take in a wider view through a series of brief fixations, linked by eye movements.

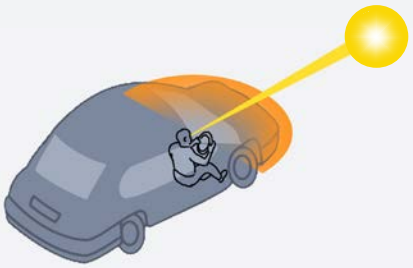
We can choose to move our eyes to a new location in the scene, where we believe it profitable to look. But an involuntary change of fixation can be caused by a potentially important change in the scene. Therefore a driver can only analyse a limited amount of information.

In low light conditions, central vision is more affected than peripheral vision.

The eye only sees a narrow two degree cone of central vision in sharp focus



A total scene is understood through a series of eye movements to very specific points



The rest is seen partially and out of focus, as a blur, though movement can be detected across 180 degrees.

This peripheral vision is used for vehicle guidance, and so a driver is able to navigate at high speed but may fail to detect hazards, or signs.

PERCEPTION

Visual perception is the result of the brain processing information from the eyes, and combining it with knowledge and experience.

It is a highly interpretive process, designed for the extraction and enhancement of those features in the environment which are important for survival. It evolved to function at the speed at which we were able to move around on foot. It is not surprising that errors occur when the same system is required to function while both travelling well above running speed and while conducting the complex task of driving.

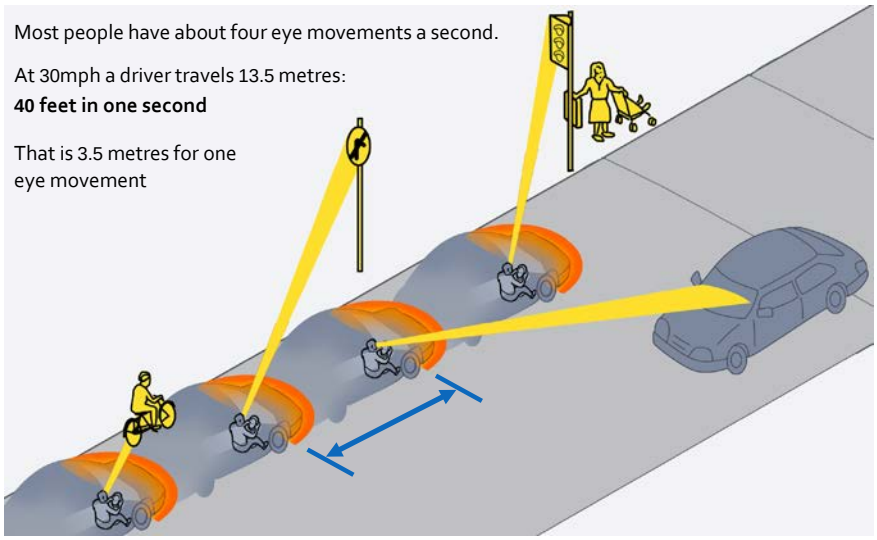
As speed increases, we are forced to attend to the scene around us more selectively and rely, in part, on our expectations as to what will be present and where. We may simply not see what is unexpected.

The brain tries to understand a complete scene through a series of selected eye movements

Most people have about four eye movements a second.

At 30mph a driver travels 13.5 metres:
40 feet in one second

That is 3.5 metres for one eye movement



It is difficult for drivers to watch the road and at the same time read complex traffic signs

CONSPICUITY

Conspicuity is defined as those characteristics of an object or condition that determine the likelihood that it will come to the attention of the observer. There are two types of conspicuity, sensory conspicuity and cognitive conspicuity.

Sensory conspicuity refers to the capacity of an object to be detected when an observer is not specifically looking for it. Important factors are: size, the object's contrast to its surroundings, its positioning within the observer's field of view, and motion.

Cognitive conspicuity relates to the capacity of an object to be detected if an observer is specifically looking for it. It is dependent on the information contained by the object and the psychological state of the observer.

High visibility clothes help cyclists be seen, but only if drivers are also looking for them

A regulatory sign may have high sensory conspicuity, but for a driver who knows the route, the information it contains is irrelevant. It therefore has little cognitive conspicuity and so may not be noticed at all

Because drivers need to be selective in what they look for, they may look but not see

Road safety

Understand conscious and involuntary human behaviour

A driver's allocation of attention as seen through the windscreen of a moving car

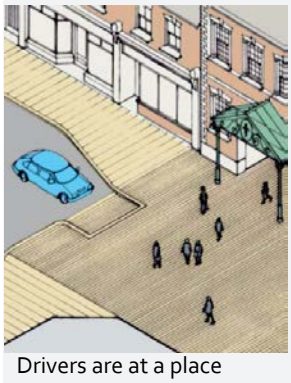
Bus passengers

People on a crossing

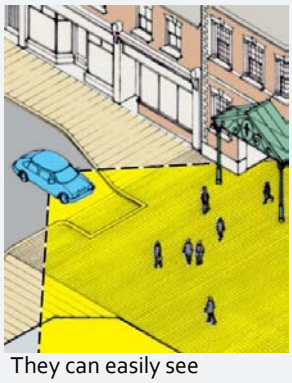
Unexpected child in road

Reaction times are slower if a driver is distracted and the hazard is not expected

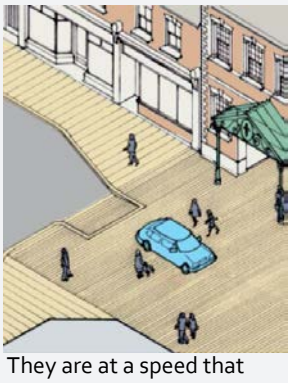
Places where drivers and pedestrians mix can be made safe



Drivers are at a place where they expect to see people in the road



They can easily see people and there are no distractions



They are at a speed that gives them time and distance to stop

Streets can be safer when drivers know what to expect and have time to react

ATTENTION

Effective allocation of attention is important in driving as it is not possible to attend to everything in the scene at once. Attention can be captured involuntarily by an object, or can be directed to something consciously. While the abrupt onset of a stimulus will usually capture attention, this will not be the case if the driver's attention has already been focused elsewhere, before the stimulus' onset.

The probability of an object being detected will also be affected by the amount of information being processed or the cognitive load on the driver when it first enters the field of view.

Cognitive load can arise from the allocation of visual attention, thus the greater the amount of visual clutter near the road or in clear view of the road, the greater the demand on the driver. It can also result from tasks that do not require visual attention such as talking on a mobile phone.

DRIVER PERCEPTION-RESPONSE TIME

Driver perception-response time is affected by age, gender, cognitive load, fatigue and the presence of alcohol or drugs in the driver's system, but also by a hazard's conspicuity, its location relative to the vehicle's path and the extent to which it fulfils the expectation of the driver.

If a hazard conforms to expectation with regards to its nature and location, response time will be minimised. But when a driver is looking for X but encounters Y, reaction time increases, as does the probability of an error.

Design that is consistent with driver expectations increases the likelihood that the driver will respond correctly and quickly to situations in the road ahead. A hazard's physical properties alone do not guarantee that it will be detected if the driver's attention is diverted elsewhere.

STREET DESIGN AND THE DRIVER

Most of the information required by a driver comes from the road and its surrounding environment. A driver's perception of the road, and their behaviour at specific locations, are greatly influenced by the extent to which the road makes sense in the light of its environs.

Conflict between these two factors will lead to driver error or unintentional violations, and an increase in the likelihood of the presence of hazards, unexpected by the driver, resulting in an increased perception-response time. The driver must be able to see the road far enough ahead, in relation to the desired traffic speed, to allow stopping, passing and reacting to other road users.

Roads should be neither too boring, which can lead to reduced attention, or too complex, which results in excessive cognitive loading.

As much as is possible, an individual's perceived level of risk should not drop below the level of actual risk.

