



Event Details

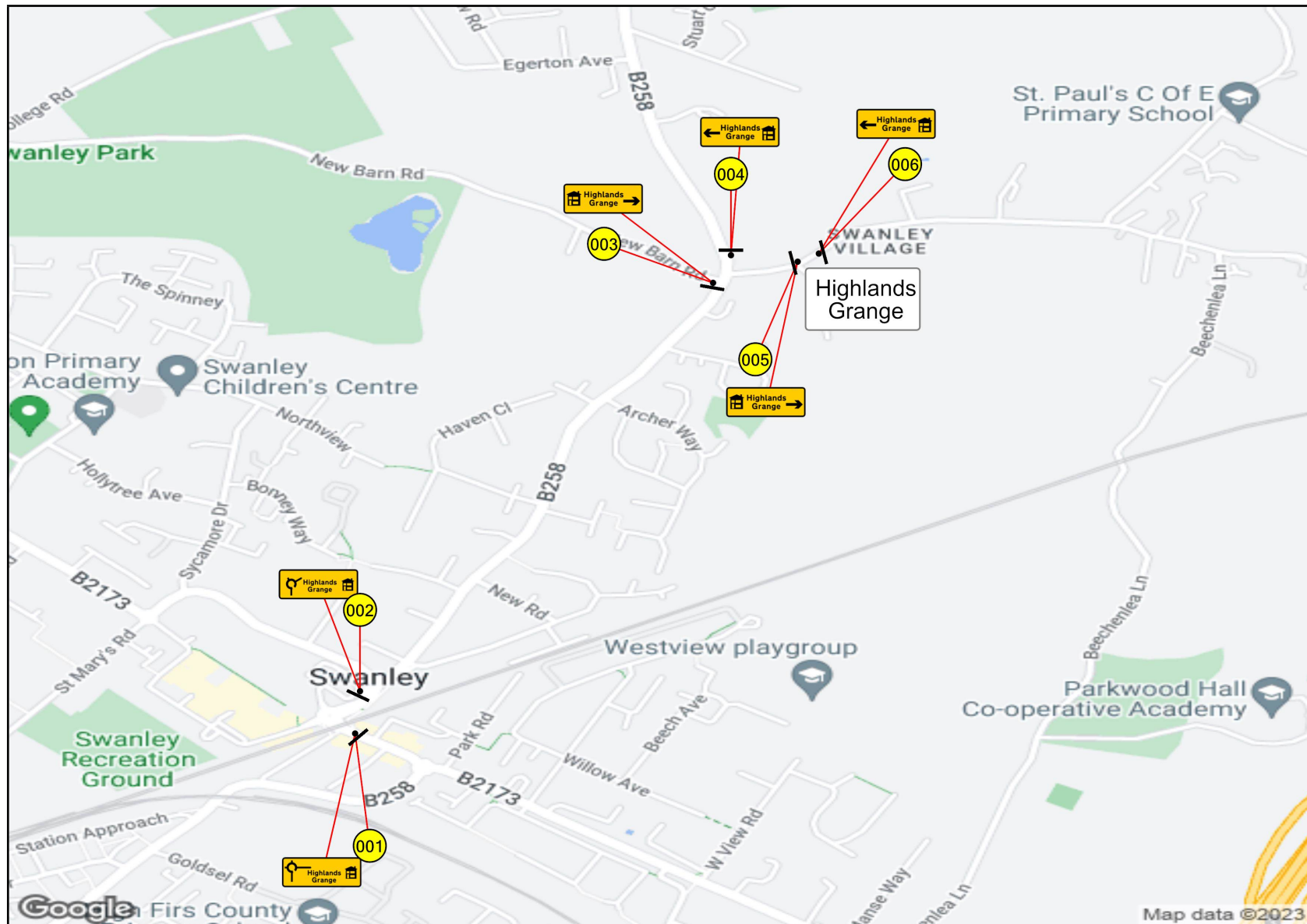
Reference:	HW23DEC013HD
Name:	Highlands Grange
Location:	Highlands Hill, Swanley, Kent
Start Date:	18/12/2023
End Date:	18/06/2024
AA Contact:	0800 7317003
Email Contact:	signs.admin@theaa.com

List of Maps

BR8 7NB_A4L	2
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Map Name: BR8 7NB_A4L

Scale:1:0





Event Details

Reference: HW23DEC013HD

Name: Highlands Grange

Location: Highlands Hill, Swanley, Kent

Start Date: 18/12/2023

End Date: 18/06/2024

AA Contact: 0800 7317003

Email Contact: signs.admin@theaa.com

Key to Abbreviations

Fixing

Post Clips 'D'	Clip
Long Leg Stand	L/leg
Metal Post	M/post
Post Extension	P/extn
Quick Fit Frame	Q Fit
RSJ Clamps	RSJ
Screwband	S/band
Stand with support plate	S/supp
Wooden Stake	Stake
Standard leg stand	Stand

Fixing Point and Location

Advance Direction Sign	ADS
Bridge	Bri
Car park	C/park
Centre reservation	C/res
Carriageway	C/way
Direction Sign	D/Sign
Junction	Junc
Lamp Column	L/col
Lamp Post (column)	L/post
Lane	La
Local Direction Sign	LDS
Motorway	M/way
Nearside	N/side
North	Nth
Offside	O/side
Post	Post
Roundabout	R/about
Road	Rd
South	Sth
T Junction	T/junct
Traffic Lights	T/lights
Cross Roads	X/rd

Sign No.	Sign Size	Fixing	xht (mm)	Sign Design	Fixing Point and Location	Local Authority
001	950x360	Screwband	50		L/col B258 at Nightingale Way	Kent Highways West
002	950x360	Screwband	50		L/col B258 at Swanley Lane	Kent Highways West
003	950x360	Screwband	50		L/col Swanley Lane at Highlands Hill	Kent Highways West
004	950x360	Screwband	50		L/col Main Rd at Highlands Hill	Kent Highways West
005	950x360	Screwband	50		L/col Highlands Hill at Highlands Grange	Kent Highways West
006	950x360	Screwband	50		L/col Highlands Hill at Highlands Grange	Kent Highways West

Kent Traffic Signs Manual

Technical guidance on the use of
traffic signs and road markings in Kent

Version	Author	Date	Comment
1.0	Lisa Gillham	05/04/2023	First Published
2.0	Lisa Gillham	05/07/2023	Pg 28 revised

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Acronyms

The following acronyms may be found within this document:

Acronym	Description
BS EN	British Standard European Norm
DfT	Department for Transport
LTN	Local Transport Note
TSM	Traffic Signs Manual
TSRGD	Traffic Signs Regulations and General Directions (2016 unless stated otherwise)

Scope and Use of this Manual

This manual has been prepared by Kent County Council with assistance from consultants Atkins, part of the SNC-Lavalin family. It forms one of a number of guidance manuals, technical advice notes and other publications intended primarily for Kent County Council staff, but which may also be of value to others with an interest in Kent's highway network. It should be noted that Kent County Council and SNC-Lavalin assume no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This manual provides information and guidance on the design, installation, and maintenance of:

- Traffic signs and bollards
- Road markings and studs
- Highway mirrors
- Pedestrian guardrailling.