Road safety

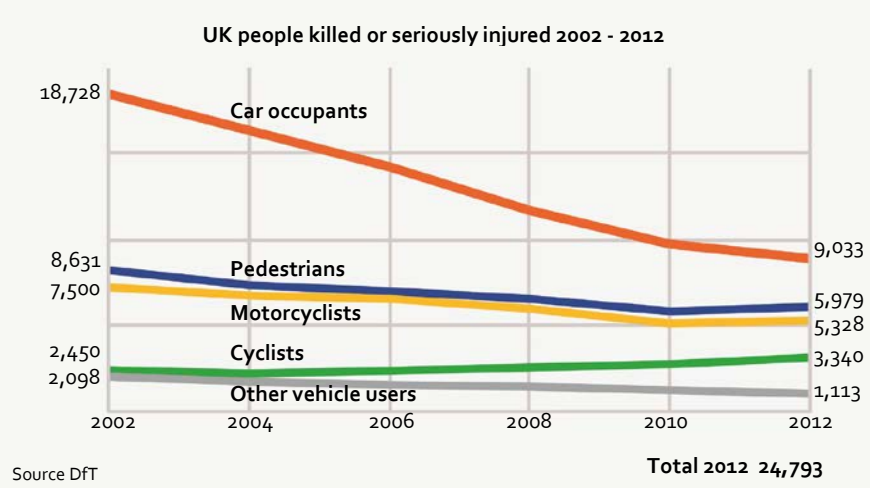
Consider the proven evidence of accident records

CAN ROADS EVER BE TOTALLY SAFE?

Accidents occur when road users fail to cope with their environment. Road design is only one matter that affects road safety. Drivers may fail to cope if they are distracted, for example by a phone call, are under the influence of alcohol or drugs, are young and inexperienced or are elderly. Deaths and serious injuries caused by road accidents have decreased mostly due to modern vehicle design.

Accidents involving pedestrians and particularly children have not significantly changed and injuries to cyclists have increased. Motorcyclist accidents are high, due to some riders putting themselves at risk and, on urban roads, not being noticed.

Roads are never totally safe for everyone, but they can be designed to make accidents less likely.



The total number of accidents is reducing primarily because modern cars are safer

COPING WITH A HAZARD

Accidents are less likely when drivers expect a hazard, are able to recognise the hazard and have time and room to react safely.

For example a driver entering a village or residential area should be able to appreciate that there may be pedestrians or cyclists crossing the road. If there are he should be able to see them in time to be able to stop safely.

In multi-use roads, moderate speed has a very significant effect on the likelihood and severity of accidents. The chance of a pedestrian being killed or seriously injured in an accident involving a vehicle travelling at 20 mph is less than 3%, if the vehicle's speed is 30 mph the likelihood is 20%. Where the speed is 40 mph, it rises to 90%.

Traffic speed of 20 mph reduces both the likelihood and severity of accidents

PROVEN EVIDENCE

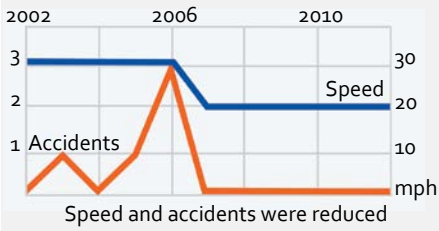
Accidents are more likely when a road appears to be safer than it really is. Multi-use roads, for example high streets that appear to be designed to almost motorway standards lead drivers to think they have more protection and priority than is available. This is because unlike true motorways, pedestrians and cycles are permitted and there is no room for the essential generous dimensions and layout of a fully segregated motorway.

Wide straight roads are misleading and cause accidents. Some measures which have been applied in the interests of safety have little or no proven effect. Much of the current guardrailing and anti-skid road surfacing on roads merely give drivers the impression that a road is safe enough for them to relax their concentration. A review of the road safety evidence of these measures at specific locations will conclude that in many cases they should be removed.

Straight roads and guardrailing encourage drivers to think a road is safer than it really is

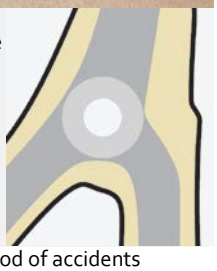
Road safety

Combine safety with amenity



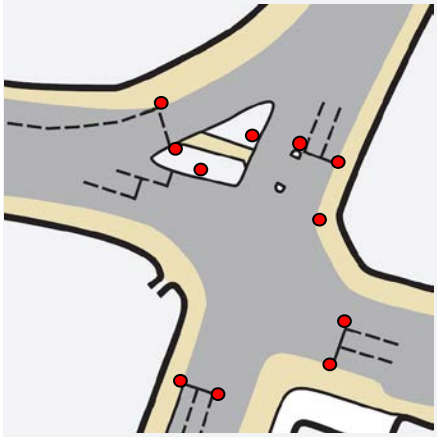
Speed and accidents were reduced

Pedestrian refuge and white lines were replaced by an uncontrolled junction and a courtesy crossing



Changes in the road layout to increase uncertainty reduced the likelihood of accidents

Accident reduction was accompanied by tangible enhancements to the quality of the place



● Signals at controlled junction
Average of 6 accidents a year
Queues on all approach roads

Signals removed. Lower approach speed
Average of 3 low severity accidents a year
Queues reduced. High flows maintained

Slower speed at junctions reduces accidents and the severity of the accidents that do occur

SELF EXPLAINING ROADS

Drivers need to know what to expect in the road ahead. This happens in a self-explaining road. Case studies show that drivers regulate their speed in response to anxiety. If the road ahead looks dangerous or there is uncertainty, speed is reduced.

Though the circumstances of each case need to be considered individually, there is evidence that where central white lines have been removed in village and residential roads, traffic speed has been lowered and accidents reduced. At Julian Road, Bath, a pedestrian refuge at a junction, together with white lines in the centre of the road were removed and replaced with an uncontrolled junction and a courtesy crossing. The arrangement is informal and drivers can see that the way ahead is not straightforward. Drivers reduce speed in order to cope with any unexpected activity.

TIME TO REACT

Having alerted drivers to the possibility of hazards in the road, the next step in the design process is to make sure the hazard will be seen. At a recently completed scheme at Poynton, Cheshire, a complex arrangement of traffic signals has been replaced with an uncontrolled junction in the shape of a double mini roundabout. Vehicles entering the junction approach slowly but continuously in a free flow single lane. Drivers are able to cope with and give way to pedestrians on courtesy crossings and then negotiate individually with other drivers as they move through the junction.

The success of the scheme relies on low speed and drivers watching what other road users are doing, with no clear indication of who has priority. This allows all drivers to respond safely to any additional unexpected events that might occur.

ADDED QUALITY

Successful traffic schemes are those which are safe and also improve the feel of the area. Places need to have a soul and be pleasant. Good design is about what humans actually feel and relate to.

Traffic schemes can contribute to the best characteristics of a place. Redundant traffic signs, guard railings, white lines and in some places traffic signals can be removed to improve road safety. In many places there will be opportunities to do more: provide hard or soft landscape, or trees.

There is no guarantee that schemes designed to preformed design "standards" are automatically safe in every circumstance. Innovative designs that help drivers to expect, understand and react to hazards can have the added advantage of being tailored precisely to the local characteristics of a place. They can emphasise the quality of the countryside, village, small town, urban area or city.

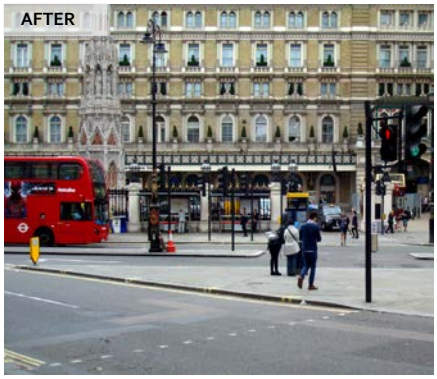
Quality designs

Aim for total street design

STRAND, WESTMINSTER

This scheme at the Strand has now been in place for more than fifteen years. Before the changes were made traffic movement was efficient with no concerns about accidents. The aim was to improve the appearance to help regenerate the street which is the setting for a group of listed buildings.