It supersedes previous Kent guidance documents *Making it Happen*, *Signing on Kent Roads - Operational Policies and Guidance 2002* and *Signs and Road Markings Technical Directive 2010*.

This manual is intended to supplement the information and guidance provided in the *Traffic Signs Regulations and General Directions* (TSRGD) and *Traffic Signs Manual* (TSM); these documents include legal requirements as well as guidance on best practice and should always be referred to in the first instance. It seeks to provide guidance where issues are not covered in the TSRGD or TSM, or where further clarification would assist; in particular, it seeks to set out Kent County Council's policies and preferred approaches in areas where there are no legal requirements and where the guidance allows for discretion.

In this manual, the word "must" is used to indicate a legal requirement of the TSRGD or other legislation or a course of action which is deemed essential, generally either for reasons of safety or to comply with Kent County Council policy. The word "should" indicates a course of action that is recommended and represents good practice. The word "may" generally indicates a permissible action, or an option that requires consideration depending on the circumstances.

In instances where reference to national standards, best practice guidance, and this manual fail to identify a clear solution, further clarification should be sought initially from the relevant team leader or manager, and where necessary from Kent County Council's Signs & Lines asset manager.

All references to TSRGD are to the Traffic Signs Regulations and General Directions 2016 unless noted otherwise. In the writing of this document, reference has also been made to a number of other standards and sources of guidance. As of the date of publication, these references are current; however, anyone using this manual should check that any relevant references have not been updated, withdrawn, or superseded.

1. Introduction

1.1. Background and Context

Kent County Council (hereafter “we”) maintains around 5,400 miles (8,700 kilometres) of highway network and associated assets. This includes around:

- 196,400 non-illuminated signs
- 17,700 illuminated signs
- 4,100 illuminated bollards
- 9,200 miles (14,800 kilometres) of road markings
- 700,000 road studs (cats’ eyes)
- 80 miles (130 kilometres) of pedestrian guardrailing.

These assets are estimated to have a total value of around £62 million.

These “signs & lines” assets play an important part in maintaining highway safety and the efficient movement of traffic, enabling us to meet our statutory obligations. They also provide highway users with valuable information, contributing to our overall aim of making Kent a great place to live and work.

We have significantly developed our approach to managing our highway network in recent years, details of which may be found in our comprehensive *Highways Asset Management Plan* (HAMP). Highways asset management describes a common sense, systematic approach to designing, constructing, maintaining, modifying, and replacing assets in the most cost-effective manner whilst also taking into consideration the performance of the asset and the risks involved in managing it.

Despite making substantial progress, we recognise we are in an increasingly challenging environment, with deteriorating assets, increasing traffic volumes, and continuing uncertainty around future funding. Given this, our approach to traffic signs, road markings, and other assets included in this manual must start with considering where it is appropriate to provide or retain such assets, including reference to the HAMP and to its *Appendix B – Service Level Risk Assessments*, which sets out our service levels alongside an assessment of associated risks. This approach accords with government guidance around the need to reduce street clutter. Where it is appropriate to provide new assets or replacements for those which are damaged or missing, it is important that we consider lifespans, lifecycle costs and maintainability in selecting, specifying, and installing them.

1.2. Legal Aspects and Responsibilities

Highway authorities have legal obligations to keep public highways available and safe for the passage of the travelling public. Our statutory duties are outlined in several pieces of legislation including:

The Highways Act 1980 - outlines our duty of care to maintain the highway in a safe condition and protect the rights of the travelling public to use the highway.

The Traffic Management Act 2004 - conveys a network management duty whereby we are required to facilitate and secure the efficient movement of traffic on the highway network.

The Road Traffic Act 1991 - describes our statutory responsibility to promote road safety and take measures to prevent collisions.

Traffic Signs Regulations and General Directions 2016 (TSRGD) - prescribes the design and conditions of use of traffic signs on or near roads in England, Scotland, and Wales.

Highway authorities are thus responsible for ensuring correct standards of signing on their road network. Only highway authorities may erect traffic signs or permit their erection (Road Traffic Regulations, Section 64). Authorities may only use signs and road markings prescribed in TSRGD or specially authorised by the Secretary of State.

Most regulatory signs, including those relating to speed, turning movements or waiting, are used to give effect to a Traffic Regulation Order (TRO). Where this is the case, it is essential that the TRO has been properly made and that the design and location of the signs comply with TSRGD and TSM, otherwise the order will be unenforceable. The practicalities of placing a sign on site should be considered when determining the extent of such orders.

A highway authority will normally erect traffic signs on highway land. Where this is not possible, traffic signs may be erected on or over land adjacent to the highway with the written permission of the landowner. A highway authority may enter private land to enable placing, replacing, converting and removing traffic signs (Road Traffic Regulations, Section 71).

All signs must be designed and installed in accordance with the legal requirements of TSRGD. Occasionally there may be a need to provide signing or road markings which are not prescribed in TSRGD. In such cases, special authorisation must be sought from the Department for Transport (DfT). Should a need for a non-prescribed sign be identified, the scheme designer should in the first instance discuss this with their team leader or manager, who may be able to suggest an alternative solution. Where the need for a non-prescribed sign is agreed, approval should be sought from Kent County Council's Signs & Lines asset manager before contacting DfT by email at authorisation.requests@dft.gov.uk.

1.3. Reducing Sign Clutter

Research carried out in 2013 by the Department for Transport (DfT) to inform the Traffic Signs Policy Review showed that the number of traffic signs had doubled in the previous twenty years. As noted in Chapter 1 of the Traffic Signs Manual (TSM), *"the overuse of traffic signs blights the landscape, wastes taxpayers' money, and dilutes important safety-critical messages. Clutter also increases risks to road workers and creates additional maintenance burdens."* (TSM Chapter 1, 2.3.2.)

The principles of good traffic management are in line with good streetscape design: neither is helped by over-provision and clutter. They also support with our asset management approach, with its emphasis on providing traffic signs only where they are needed, as well as considering lifespans, lifecycle costs and maintainability.

The following points should be considered when designing schemes including traffic signs, to help reduce sign clutter:

- The use of traffic signs, road markings and pedestrian guardrailing should be minimised where this can be done without compromising safety.
- Traffic signs should be provided only where they are deemed to be necessary.
- Signs should be of the minimum size prescribed by the regulations and guidance except where problems have arisen with visibility of existing signs or where site specific assessment supports the use of larger signs.
- Consideration should be given to mounting signs on existing street furniture. However, asset owner approvals may be required in advance, and one should ensure the integrity of the post either by load testing or by adhering to the maximum approved dimensions.
- Where existing signs have been poorly designed or located, this should be rectified.
- The need for existing signs should be reviewed since changes to the regulations mean that in some cases signs or their illumination are no longer required.
- Unnecessary signs and posts should be removed.
- The use of backing boards should be kept to a minimum; in particular, high visibility yellow backing boards should be used only where there is a strong safety justification for their use.
- At the entrances to villages, speed limit terminals and simple gateway signs should be co-located.

These and other relevant points are addressed in more detail in the following chapters.



Photo: Cluster of signs

2. General Principles of Traffic Signing

2.1. The Need for Traffic Signs

“Only where there is a Traffic Regulation Order (TRO) in place (or a similar regulatory requirement, such as the start of a 30-mph speed limit in a street-lit area) is there a statutory requirement to provide signs. ‘Less is more’ is therefore a good adage when designing a scheme. Where there is a need to warn and inform road users, signs or markings will also be needed. Signs should only be provided where a clear need has been identified and should be minimal and sympathetic to their environment. These principles apply in both urban and rural settings.” (TSM Chapter 1, 2.1.1.)

Generally, the number of traffic signs should be kept to a minimum, although this needs to take into consideration legal requirements, the need to address safety issues, and the benefits of providing highway users with appropriate information.

2.2. Types of Traffic Sign

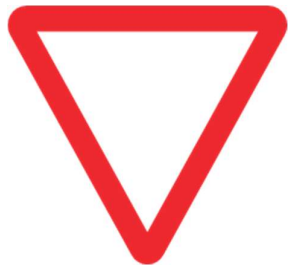
Traffic signs are provided to convey messages to users of the public highway, principally to the drivers of motor vehicles, but also to pedestrians, cyclists, and equestrians.

There are three main types of upright traffic signs, each with a distinctive basic shape and colour conventions. The shape of the sign is the first message conveyed on the approach to signing and can assist drivers in changing speed or preparing to take action to negotiate hazards, obey mandatory and regulatory instructions, or prepare to read directions. For this reason, backing boards, which obscure the shape of circular or triangular signs, should be used only where needed. The standard colours for traffic signs are outlined in Appendix A of TSM Chapter 1.

Warning signs give warning of a hazard ahead and are generally triangular. More information about warning signs may be found in Chapter 8 of this manual.



A typical triangular warning sign



A Give Way warning sign

Regulatory signs include all signs that give notice of requirements, prohibitions, or restrictions. They indicate either what road users must do or what they must not do. Most signs intended for moving traffic, except for STOP and GIVE WAY signs, are circular in shape, whilst signs indicating on-site parking controls are rectangular. More information about regulatory signs may be found in Chapter 9 of this manual.



A typical circular regulatory sign

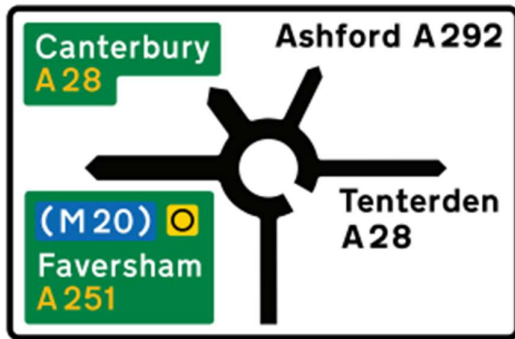


The STOP sign is the only sign which is octagonal in shape



Although triangular, this GIVE WAY sign is a regulatory sign

Informatory, directional and tourist signs generally give road users information about a route or places and facilities of particular value or interest. Most informative signs are rectangular, though direction signs at junctions, often known as flag-type signs, usually have one end pointed. Their colours indicate the type of route or destination they relate to. More information about these types of signs may be found in Chapters 10, 11 and 12 of this manual.



An advance direction sign



A flag-type sign, as used at a junction



Another flag-type sign, this one to an industrial estate



A tourism sign

It should be noted that not all signs on the public highway are installed and maintained by Kent County Council as the highway authority. Other signs include street nameplates, “no ball games” and “no parking” signs. Many, but not necessarily all, of these will have been provided by borough/district or parish councils and will be their responsibility to maintain. Third parties such as these will require Kent County Councils approval to mount signs to highway assets.

Road markings, including road studs, are also classed as traffic signs, and comprise markings on the surface of a road for the control, warning, guidance, or information of road users. They may be used in isolation or in conjunction with upright signs, traffic signals or pedestrian crossings. More information about road markings may be found in Chapter 13 of this manual.

2.3. Design of Signs

Signing is a skill, with strict rules and guidelines which must be adhered to in order to provide safe and effective signing. Inappropriate use or overuse of signs can reduce the effectiveness of critical signing.

All signs should be designed by a suitably skilled person who has completed an appropriate level of training, is familiar with the relevant parts of TSRGD and TSM and is competent in using sign design software. The level of skill required will depend on the type of signing proposed: provision of standard basic signs can be simple in comparison to provision of worded or complex signs, which need to be designed by a suitably trained professional. Those checking and approving sign designs should also have a good understanding of sign design requirements themselves.

The software used for sign design should be fully compliant with TSRGD and TSM and should be capable of detailed signs and post design, with wind loading being calculated to suit the proposed sign site.

Designers of schemes including traffic signs are strongly recommended to visit the site during the design stage to carry out a reality check of the existing situation, as this will enable many obvious errors to be avoided and ensure sympathetic sign placement can be achieved.



Photo: The now redundant Unsuitable for HGV sign to Diagram 820A should be removed

To perform the function for which they are intended, it is essential that signs can be read and understood by road users in good time for subsequent actions to be carried out safely. Factors which contribute to this include:

- The compliance of the sign with the design rules in TSRGD and TSM, including the size of the sign and the use of standard lettering, symbols, and colours
- the location, mounting height and orientation of the sign
- the visibility of the sign including its contrast with its surroundings
- the illumination of the sign.

These factors are considered here and in the following chapters.

2.4. Size of Signs

In general, the size of signs intended for moving traffic is dictated by the approach speed of the majority of traffic using the road. This is measured as the 85th percentile speed of private cars: that is, the speed in miles per hour (mph) at or below which 85% of private cars are travelling. The permitted range of sizes for each type of sign is given in TSRGD, and guidance on their use in the relevant chapters of TSM. For directional informatory signs, further information including the x-heights for lettering and visibility distances may be found in LTN 1/94.

To reduce sign clutter, signs in Kent should be of the minimum size prescribed by the regulations and guidance except where problems have arisen with the visibility of existing signs or where a site-specific assessment supports the use of larger signs.