Despite traffic flows remaining unaltered, a considerable amount of guardrailing was removed. The pedestrian flows across the road to and from Charing Cross station are high. The accident record has been good.



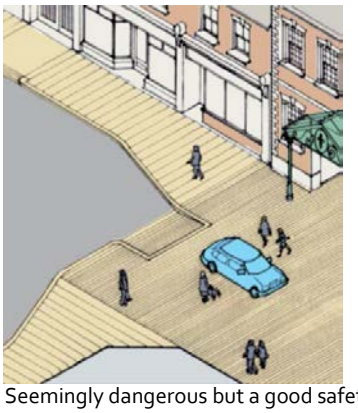
Simple design lines, robust materials and the removal of street clutter including guardrailing

HOLBEIN PLACE, CHELSEA

Holbein Place is a one way street leading off the Sloane Square gyratory system. The road surface has been raised to pavement level which has a similar high standard granite surface.

As there is relatively little distinction between "pavement" and "road", drivers tend to expect pedestrians in the road. In the three years following the changes there have been no accidents.

When Holbein Place was two way and had a pelican crossing, there was on average one accident a year.



Seemingly dangerous but a good safety record because drivers are aware of the dangers

MAID MARIAN WAY, NOTTINGHAM

Maid Marian Way, an inner ring road in Nottingham has been totally remodelled. A large roundabout including a series of unpleasant underground pedestrian passages and a sunken inner area in the roundabout has been replaced by a signalised cross-road junction with signal controlled pedestrian crossings.

People walking from the Old Market Square to the Castle are able to stay above ground, where they can cross comfortably and easily understand the relationship between the two. Active shopping frontages relate better to pedestrian routes.

Removal of roundabout with pedestrian underpass at Maid Marian Way, Nottingham

THE CUT, LAMBETH

The Cut is a central London street with a speed limit of 30 mph. The pavements have been widened, raised tables have been provided at crossroads and street clutter has been reduced. Care has been taken in the selection and location of new street furniture: lamp columns, bins seats and street trees. The location of car parking and motorcycle parking has been carefully fitted into the street scene.

The volume of traffic has not changed significantly but the various visual clues have reduced speed effectively to 20mph and below. Pedestrians are able to use and cross the street more comfortably.

Visual changes combined with road narrowings have reduced traffic speed at The Cut, London

Quality designs

Make the most of rural villages. Reduce traffic signs and white lines

West Meon, Hampshire before and after traffic calming achieved through clutter reduction

RESPECT VILLAGE CHARACTER

The schemes on this page have been in place for three to six years and have good safety records. Traffic speed has been reduced and the character of each village enhanced.

At West Meon, on the A32 in Hampshire, road centre white lines have been reduced or removed along with a large chevron sign and timber bollards have been installed that are visually in keeping with the rural village character of the site.

Ugly traffic signs and lines are less effective in slowing traffic than a simple road narrowing

VILLAGE GATEWAYS

Traffic management can be designed in sympathy with the character of the location. Street clutter and traffic signs can be reduced to the minimum.

On the approaches to village centres, the appearance of the road can be adapted to reinforce the impression that drivers are entering a different sort of road environment and need to drive accordingly. The left hand image is full of clutter including the overuse of colour and backing boards. The arrangement on the right is more sensitive and respects the context of the village as a place.

White lines were removed throughout the village including those at a humped back bridge

WHITE LINES

At Clifton, on the A6 in Cumbria, the village entrance is marked with a clear and simple sign and gradual road narrowing. Thereafter the road is narrowed repeatedly through the village at places of local importance such as the parish church, village hall local pub, hotel and village school.

The road safety scheme removed the white lines throughout the length of the village including in this case over a hump backed bridge. Though seemingly counter-intuitive in terms of safety, the scheme has reduced traffic speed. There have been no accidents.

Fifty traffic signs were removed at Bibury, Gloucestershire as part of a road safety programme

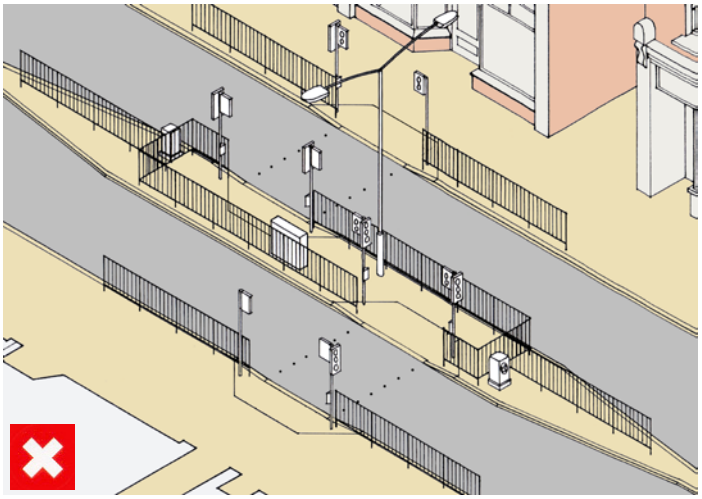
DE-CLUTTER

Bibury village on the B4425 in Gloucestershire is a national tourist attraction. The road safety scheme enhanced the appearance of the village by reducing street clutter. Over 50 traffic signs were found to be unnecessary and were removed.

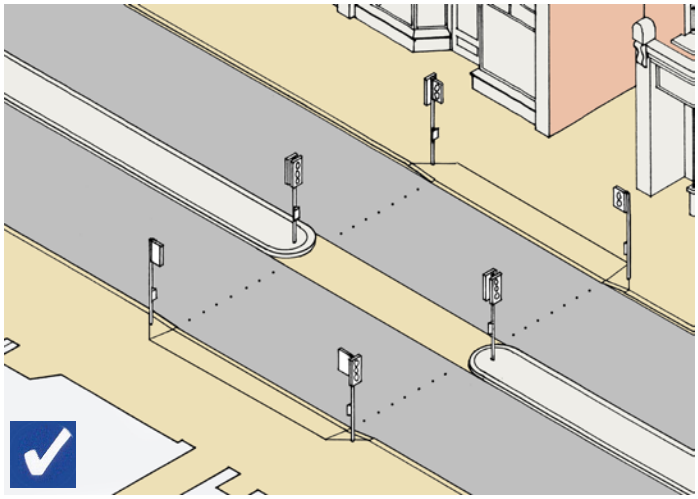
At places the road has been narrowed with simple low cost grass verges. These have the advantage of an appearance that is traditional to the village and avoid an impression that additional safety features have been imposed on the street scene. Instead they look as though they have always been part of the historic village fabric.

Comfortable crossings

Create crossings which are direct, elegant and safe



A typical two stage crossing which has a reasonable safety record



The same crossing redesigned to be more convenient and comfortable

COMFORTABLE CROSSINGS

Pedestrian crossings should be comfortable for people to use. For example, two-stage signal controlled crossings are less than ideal in this respect. The typical staggered arrangement increases walking distances and crossing times increase due to the need to cross in two stages.

Direct single stage crossings are more convenient, being shorter and quicker to use. If traffic conditions allow, it may be possible to convert existing two-stage crossings to direct single stage crossings.

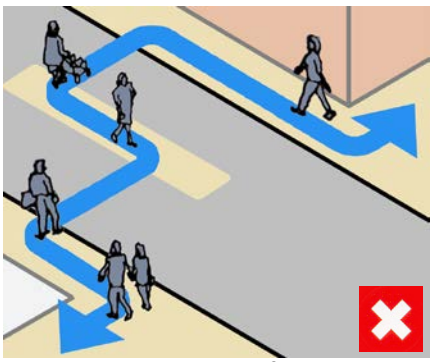
If traffic volumes are such that a two stage crossing is necessary, it can still be in a straight line if the central refuge is wide enough for pedestrians to realise that they are clearly using two separate crossings – See Maid Marian Way crossing , Page 12.

Elsewhere, crossing distances can be reduced (and traffic can be calmed) by installing build-outs to narrow the road at the crossing point. The minimum width for many controlled crossings is 2.8m. Wider crossings can give people the comfort of not feeling hemmed in and caught up in a mass of other pedestrians.