Signs should be designed to ensure efficient use of space, with particular care taken to ensure signs are not unnecessarily large. In the case of directional signs, stack type signs are smaller than map-type and should be considered where the road layout is simple. This approach should be adequate for most locations except for roundabouts, mini-roundabouts or grade separated junctions. Map-type signs may be considered at simple junctions where there are compelling safety reasons.



Photo: A simple stack type sign

2.5. Construction of Signs

In Kent, most highway signs are now provided in Blackburn's aluminium composite panel (ACP) material. ACP provides a cheaper installation when compared to the traditional aluminium sign face and has no scrap metal value, so reduces incidents of theft. The performance of the substrate is good when compared to the traditional aluminium sign face, with typical lifespans of 10 to 12 years. For large advance direction signs exceeding 2400mm x 1200mm or 1200mm x 2400mm ACP plank construction should be used.

Consideration may be given to alternative materials where signs are ornate and include raised or embossed lettering: for example, in traditional fingerpost direction signs or pedestrian direction signs.

Signs installed on highways in Kent should be designed and constructed in accordance with the relevant British Standards, with the DfT *Specification for Highway Works*, and with any amendments detailed in Kent County Council's standard contract documents. A list of relevant British Standards may be found in Appendix B of TSM Chapter 1.

Signs mounted at or below 1800 mm mounting height in areas where pedestrians have access, may have sign faces coated with protective overlay film to protect legends from being damaged by vandals and should have anti-rotational clips.

The back of the sign is in many ways as important as the front in terms of its environmental impact.

In Kent, the backs of signs, posts, lighting units and clips must be grey except in conservation areas or other heritage sensitive situations where it has been agreed that these should be black.

BS EN 12899 1:2007 requires that certain information is displayed on the back of conforming traffic signs such as the year of manufacture and the manufacturers or suppliers' name. Signs should be manufactured using the minimum number of clips and joints whilst still complying with the standards in BS EN 12899-1:2007.

The use of "dummy" posts should be avoided. Where longer posts are required, the existing posts should be extended with flush fitting proprietary extension pieces of the same finish, or new posts provided of the correct length. This will ensure that the sign structure is structurally robust and has a tidy and integrated appearance.



Photo: The cycle sign has been added to the top of an existing structure, creating an uncoordinated appearance



Photo: An extreme example of the use of dummy posts to extend and add a sign on a gantry

Prefabricated plastic chevron signs to diagram 515 (S2.6.3) are available with alternative forms of collapsible post and may be used in locations where signs are regularly knocked down in road traffic collisions. The use of these should only be considered after all other potential solutions, such as re-siting the sign and improving visibility, have been exhausted through normal safety engineering processes.

These passively safe signs are required to be mounted from sockets installed into the ground. Sufficient width should be specified to create an effective sign with a minimum of 2 chevrons. However, as these signs can create a wall effect, care should be taken to ensure they do not obstruct visibility, especially if used in conjunction with diagram 606 at roundabouts.



Photo: Prefabricated plastic chevron signs used on a roundabout

3. Positioning of Signs

3.1. General

The positioning of signs must be considered carefully to ensure that they are legible from the approaching road user's point of view, but also do not impede the view of other road users including pedestrians, cyclists, motorcyclists, and equestrians, particularly on side roads or in accesses. Legal requirements must be clearly signed, and consideration given to the surrounding environment and the need to minimise visual intrusion.

From the approaching road user's viewpoint there are four aspects to the positioning of a traffic sign:

- its siting along the road in relation to the junction, hazard, or other feature to which it applies,
- its lateral placement in relation to the edge of the carriageway and other features of the cross-section,
- its mounting height above the road, and
- its orientation.

The limits of Traffic Regulation Orders and physical constraints imposed by the road layout will also have an influence on sign siting.

3.2. Siting along the Road

To allow a road user adequate time to read, understand and comply safely with its message, each sign should be sited at the correct distance in advance of the feature to which it relates. This excludes regulatory signs which must be sited at a specific point, such as speed limit terminal signs or waiting restriction signs. The correct distance will generally depend on the approach speed of the majority of traffic using the road. This is measured as the 85th percentile speed of private cars: that is, the speed in miles per hour (mph) at or below which 85% of private cars are travelling. The greater the speed, the further in advance the sign needs to be to give drivers time to respond.

Guidance on the siting of signs may be found in TSM Chapter 3 Appendix A (regulatory signs), TSM Chapter 4 Appendix A (warning signs) and LTN 1/94 Appendix A (directional informative signs). The standards allow a degree of flexibility, enabling sign locations to be chosen based on several other parameters.

Signs are designed for the symbols and legends to be recognisable and fully legible from defined distances depending on their type and the speed of traffic. It is essential that the whole sign face is visible from these distances, and that it is not obscured by vegetation or other obstructions. Where possible, signs should be sited away from trees, hedges and other vegetation which would need to be cut back on a regular basis to prevent the sign from being

obscured. If a warning sign needs to be located further from the hazard to which it relates, then a distance plate may be considered if permitted under TSRGD.

Signs should generally be located on the left-hand side (near side) of a road where drivers are accustomed to looking for them. However, locating on the right-hand side (offside) is appropriate in certain circumstances: for example, where there are difficulties in siting on the near side, or where a direction sign is located opposite or in the entrance to a side road. In circumstances where a sign cannot be sited on the near side, it may be sited on the offside, and consideration given to providing a supporting advance warning sign on the near side. In some circumstances, such as at sharp left-hand bends, siting signs on the right may be preferable to siting them on the left.

In previous versions of TSRGD the regulations required some signs, such as No Entry and speed limit terminal signs, to be installed on both sides of the road. This requirement is now relaxed in TSRGD 2016 to reduce environmental impact. In deciding whether to reduce signing provision, the following factors should be considered:

- turning angles
- junction layouts
- one way traffic conditions
- sign mounting height

In Kent, we suggest that the use of a single sign is considered initially; however, this will need to be assessed on a site-specific basis, as there will be some situations where two signs will still be preferable.

Where a single sign is used, care should be taken to ensure that the sign will be clearly visible to road users, as failure to do so could give rise to enforcement or road safety issues. In particular, drivers should not be placed in the situation where they might not see the sign before starting to turn at a road junction. In some instances, this may require the sign to be placed on the off side of the road.

Careful consideration should be given to the effect of the signing on residents. In residential areas signs should never be placed in front of windows, and sign locations should be chosen so as not to disrupt the householder's view. Where possible, signs should be located at the boundary of adjacent properties, with care taken to avoid gateways, accesses, and the visibility splays of driveways. If a departure from the standard height or mounting requirements is necessary to achieve this, this should be considered. Consideration should also be given to mounting signs on existing highway assets such as lighting columns and pedestrian guardrailing, or on other street furniture, with the appropriate permissions, as discussed further in Chapter 4 of this document.

3.3. Lateral Placement

To prevent damage from passing vehicles, signs should be set back from the edge of the carriageway. Wherever possible, signs should be set at the back of the footway or verge.

Clearance is the horizontal spacing from the nearest edge of the sign face to the edge of the adjacent carriageway or hardened verge. In Kent, signs should be placed with the following minimum clearances:

Location	Required clearance
General – less than 50mph	450mm from edge of sign face to edge of carriageway
Road with severe camber or cross fall	600mm from edge of sign face to edge of carriageway
Central reserve of dual carriageway under 50mph	600mm from edge of sign face to edge of carriageway
Central reserve of dual carriageway over 50mph or general - over 50mph	1200mm from edge of sign face to edge of carriageway
Signs adjacent to a hard verge	600mm from edge of sign face to edge of hardened verge
Signs behind vehicle restraint system (VRS)	1200mm if VRS cannot be removed as it is protecting an existing hazard.
Signs on passively safe posts	Should be in accordance with this table unless a greater clearance is required by the post manufacturer

Table 3.1 – Sign clearances

3.4. Mounting Heights

Mounting height is the vertical distance from the underside of the sign to the level of the highest point of the road, footway, or verge below it. In Kent, signs should be mounted at the following heights:

Location	Minimum required mounting height
General – in verge	1800mm
Above a footway (or above a verge where there is evidence of use by pedestrians).	2100mm
Above a cycleway	2400mm
Above equestrian routes	2700mm

Table 3.2 – Sign mounting heights

The key factor in determining mounting height is the need for the sign to be seen by the road users for whom it is intended. Signs may be mounted lower when placed on bollards and railings and may be mounted higher for lorry drivers for example but should not be mounted at unnecessarily high mounting heights which would make maintenance, cleaning and vegetation clearance difficult. An increase in mounting height may be considered where the vertical alignment of the approach would otherwise restrict the forward visibility of the sign or where illuminated signs have a history of being targeted by vandals, and an increase in mounting height may keep light fittings out of easy reach.

Generally, direction signs at junctions should be mounted at low heights, at the rear of the footways, in positions which will allow visibility from a reasonable distance for approaching road users, and Appendix A of LTN 1/94 gives details of siting distances. Signs should not be located where they will be regularly obstructed by parked vehicles.

The mounting of small signs on tall posts should where possible be avoided. In urban areas and village centres, consideration should be given to mounting waiting restriction signs and other small signs on lighting columns, pedestrian guardrailing or bollards. In rural areas, speed limit repeater signs should where possible be mounted at low mounting height at the rear of the footway or in the verge.



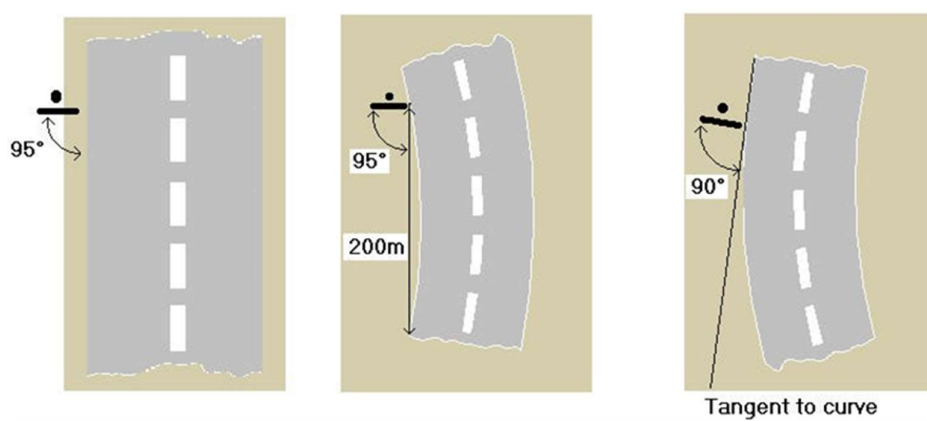
Photo: Poorly sited parking restriction sign

Where signs are located adjacent to walls and hedges, the top of the sign should where possible be below the top of the wall or hedge to create a tidier appearance and avoid the back of the sign being visible. Where two signs are to be adjacent to each other so that they will be viewed together, the tops of the signs should be level with each other; this is particularly important to create a tidy appearance at gateway features.

3.5. Orientation

Signs should be placed in such a way that they face slightly away from the beam direction of headlights from approaching vehicles, to prevent dazzle. Signs at the side of straight lengths of road should be orientated at 95° to the approaching traffic.

The main exceptions to this are signs which indicate on-street parking controls, which are generally positioned parallel to the carriageway, and some flag-type directional signs which have to point approximately in the direction to be taken. On some bends and complicated alignments, compromises may need to be adopted, and it will generally be adequate on a right-hand bend for a sign to be set at an angle of 90° to a line tangential to the near side edge of carriageway at the point where the sign is erected.



Alternative layouts showing sign orientation

4. Mounting Signs

4.1. Support Structures

Signs should be mounted so they are visible but not intrusive. Designers should consider the visual appearance of the road as a whole, particularly in conservation areas and other heritage sensitive situations, town and village centres, and residential areas.

Where appropriate, designers should consider mounting signs on other highway assets such as street lighting columns or pedestrian guardrailing. The mounting of signs on street furniture and other assets owned by borough/district or parish councils may also be considered subject to the agreement of the relevant council.

Lighting columns may be used to mount signs subject to the approval of Kent County Council's Street Lighting team, who will need to check the column's condition and adequacy to support the sign. For structural reasons (wind load), the maximum size of sign which may be mounted on a lighting column is 0.3 square metres. In general, this equates to a standard warning or regulatory sign with a maximum height of 600mm. Approval will not be given to mount signs on lighting columns which already support other signs, cameras, planters, or other apparatus.

You can apply for Street Lighting approval here: <https://www.kent.gov.uk/roads-and-travel/what-we-look-after/street-lights>

Where lighting columns are used to mount signs, care should be taken to ensure the minimum clearance to the edge of the carriageway (as specified in Table 3.1) is maintained. If the lighting column is at the front of the footway, it is likely to be at the minimum clearance already. Attachments of signs to lighting columns should be via external bands or clamps that will not damage the column or its protective coating.

In Kent, we generally prefer not to mount signs on privately-owned assets such as walls or railings because of the legal issues involved, including the possibility that the owner may wish to make changes to their property or to withdraw consent later. However, in some locations such as conservation areas and other heritage sensitive situations this may be considered as a way of reducing clutter and visual intrusion. The written consent of the owner must be obtained before mounting any sign on a privately owned wall, railing, or other feature.