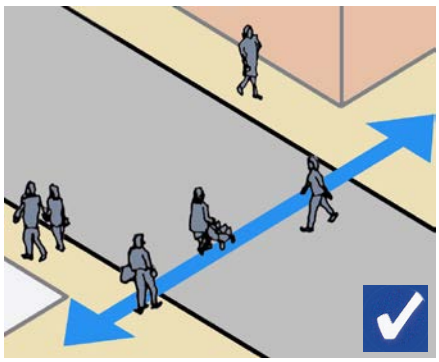
Many crossings still have long lengths of guard-railing, much of which might now be considered unnecessary.

The Department for Transport's Local Transport Note LTN2/09 Pedestrian Guardrailing offers an assessment procedure to evaluate the need to install or remove pedestrian guardrailing, particularly at pedestrian crossings and road junctions. Since 2009 Transport for London has adopted simplified methods, the most recent version is explained on page 15.

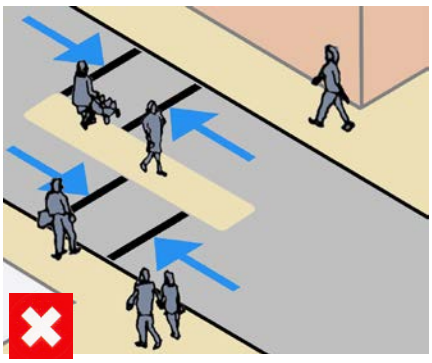
Tactile paving and road markings on the diagrams omitted for clarity



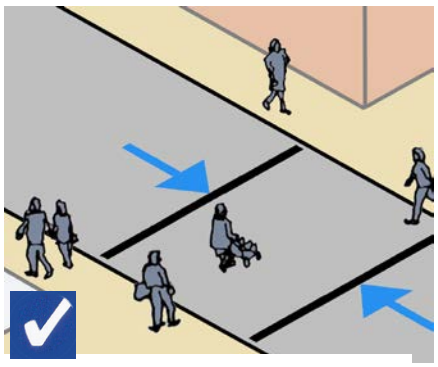
Pedestrians have to go out of their way



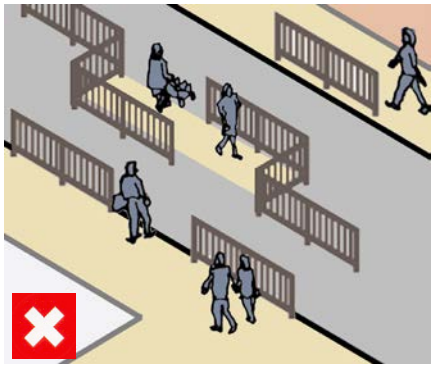
Pedestrians can walk in a direct "desire" line

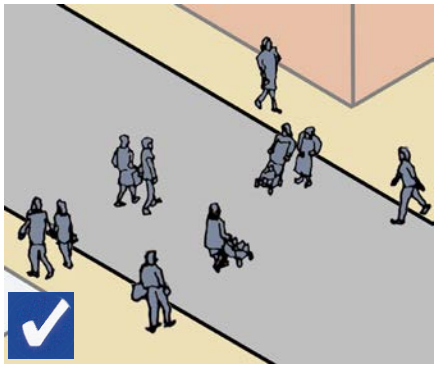


Crossings are usually 2.8 metres wide



Crossings can be as wide as 10.0 metres





A less complicated crossing does not need guardrailing

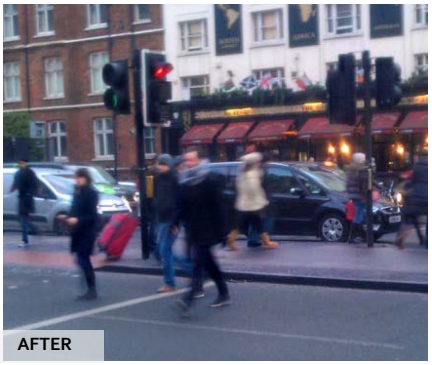
Junction safety assessment

Make the most of a place


People prefer to take a direct line across a road


Guardrailing is not intended to protect pedestrians but may provide parking for cycles

At many of the TfL crossings, guardrailing was removed without any other associated works



Guardrailing forces pedestrians into a narrow area where they may be trapped in the road

TfL'S GUARDRAILING ASSESSMENT PROCESS

Transport for London's assessment process is intended to aid design engineers make decisions by highlighting key factors to be taken into consideration.

PRINCIPLE CONSIDERATIONS

Maintenance of railing is an ongoing liability.

Kerbside activity may be hindered: emergency services, people getting onto buses, and access to below pavement utility services.

Visibility may be reduced for people about to cross the road.

Cyclists may become trapped between a railing and a vehicle.

Cycle parking at a railing may reduce visibility and partially obstruct the pavement.

Vehicle restraint. Guardrailing is not designed to act as a barrier to protect pedestrians.

Street clutter. Guardrailing adds to an ugly, cluttered feel of the street.

Desire lines. Pedestrians may be taken away from their desire line and walk on the outside of the railing and become trapped in the road or forced to jump over them.

Pavement width may be reduced by guardrailing to the detriment of wheelchair users and pedestrian comfort.

Driver perception. Where a railing is present, drivers are more likely to assume, incorrectly, that pedestrians will only cross at a formal crossing.

Speed. Railing encourages greater speed.

Pedestrian attitudes. Surveys at two junctions after removal showed that the majority of people were in favour of removal.

Crowd management. Railing can be used to effectively contain crowds.

Security. Railing may be requested to prevent vehicles accessing the footway. Bollards may be an alternative.

Outside schools. TfL has no evidence that railing provides a safety benefit outside schools, but the perception of safety may be a reason to keep it or provide it.

Pavement parking may be prevented. Alternatives are effective enforcement, bollards, trees and cycle stands.

Effective capacity of crossings may be reduced. People may become momentarily trapped in the road by railing, while trying to squeeze through a crowd.

SAFETY AUDIT & MONITORING

A road safety audit is carried out, on the assumption that no railing exists. The design team then prepares a response report and takes the final decision.

There is a fully documented audit trail. This is in effect a Quality Audit, see page 23.

Following removal, a site may be subject to monitoring for accidents.

Crossing places

Use courtesy crossings to complement the quality of a place

COURTESY CROSSINGS

People prefer to be able to cross the road exactly where they want to, without being made to go out of their way.

Courtesy crossing can supplement or sometimes replace formal zebra and signal controlled crossings. They can be located more closely together along a conventional street than formal crossings and give people more opportunity to cross where they wish.

Courtesy crossings can take many forms and be designed to fit in with the surrounding character of an individual place.

They can be particularly effective where the speed and volume of traffic have been reduced.

Courtesy crossing place at Shrewsbury

Courtesy crossing place south London

PEDESTRIAN REFUGES

Pedestrian refuges make it easier for people to cross wider streets as they can do so in two stages.

The dimensions, construction and construction materials can vary according to the traffic conditions and also character of the place. Wide refuges reduce carriageway width and so encourage lower speed. They also provide more room for people to wait.

Traffic islands can be designed to serve as a pedestrian refuge. For example a wide central traffic island with low kerbs and extending some length along the street can make ad hoc crossing movements easier


Centre refuge aligned with a historic building


Pelican crossing without guardrailing

UNCONTROLLED JUNCTIONS

Mini-roundabouts are designed to help drivers negotiate junctions where speeds and volumes of traffic are reasonably low. In practice mini-roundabouts are not entirely satisfactory for pedestrians because drivers concentrate on avoiding other vehicles and do not expect to see people in the road. Mini-roundabouts also require traffic signs and road markings that add to street clutter.

Some highway authorities have successfully experimented with arrangements where there is a total absence of traffic signs and road markings. Drivers are encouraged by the layout and road surface to negotiate safely with other drivers as well as pedestrians. In the legal sense these are uncontrolled junctions.

A more complex form at the centre of Poynton, Cheshire is described on page 11.