Photo: Signs mounted on railings (with owner's consent) to reduce clutter and visual intrusion

Waiting and loading restriction plates are often required in built up areas, and consideration should be given to mounting them on lighting columns, bollards or pedestrian guardrailing where possible. Since waiting restriction signs are required to be located within the restricted length and not more than 15 metres from its end, this may not always be practicable; however, careful consideration of this during the design of waiting and loading restrictions may minimise the need for additional signposts. Proprietary bollards are available to mount small waiting restriction signs and may be an appropriate solution in some locations.

It should be noted that, since 2003, councils are no longer required to display a sign plate to accompany an “at any time” double yellow line restriction except where there are also loading restrictions. Where obsolete signs remain, they should be removed.



Signs of this type may be obsolete: if so, they should be removed

4.2. General Design of Support Structures

Direction signs, chevron signs and other signs exceeding 1000mm in width should generally be mounted on two posts as this ensures some resistance to rotational forces and vandalism. In some cases, larger signs may be mounted on a cantilever arrangement provided the foundation and post are verified as strong enough to support the sign in this arrangement.

Where signposts need to be installed in the footway, to minimise obstruction signs should where possible be mounted on a single post sited at the back of the footway, using offset brackets where necessary. Where more than one post is needed, they should where possible be installed at a minimum post spacing of 1200mm; an absolute minimum of 1000mm may be considered in exceptional circumstances.

Where a sign needs to be erected on more than one post, it may be desirable to alter the size or shape of the sign to achieve the required post spacing. Direction and miscellaneous signs may be increased in width, the layout changed, or a backing board used to meet this requirement.

Signposts should generally be provided with a galvanised finish. In conservation areas posts may be provided with a black powder-coated finish; in such cases the back of the sign, clips, and any light fittings should be of the same colour.

Posts located in the footway may present a hazard to pedestrians, who can fail to see them, particularly during hours of darkness. Where there is concern over the visibility of posts, yellow or white bands of 140mm to 160mm thickness may be adhered to the post at a height of between 1400mm and 1600mm from the footway level.

Anti-rotational, vandal-resistant clips should be used to fix signs to posts.

4.3. Passive Safety

Highway assets installed at the side of the road, including traffic signs, pose a risk of injury to highway users in the event of a collision, so designers should ensure that passive safety is considered as part of the design process. Designers should make sure that sign support structures can support the required loading, but also look at ways in which they can be designed to provide less resistance in a collision and thus reduce the severity of injury upon impact.

Passive safe products are a tool in the armoury available to improve road safety. Designers should be aware, however, that they will not always be the best solution, and that one solution does not fit all; they should thus demonstrate that they have risk-assessed each scheme. The *Institute of Highway Engineers (IHE) Sign Structures Guide 2021* suggests some questions/procedural steps as part of that risk assessment. The first step should always be to consider whether the sign is required or if it can be omitted.

Removing and reducing street clutter is a major contributor to improving safety. However, if a sign is required, it is advised nationally that local highway authorities prioritise A and B roads for the provision of passively safe structures (*Passive Safety UK Guidelines for Specification and Use of Passively Safe Street Furniture on the UK Road Network*, UK Roads Ltd).

Generally, the higher the speed limit the higher the priority. This focuses resources on the roads where passively safe structures are likely to have the greatest benefit. For 20mph zones and residential estates, it is thought that there is little benefit in using passively safe structures.

On non-trunk A and B roads, it is recommended that there is a 4.5m clear zone (free of hazardous obstructions) where space allows; otherwise as much space as reasonably possible should be provided. In many cases careful planning will be sufficient to keep obstructions outside of the clear zone; however, it will sometimes be a challenge to balance road safety, economics, function, and environmental interests.

It is recommended that sign support structures within 4.5m of the carriageway should be passively safe unless behind a safety fence.

A list of currently available passively safe products may be found on the Passive Safety UK website. <http://ukroads.org/passivesafety/>

4.3.1. Non-illuminated signposts

Tubular steel posts (TSP) for traffic signs are available in 60mm, 76mm, 89mm, 114mm and 139mm standard diameters and in either a S275 (nominal strength) or S355 (increased strength) material.

Simple signpost installations using 60mm, 76mm and 89mm TSP are deemed to comply with the requirements of *BS EN 12767:2019 Passive safety of support structures for road equipment – requirements and test measures* when used in compliance with the following rules:

- Single TSP arrangements must not exceed an 89mm post diameter with 3.2mm wall thickness in either material. As an example, a 76mm post with 4mm wall thickness in either S275 or S355 is acceptable.
- Where a sign is supported on two or more 76mm posts, they must be at a minimum post spacing of 750mm, and the wall thickness must not exceed 3.2mm.
- Where a sign is supported on two or more 89mm posts, they must be at a minimum post spacing of 1500mm, and the wall thickness must not exceed 3.2mm.
- No bracing must be used between posts (only the sign itself).
- Normal minimum mounting height is 1800mm.

Though generally only suitable for smaller signs, these cost-effective posts are suitable for supporting many of the signs required in urban locations.

Posts and foundations should be designed and specified to ensure that they will have adequate strength to support the signs to be mounted on them. Care should be taken when using sign design software to ensure that passively safe options are chosen where this is a requirement.

A designer proposing to support a sign on post sections larger than 89mm diameter within 4.5m of the carriageway should carry out a site-specific risk assessment considering the classification, speed of the road and other local factors. This should include considering the use of passively safe posts such as Lattix, Jerol or Frangible, or safety barrier protection. Available budget, site layout and existing street furniture may dictate the product type used, but safety barrier protection should be designed in liaison with Kent County Council's Structures team.

Where sign assemblies over 4.0m in height are proposed, the support structures and their foundations should be designed by a structural engineer or other suitably qualified person, and design calculations provided for checking by Kent County Council's Structures team.

4.3.2. Illuminated signposts

Wide based posts for illuminated signs should have minimum base sections of 140mm diameter to accommodate electrical apparatus and should be of integral construction. Because a 76mm or 89mm wide based post would be assessed based on the diameter of the widest bottom section (140mm dia. in the impact zone), these posts are not classed as passively safe.

As above, a designer proposing any lit sign within 4.5m of the carriageway should carry out a site-specific risk assessment considering the classification, speed of the road and other local factors. This should include considering the use of passively safe products or crash barrier protection.

It should be noted that passive safety of illuminated signs is not simply a matter of impact but also one of electrical disconnection. To meet passive safety requirements, a disconnection system must be designed to disconnect within 0.4 seconds of impact. Where a risk assessment indicates that the use of passively safe products would be desirable, the designer should discuss options with Kent County Council's Street Lighting team.

4.4. Multiple Signs on a Support Structure

To reduce clutter, it may sometimes be appropriate to mount more than one sign on the same post or posts. Generally, not more than two signs should be erected on any one post. Where a sign requires a supplementary plate, the combination of sign and plate is regarded as one sign.

A warning sign or signs should not be mounted on the same support as a STOP, GIVE WAY or terminal speed limit sign facing the same direction. Where two warning signs are mounted on a post, the sign showing the first encountered hazard should be mounted above the other.

Sign combinations, excluding terminal speed limit signs, that may be mounted together should be placed in the following order from top to bottom. For further advice, see TSM Chapter 3:

- STOP or GIVE WAY or any triangular warning sign(s)
- Speed limit signs
- Other circular signs
- Rectangular signs.



Photo: Generally, not more than two signs should be erected on any one post

Where a new sign is to be added to an existing sign arrangement, the requirements for mounting height should be fully met, ensuring that additional signs do not interfere with the visibility for accesses and junctions. Wind loading calculations should be carried out to ensure that the addition of the sign face does not render the arrangement structurally unsafe.

5. Sign Backgrounds

5.1. General

A natural background is often helpful in improving effectiveness of signs, particularly at junctions. Use of features including walls, fences, buildings, and railings should be considered. Hedges can also be used, but care should be taken to ensure the signs are not so close that they become overgrown regularly. Siting a sign such that a tree or other natural feature hides the back of the sign can reduce unnecessary environmental impact.

In urban areas, the position of signs should be considered in relation to the surrounding townscape. Signs need to be visible against their background without being visually intrusive. In some cases, this may be achieved by placing the sign against a building; however, great care should be taken to avoid spoiling the view of, for instance, a listed building. The best compromise between achieving design standards, legal requirements and environmental sensitivity should always be sought.



Photo: A sign well positioned against the wall of a building

A sign placed in a natural dip in the road (if design and visibility criteria can be achieved) will be less environmentally intrusive than one placed at a crest or on an embankment. The latter may encroach into views from the surrounding countryside, particularly in the case of large direction signs, so this should be avoided if possible.



Photo: A sign mounted in a cutting or dip will reduce visual intrusion from the surroundings

5.2. Backing Boards

The use of backing boards can be an effective means of improving sign visibility; however, the need for them may be reduced by careful positioning of signs, for instance in front of a natural background.

The TSRGD permits the use of both grey and yellow backing boards. Grey backing boards may be used to tidy a structure containing more than one sign face (e.g. roundabout and reduce speed now), and their use for this purpose should be considered on a site-specific basis.



Photo: Appropriate use of grey backing board

The use of yellow backing boards creates a highly conspicuous sign, but one which is also visually intrusive. In addition, the over-use of yellow backing boards may cause drivers to become over-familiar with them, so that their effectiveness in safety-critical situations is reduced.

In Kent, yellow backing boards must be used only at sites where there is a history of crashes and where other measures have already been trialled and found to be ineffective. Yellow backing boards must only be used on regulatory or warning signs (never on direction or information signs) and should not be used in conservation areas.



Photo: These gateway signs are out of character with a minor rural road



Photo: Prefabricated plastic chevron signs used to highlight a severe bend

6. Maintenance of Signs

6.1. General

It is essential that our traffic signs in Kent are well-maintained. Missing or damaged signs fail to serve the purpose for which they were provided, and dirty or obscured signs will have reduced visibility and legibility, particularly at night or in conditions of poor visibility. Failure to maintain traffic signs can negatively impact road safety and may give rise to enforcement issues.

In Kent, maintenance of traffic sign assets, including road markings and pedestrian guardrailling, is prioritised using a risk-based approach as set out in our *Highways Asset Management Plan Appendix B – Service Level Risk Assessments*. This includes prioritising safety-critical signing, signing on high-speed dual carriageways and main roads.

6.2. Inspection and Cleansing

Sign faces and their supports are inspected and identified for repair or replacement by way of routine and ad-hoc visual inspections. These comprise cyclic condition inspections carried out as part of the wider highway inspection regime, and targeted inspections informed by fault reports from customers.

Our inspections are visual, not by structural assessment but because we inspect our Strategic and Major Strategic Road Network across the county at a higher frequency than the majority of minor or link roads this means that the larger signs and post sections, which could pose a higher risk to road users in the event of an asset failure, tend to be inspected more often.

Dirt, algae, and graffiti on our signs can negatively impact road safety. Cleaning our sign assets regularly can improve their visibility, giving drivers more time to react to key messages. Clean signs also have better reflectivity, making them more effective at night. Legally, signs must be unobscured and maintained in good order to be enforceable.

Traffic signs identified by inspection as in need of cleaning should be cleaned as appropriate for their location. For signs on the local road network, cleaning is normally prioritised based on an assessment of risk. Our service will not provide for removal of non-offensive graffiti unless it is obscuring an important message in the form of a warning or regulatory sign.

Illuminated and non-illuminated bollards on A roads along winter gritting routes are cleaned once a year at the end of the gritting season to remove any dirt that may have accumulated on these low-level assets.

In addition, the Soft Landscape team review the network annually and when resource is available, they raise programmed works to clear vegetation from signage on the A and B road network. As part of this program the signs there are also cleaned. Furthermore, Highway Operations aim to clean all traffic signs on the high-speed dual carriageways, every 3 years as

a minimum, in line with the trunk road recommendation in the DfT Design Manual for Roads and Bridges (DMRB).

Traffic signs should be cleaned with clean water or diluted soap solution. No chemicals, solvents or abrasive cleaning agents should be used, and the use of power washers is not recommended as this can damage the reflective film. Long reach, water-fed pole brushes and mechanically elevated working platforms may be required to reach the heights necessary.

6.3. Repair and Replacement

Generally, signs are designed to last 12 years, and as it is a requirement of BS EN 12899 1:2007 that each sign be marked with its year of manufacture and the name or logo of the manufacturer or supplier, some evidence of how old a sign is should be available.

The repair of damaged or deteriorated signs is generally not cost effective: in most cases, a damaged sign should be replaced with a new sign. In some instances, where signs are manufactured in plank form and the sign's 12-year life span has not been exceeded; individual planks may be replaced.

Overlay stickers could be used to make minor alterations to large existing signs, which could avoid the need to design and purchase a whole new sign. Designers considering this option should, however, use caution and risk assess the possibility of the sticker being removed and the original information being displayed. The overlay sticker should also be the correct x height to match the existing sign and of the same reflectivity.

7. Illumination of Signs

7.1. General

The term “illumination” covers any means by which a sign is made visible at night. Methods of illumination include direct lighting of a sign, the use of retroreflective material in its manufacture, or both.

Under previous versions of TSRGD, many traffic signs were required to be directly illuminated at night when placed within or adjacent to a street-lit area. These requirements have been significantly relaxed in TSRGD 2016. Signs which no longer require direct illumination may still be directly illuminated if there is a good safety reason for doing so.