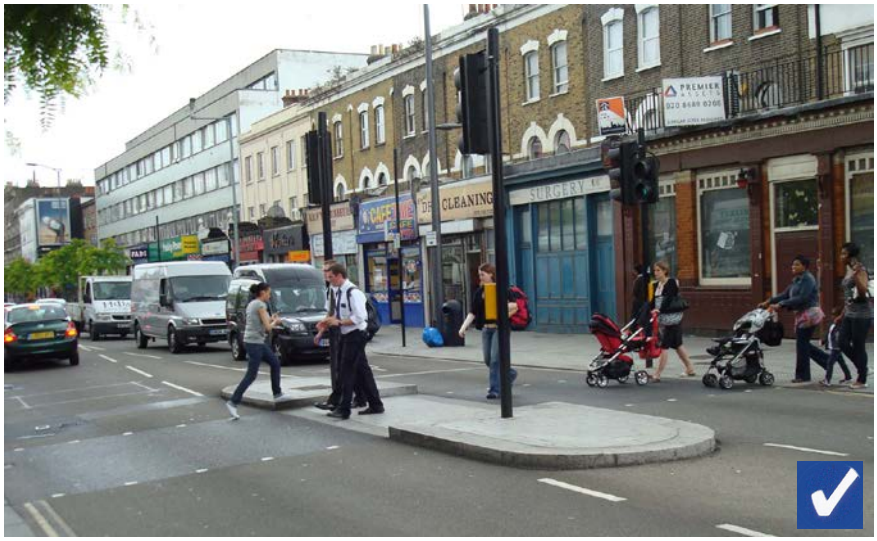
Surface materials at an uncontrolled junction with courtesy crossing help drivers to negotiate

Keep left signs and yellow lines

Avoid unnecessary keep left signs; use alternatives to yellow lines

Unsightly, muddled and unsafe traffic signs

Unnecessary sign and guardrailing



Signal controlled crossing without a keep left sign

Restricted Parking Zones effectively control parking but without ugly yellow lines

TOO MANY SIGNS TO COMPREHEND

Many traffic junctions are cluttered with unnecessary traffic signs on their approaches. This is a typical example of cognitive load. Drivers need to understand quickly which signs are important. The fewer signs they have to interpret, the more attention they can give to traffic conditions.

A traffic sign that is used far more often than is required by the Traffic Signs Regulations and General Directions (TSRGD) is the keep left sign. It is only needed if the highway authority has decided that without one, drivers would not understand the road ahead and there is a risk that they will pass to the wrong side of an obstruction such as a traffic island.

KEEP LEFT SIGNS

Highway authorities can reduce clutter by dispensing with unnecessary signs without compromising safety. Although keep left signs are seen on many pedestrian refuges including at controlled crossings, there is no legal requirement for them to be installed in these situations.

If signs are considered by the highway authority to be helpful, they may be mounted on simple, elegant bollards, or be fixed directly to a structure.

YELLOW LINES

Yellow lines can be unsightly and out of character, particularly in historic settings. Where necessary they should be applied sensitively.

Variations to the width and the tint of the colour of the lines are allowed.

The standard width of yellow lines is 100mm, but narrower 50mm lines are permitted where the highway authority consider them to be suitable.

In a Restricted Parking Zone yellow lines are not required. The parking rules are explained to drivers by signs at the entrance to the zone.

Elegant solutions

Put street lights on buildings and service boxes underground

PLACE MAKING

In order to reduce clutter and to fully integrate street lighting into a street scene, street lights can be neatly fixed to buildings. This can be done in a way that also maintains lighting standards and maintenance systems.

The Corporation of London has powers that allow it to fix its lights to buildings instead of columns. This includes brackets, wires, pipes and apparatus as may be "necessary or convenient for lighting the City". Lights, cables and switches are incorporated into the design of the building. Access to the dedicated, cable ducts within the buildings is only needed very occasionally, usually when the cables are renewed. Access to the mains supply fuses, lamp fuses and switches are available from street level at all times.

Wall mounted lighting on historic building

Wall mounted lighting on modern building

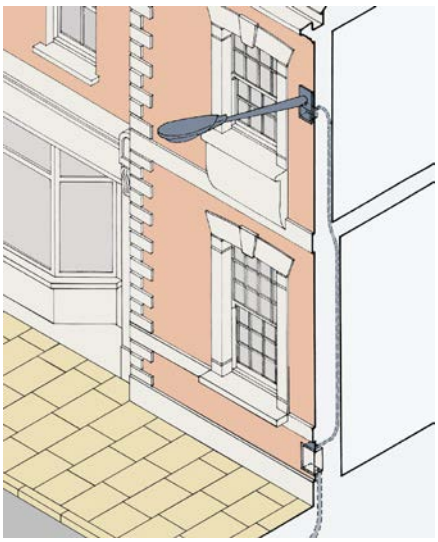
STREET LIGHTS ON BUILDINGS

Elsewhere lighting authorities can fix street lights to buildings with the agreements of owners or in conjunction with planning permissions.

These agreements typically take place at the planning application stage, or as part of an area or street enhancement project. Experience at the City of London and in numerous small scale examples such as at Devizes Market Place, right, suggests that any technical difficulties have been resolved.

Lights are fixed to the buildings so that they respect the architectural style and design of the buildings. Cables are out of sight and switch boxes positioned, often out of sight but in places where they can be easily maintained.

Amenity lamps supplemented by wall lights



Wall lights, hidden ducts, neat control boxes

POP-UP UNDERGROUND SERVICES

Street clutter can be reduced by arranging for equipment that would normally be positioned on pavements, to be located under the ground. The equipment such as a service box or waste collector is only raised above ground level when it needs to be used or maintained. In addition to reducing visual clutter, it can free up areas of valuable pavement.

Technical innovation is required, but the range of applicable equipment is increasing and includes:
Electrical connectors, instead of feeder pillars.
Electricity supply cabinets for street markets, etc. (pictured raised and lowered, left).
Telephone cable cabinets (pictured in use).
Traffic signal control boxes.
Urinals, useful in places which have a different street character in the day and at night.
Waste bins, including the storage of large quantities of separated waste for recycling.

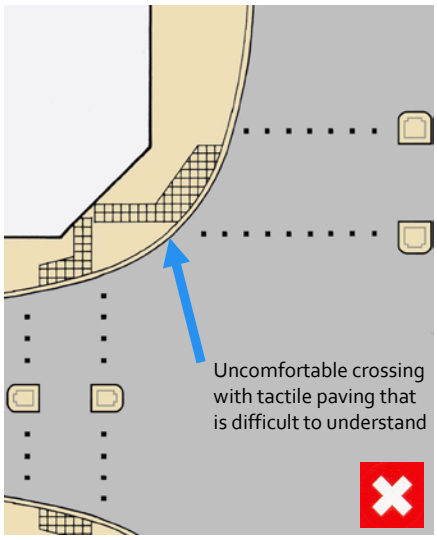
Underground telephone cable cabinet

Electricity supply cabinet for street market

Street corner geometry

Design street corners for the safety and convenience of pedestrians

Large corner radii allows drivers to turn without slowing very much



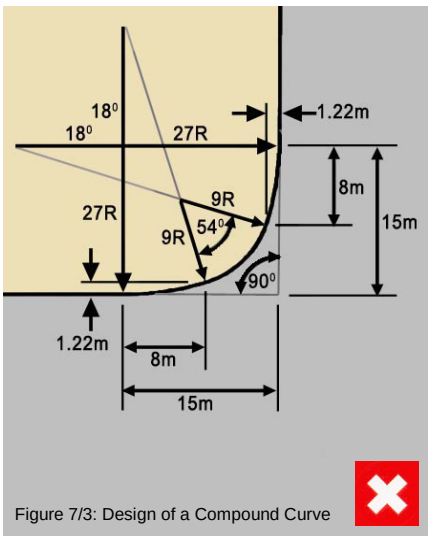
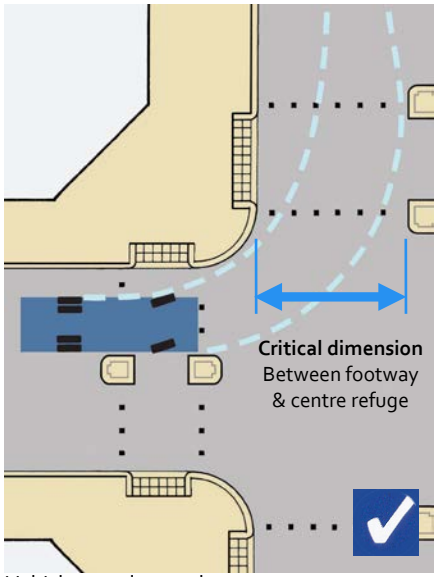
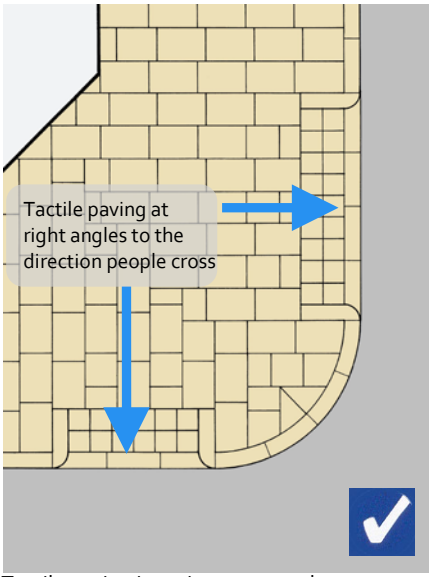


Figure 7/3: Design of a Compound Curve

Generously curved kerbs for vehicles often result in uncomfortable places for people to cross



Vehicles need enough space to turn



Tactile paving is easier to use at sharp corners

ROADS DESIGNED FOR VEHICLES

At many street corners the layout and geometry of the kerb puts people on foot at a disadvantage.

The wide sweep of the kerb helps drivers to get around the corner with the least amount of effort and often without needing to slow down very much.

Entrances to service access roads are often designed primarily for the ease and convenience of the drivers of heavy goods vehicles. As a result the distance for pedestrians wishing to take a direct route across the access road increases.

Tighter corner radii reduce the crossing distance and encourage lower speed.

CONVENTIONAL ROAD DESIGN STANDARDS

Before the Manual for Streets was published road design tended to concentrate on the efficient movement of traffic. The radii of kerbs at street corners were designed to be large enough to allow for the efficient turning of large vehicles

Pedestrians could be expected (often enforced by guardrailing) to walk some 15 metres back from the corner to find a safe place to cross.

In practice, people tended to take the most direct route, possibly walking on the outside of the railings at a place where drivers did not expect to see pedestrians in the road.

This illustrates that schemes designed to conventional road design standards are not automatically safe.

NEW THINKING

It is now accepted that road junctions can be designed to cater for both the efficient movement of traffic and ease of crossing.

People prefer to walk in a direct line, and small corner radii allow the crossing points to be positioned closer to the desire line while encouraging drivers to turn more slowly.

The kerb radius does not have to follow the tracking line of the rear wheel of the vehicle, if there is sufficient room in the road for the vehicle to turn.

The tighter kerb radius also makes it easier for the detailed construction of the dropped kerb ramp, tactile paving and the kerb itself to be combined in a visually co-ordinated neat paving design. Because there may be occasional wheel overruns, the edge of the kerb at the corner may need to be strengthened, see page 20.

Comfortable, elegant pavements

Save money, use the right pavement specification at the right location

AVOIDING BROKEN PAVING SLABS

Safe, clean, comfortable pavements encourage people to walk and enjoy the experience. Traditionally shaped large natural stone or concrete slabs can be an elegant solution. But broken paving slabs are dangerous. People can trip over them. They are uncomfortable to walk on, collect litter and have the feel of neglect.

To protect paving slabs from vehicle loading, some councils install bollards to prevent vehicle overrun.

Apart from the clutter this can create, bollards reduce the width of a pavement available to pedestrians and present an additional obstruction to blind or partially sighted people. They are also likely to be damaged from time to time and so increase the maintenance burden.

Broken paving slabs are unsightly

But rows of bollards are almost as bad

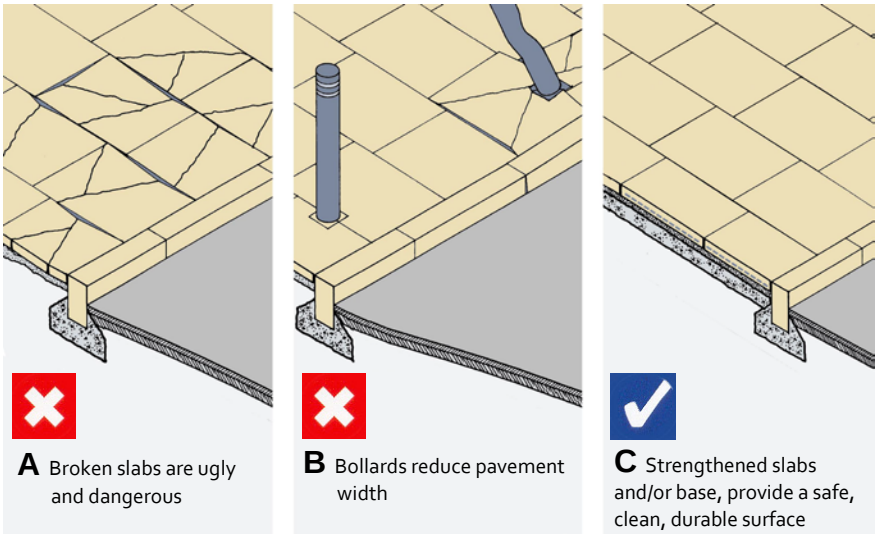
STRENGTHENED SLABS

A more durable solution to prevent broken slabs is to strengthen them so that they can withstand the imposed loads.

The usual reason that slabs break is that they are not sufficiently supported underneath by the bedding arrangement. If a wheel of a lorry runs over the slabs, the heavy load will snap the slabs like biscuits.

The answer is to strengthen the slabs and/or the bedding accordingly.

The method of strengthening depends upon the likely weight and frequency of the overrunning vehicle wheels.



A Broken slabs are ugly and dangerous

B Bollards reduce pavement width

C Strengthened slabs and/or base, provide a safe, clean, durable surface

Safe, robust and wide pavements encourage people to walk more often

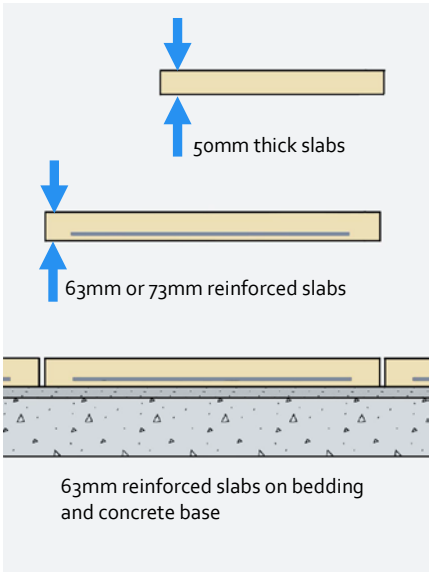
STRONG AND TIDY

The method of strengthening depends upon the likely weight and frequency of vehicle overrunning. The result should be a neat and tidy permanent pavement.

The common alternative slab types are:
50mm thick slabs
63mm or 73mm thick steel reinforced slabs
63mm thick steel reinforced slabs on bedding and base concrete.

Where a pavement is likely to frequently be overrun by large vehicles, the base should be designed to be as strong as the adjacent road.

It is important that the strengthened paving slabs look exactly the same as the rest of the pavement, so that the whole pavement looks as uncluttered as possible.



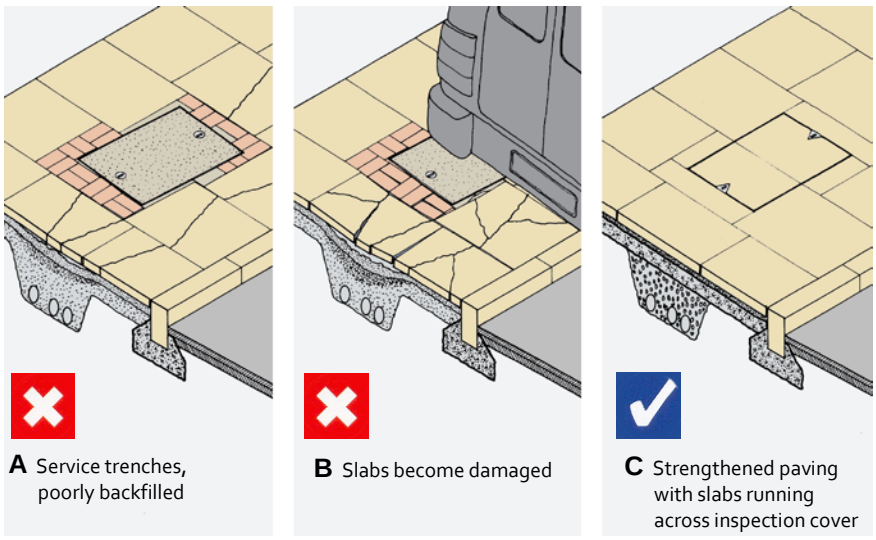
Choice of thickness depends upon the site

All the slabs should have the same appearance

Well maintained pavements

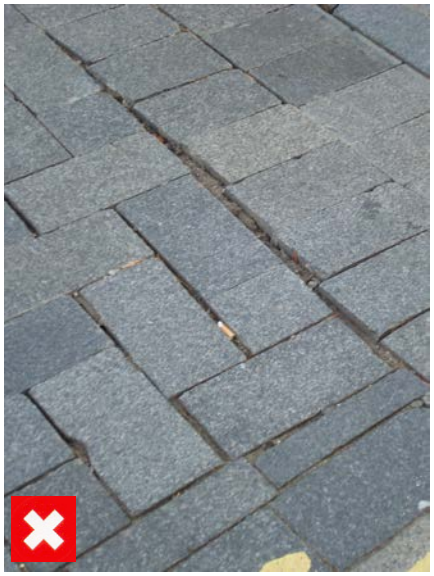
Either ensure good maintenance or design out the need

Well designed and well maintained natural stone paving



The most common cause of damage to slabs is poor service trench maintenance

Natural stone damaged when replaced



Granite blocks on an insufficiently strong base

LOW MAINTENANCE DESIGN

Paving needs to be designed so that it will not need very much maintenance. The construction needs to be strong enough to withstand the likely use. British Standard 7533-12-2006 gives a good indication of the construction specification required for pedestrian areas which are occasionally used by vehicles. In practice this condition applies to most, or at least parts, of many pavements subject to vehicle overrun.

It also needs to be recognised that most pavement slabs are at some time likely to be lifted to access underground services such as pipes and cables. The easier it is to lift the slabs, the less likely they are to be damaged and the more likely to be reused.

SERVICE TRENCH REINSTATEMENT

Most paving materials look very good when they are first laid.

A common cause of damage to pavements is when a service trench is dug and then poorly reinstated. If the material in the trench has not been properly compacted it sinks and fails to sufficiently support the slabs which then drop and crack.

Sometimes the original good quality surface materials are not replaced like for like, and an unsightly, temporary blacktop surface is left permanently.

Manhole, or inspection covers in pavements can be installed so that they are aligned with the paving slab pattern. This is an elegant way to visually integrate practical equipment into pavements.

ENFORCEMENT

Service companies and their contractors are required under the New Road and Streetworks Act 1991 (Code of Practice 2010 - Department for Transport) to reinstate pavements to the original standard after they have carried out repairs or maintenance work.

Some authorities are able to insist on a high quality of maintenance by making their standards known and, if they are not met, by carrying out the reinstatement works themselves and charging the cost to the service company's contractors.

Where unusual materials have been used, stocks are often kept for maintenance purposes by the highway authority and sold to the service company's contractor. Otherwise only readily obtainable materials should be used in the original design.

Stages of improvement

Improve every street in three steps

WHERE TO START? AN EXAMPLE

A seemingly unkempt street, suffers from poor maintenance and lack of co-ordination.

The accumulation of graffiti, fly-posters, over-flowing bins and a damaged tree and bench set the tone of the street, even though many of the buildings are potentially quite distinguished.

These negative images are compounded by overbearing signs, service boxes and railings.

The total scene is one of neglect. It does not foster wellbeing, either human or economic.

The first step is to tidy up.

Real streets are seldom quite as neglected as this, though some are certainly close

STEP 1. TIDY UP

Make the street look as though someone cares.

Much can be done by ensuring that existing management and maintenance regimes operate efficiently:

- Remove graffiti
- Remove fly-posters
- Remove dead tree and damaged tree grill
- Repair bench
- Remove overflowing bins
- Put cycle racks where people do not walk

When these are done, consider any other signs and equipment that are redundant:

- Remove unnecessary railings Page 15
- Remove unnecessary traffic signs Page 17

A clean and tidy street looks like a place that is cared for, Step 1

STEP 2: IMPROVE STANDARDS OF DESIGN

Aim for total street design, not just individual parts and components Page 12
Reduce white lines Page 13
Create crossings which are direct, elegant and safe Page 14
Put street lights on buildings Page 18
Put service boxes under the ground Page 18
Design street corners for the safety and convenience of pedestrians Page 19
Remove bollards Page 20
Repair broken paving Page 20
Coordinate pavement surface over manhole covers Page 21

STEP 3: CREATE A MEMORABLE PLACE

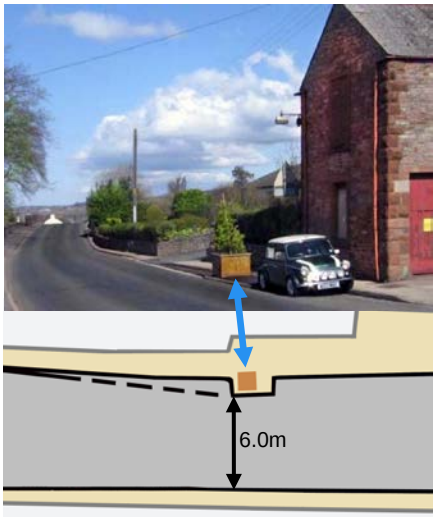
In some streets it may be possible to go further and change the arrangements of traffic, perhaps by creating a shared space where the character of the place is given even greater prominence.

Every part of the streetscape has been considered and co-ordinated, Steps 2 & 3

Assessing a proposal

Use a design Quality Audit to balance road safety with other issues

Use a design Quality Audit to assess a design against the requirements of the project brief

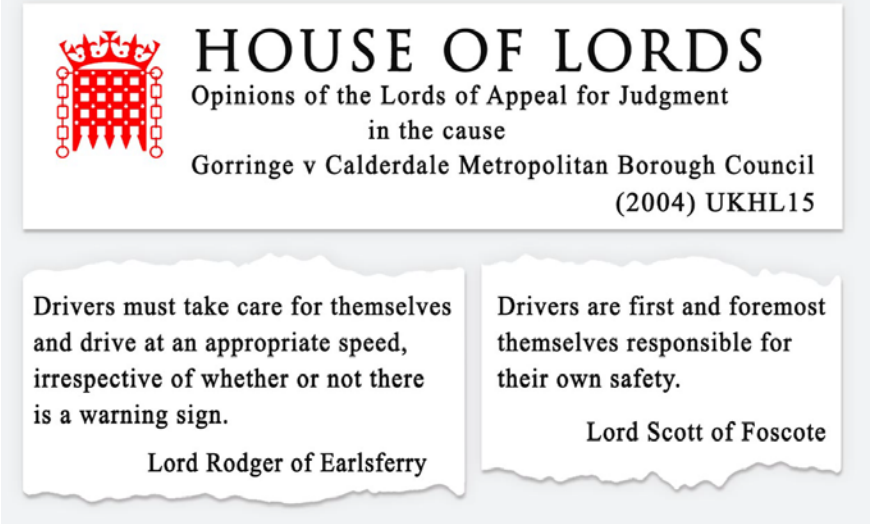


Build-outs with planters bearing a white motif

Width of road at build-out: 6.0m

No centre of road white line

Build-outs in a traffic calming scheme respects both safety and environmental concerns



Key judgments emphasise the responsibilities of drivers

QUALITY AUDIT

When a scheme is being prepared, ideas are brought together to find a design that will respond to all the objectives stated in the project brief.

The design can be subjected to various audits, including road safety, combined into a single quality audit to check that the brief objectives are met.

All the issues in the project brief are examined, often by specialists in each of the main subjects. It is not intended to be a box ticking exercise. It is a way to make a balanced decision, supported by reasoned documented judgements.

In modest projects the process may be informal, but concerns and responses need to be recorded.

BALANCED DECISIONS. A CASE STUDY

Projects that seek to balance a consideration for the character of a place as well as the safety of road users need to be fully assessed. As an example, consider a case where build-outs are proposed in a traffic calming project.

Safety concerns. Drivers will not see the build-out. Formal traffic warning signs will be required.

Environmental concerns. Formal warning signs and white lines are not appropriate in a historic rural village where they will erode the special character.

A balanced decision. The final design retains a road width of 6.0m, sufficient for two lanes of traffic; a planter is placed on the build-out with a light coloured motif that can easily be seen in daylight and be picked up by car headlights. The Highways (Traffic Calming) Regulations 1999 permit build-outs with no traffic warning signs, if the highway authority is satisfied that the build-out can be seen.

RISK AND LIABILITY

An assessment of any highway project, especially one that includes places where pedestrians and vehicles share the same space, needs to take a balanced view of safety, risks and liabilities.

Judgements by the House of Lords in the case of Gorringe v Calderdale, 2004 brought together previous judgements and provided useful guidance on the liability of local authorities.

Important points included were that people must accept responsibility for their own actions and take care to avoid injuring themselves and others. They should take the road as they find it and drive accordingly. But a highway authority must not entrap drivers. The judgement stated that "Warning overload is all too imaginable. As it is, road users tend to discount such warnings. The currency would be debased further were highway authorities to feel obliged to multiply its street signing still further."

How to deliver - localism

The Localism Act 2011
This Act allows for individuals, other interested parties and councils to have greater say in the way local issues are dealt with. There can be more local involvement in the preparation of a planning framework.

Local people can also be involved in street design and the processes that can bring about small changes and incremental improvements to a whole street or highway. These changes are usually outside the planning process but are often more immediate.

Local involvement
Using the notes in this booklet, local groups can begin to look at their streets with a fresh eye. Take a small area and note down what is good and what could be improved. The sketches on page 22 give some ideas of what is possible.

Often a start will be a simple exercise in the reduction of street clutter. This can lead to an engagement with the highway and other authorities and companies that are responsible for the wide range of signs, equipment and ground surfaces that make up a cluttered street.

This engagement should lead to a wider interest in the design of small highway projects and a greater understanding of the wide range of available options.

Official policies
Highway authorities are required to regularly prepare formal Local Transport Plans which typically include policy statements such as "All highway works will be carried out in such a way as to improve the historic and environmental character of the area." Thus the ideas in Manual for Streets are supported in local as well as national policies.

The challenge is to put them into practice.

Making things happen
Most street improvements are the responsibility of the highway authority which will have budgets and programmes relating to transportation, road safety and highway maintenance, etc.

The benefits of improvement projects can be enhanced by including additional funds and direction from locally determined budgets relating to economic development, amenity and conservation.

In practice this means that highway authority's annual programme of planned maintenance and projects agreed in response to local and national objectives, such as improved safety for children or cyclists may need to be co-ordinated with parallel local initiatives to improve the total quality of a place.


Thrashing out analysis, ideas and options in multi disciplinary groups

Costs
Some prestigious highway schemes can be very expensive. But the majority of the principles explained in this booklet can be carried out without resorting to expensive road materials or equipment.

Elaborate infrastructure is not essential but the design process may need wider and perhaps longer consideration. Apart from de-cluttering exercises most schemes can take place as part of normal highway upgrading or maintenance work.

Sharing costs
Contributions towards the cost of a scheme can be made in association with an adjacent development under Section 106 planning gain provisions. In some rural locations village committees or parish councils have raised funds to contribute towards street improvements works which are in addition to the highway budgets.

Functions of local authorities
To achieve tangible results, an understanding of the local funding and decision making process is essential. In much of the larger urban conurbations of England, the highway authority is a unitary authority: London boroughs, metropolitan boroughs, etc. with responsibilities including town planning and street cleansing.

In London, Transport for London has strategic transport functions as well as highway responsibilities for most main roads. It works closely with the London boroughs.

In more rural areas functions are split between county and district councils. County councils deal with traffic and highways, while district councils handle town planning, cleansing, road sweeping and waste, including recycling. In these places there are often also parish and town councils that can raise funds for highway works.

Short and long term improvements
The basic first step is to make a list of items of street clutter that should be removed and to discuss it with the highway authority.

However streets are frequently being changed and so it may be helpful to have in mind what improvements would be desirable in the longer term, should the opportunity arise, using the ideas on page 22.

Ideas from elsewhere
The ideas in this booklet are being adopted across the country so it may be useful to visit other places in the UK. Other countries have different ways of doing things and their street designs can be refreshingly innovative – there may be scope for incorporating such innovations in UK street design.


Making sure that everyone understands the options and has their say

Further Reading & References

Main documents and websites referred to:

Department for Transport
The Highways (Traffic Calming) Regulations 1999
Manual for Streets 2007
Traffic Management and Streetscape LTN 1/08, 2008
Guardrailing LTN 2/09, 2009
Shared Space LTN 1/11, 2011
Quality Audits TAL 5/11, 2011
Bollards & Pedestrian movement TAL 2/13 2013

Chartered Institution of Highways & Transportation
www.ciht.org.uk
Manual for Streets (2) 2010
Road safety audits, 2008

Institute of Highway Engineers www.theihe.org
Design and maintenance of the public realm

Judgements by the House of Lords
Gorringe v Calderdale M B C. UKHL 15, 2004

Civic Voice
www.civicvoice.org.uk
Save our high streets

Institute of Civil Engineers
www.ice.org.uk
Designing Streets for People

Living Streets
www.livingstreets.org.uk
Walk to Work Week

Cabe at the Design Council
www.designcouncil.org.uk

English Heritage
www.english-heritage.org.uk
Streets for All, regional series, 2006
Changing face of the High Street, 2013

National Health Service
www.nhs/livewell
Cycling for beginners

Cyclists Touring Club
www.ctc.org.uk/publication
Get Britain Cycling and other campaigns

Urban Design Group
www.udg.org.uk
Quality in Town and Country
Dictionary of Urbanism

Glossary of terms

Although people are very interested in what happens to their streets, they and the professionals use different words to describe the street and works to it. In this document we mainly have used the common terms.

Common term	Technical term
Pavement	Footway
Road construction	Pavement
Road	Carriageway
Street (includes road, pavement & verge)	Highway (includes carriageway, footway & verge)
Traffic lights	Traffic signals
Crossroads with traffic lights	Signalised junction
Accident	Collision
Railings at the edge of the kerb	Guardrailing or railing
Zebra and pelican crossings	Controlled crossings
White lines	Road markings

Thanks

This document is a compilation of current thoughts and practices in the art of Street Design. It brings together the works of several official, professional and special interest organisations, as well as the experience and expertise of public bodies and individual practitioners. The subject is at an interesting stage where some long established practices are being challenged. New ideas to create pleasant public places are being underpinned by growing evidence that they can also be efficient in practical terms and safe for the people who use them.

Thanks to the many people who have contributed ideas, experience and above all enthusiasm for the publication.

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