In Kent, we have largely completed a programme of reviewing, and where appropriate de-illuminating, those signs which are no longer required to be directly illuminated under TSRGD 2016. Where new signs are to be installed, these should not be directly illuminated except where this is required by TSRGD, or where a site-specific risk assessment has indicated a need for direct illumination.

Some signs requiring direct illumination, such as GIVE WAY signs and warning signs within street lit areas, have historically been overused, and their use on roads with a speed limit of 30mph or less should be carefully considered. Guidance on the use of these signs is included in Chapters 8 and 9 of this manual.

It should be noted that the failure to illuminate signs to the correct standards or to maintain them so that they are clearly visible at night could lead to issues of enforcement for regulatory signs, and of safety/liability for both regulatory and warning signs.

7.2. Lighting and Reflectorisation

Illumination requirements for traffic signs are specified in the TSRGD, and the four alternative forms of illumination are set out below:

- direct illumination in combination with retroreflective sign face material
- direct illumination only
- retroreflective sign face material only
- no illumination or retro-reflectivity required.

In general, signs on Kent’s highway network which require direct illumination fall into the following categories:

- some warning signs within 50m of any lamp which forms part of a system of street-lighting

- most regulatory signs within 50m of any lamp which forms part of a system of street-lighting

A “system of street-lighting” being defined in TSRGD as *“the presence on a road of at least three lamps, lit by electricity, provided for the purposes of illuminating the road, and placed no more than (a) 183 metres apart in England and Wales...”*

The current illumination requirements for each sign diagram are set out in the relevant schedules of the TSRGD 2016 and may also be available in sign design software.

Sign Plot Buchanan have an illumination tool which is designed to assist with determining if a sign should be lit or reflectorised. It is free, downloadable software but you will need to register: <https://www.buchanancomputing.net/downloads>

Where direct illumination of a sign is required, all equipment must comply with the current requirements of Kent County Council's Street Lighting team, and designers are strongly advised to contact the Street Lighting team at an early stage in the development of their proposals.

In Kent, all permanent highway signs other than those intended solely for pedestrians should be reflectorised by a glass bead layer with RA2 retro-reflectivity or higher in accordance with BS EN 12899-1:2007 Part 1.

Where increased reflectivity is required to assist in the visibility of signing during hours of darkness, the use of diamond grade micro prismatic material should be considered, and a site-specific assessment undertaken.

8. Warning Signs

8.1. General

Warning signs are used to alert drivers to potential danger ahead. They indicate a need for special caution by road users, and may require them to respond by, for example, reducing speed.

Warning signs can play an important part in improving road safety. However, they should only be used where there is a specific safety issue or hazard, not to sign readily apparent conditions or routine features of the road such as bends or junctions. As noted in TSM Chapter 4, overuse of warning signs can dilute their effectiveness and tends to bring them into disrepute. The need for warning signs should thus be assessed by an experienced highway engineer considering all relevant factors including the safety record of the site.

Warning signs are generally triangular and, except for the Give Way warning sign (diagram 501, S2-6-1) the apex is uppermost. They are sometimes supplemented by rectangular plates which give additional information (for some signs a plate is compulsory).

Warning signs are mainly prescribed in Schedule 2 of TSRGD, but are also found in Schedule 14, if relating to traffic control or pedestrian crossings, or in Schedule 13 for temporary situations. Advice on the use of warning signs is given in TSM Chapter 4, and advice on the appropriate use of warning markings in TSM Chapter 5.

8.2. Junction Warning Signs

Junction warning signs should not be provided at minor junctions in rural areas or at junctions within a speed limit of 30mph or less unless there is an evidenced safety issue, and a safety assessment has indicated a need for this sign at the location.



Example Sign Diagram 506.1 L (S2-2-3)

8.3. Bend Signs

Bend warning signs to diagram 512, 512.1, 512.2 and 513 should not be provided on roads with a speed limit of 30mph or less unless there have been an evidenced safety issue and a safety assessment has indicated a need for this sign at the location.



Example: Sign Diagram 512 (S2-2-8)

8.4. Maximum Speed Advised

The advisory sign to diagram 513.2 (S2-3-2 & S13-4-2) “Maximum speed advised” should only be used in Kent in exceptional circumstances, except when used in conjunction with diagram 7009 (S13-2-10) “Loose Chippings”.



Sign Diagram 513.2 (S2-3-2 & S13-4-2)



Sign Diagram 7009 (S13-2-10)

Where excessive approach speed is experienced on the approach to a hazard the sign to diagram 511 (S2.3.1) “Reduce speed now” should be used. Where an evidenced safety issue and a safety assessment has indicated a need for this sign at the location, suitable remedial measures should be installed.



Sign Diagram 511 (S2-3-1)

8.5. Chevron Signs

Chevron signs to diagram 515 (S2-6-3) should be used to indicate sharp deviations in route where a bend sign alone would not be effective. A sharp deviation in route can be deemed to be tighter than a 450m radius.

Chevron signs should be used on large roundabouts to face approaching traffic and should be co-located with a sign to diagram 606 (S3-2-1 & S14-2-42). When used in combination, at least one chevron should be completely visible either side of the diagram 606 (S3-2-1 & S14-2-42) sign. Chevron signs are not required on a roundabout with a central island less than 8m diameter where the speed limit is 30mph or less. The signs to diagram 606 (S3-2-1 & S14-2-42) only will be sufficient.

Chevron signs to diagram 515 (S2-6-3) are prescribed in three sizes, 400mm, 600mm and 800mm high, depending on the speed of the road. See TSM Chapter 4, section 3 for further guidance.



Sign Diagram 515 (S2-6-3) – 800mm for high-speed roads

Chevron signs should never be double stacked. Where used on a bend, the sign should always comprise a minimum of two chevrons (either a single sign with two chevrons or two signs with one chevron each).

Chevron signs are often vulnerable to being struck by overshooting vehicles at roundabouts and should always be installed as passively safe. Mounting heights should be changed to 1800mm to render the sign arrangement passively safe on 89mm posts.

In addition to standard ACP signs, chevron signs are available as proprietary passively safe systems, which may be particularly suited to locations with a history of vehicle strikes. In Kent, we generally use the Glasdon Chevreflex (chevron wall) system for this application.

More information about these may be found in Chapter 2 Section 2.5.

Yellow backing boards on chevron signs should only be used when the site has an evidenced safety issue, and a suitably qualified or experienced officer has indicated that this would be an appropriate enhancement.

8.6. Pedestrian Warning – Flashing Amber Lights

Flashing amber lights to diagram 4004 may be used to supplement the sign to diagram 545 (S2-2-25) with a “School”, “Patrol” or “Disabled children” (or its variants) supplementary plate where the 85-percentile approach speed of traffic exceeds 35mph or, subject to a safety assessment, on busy roads where a driver’s attention is likely to be fully occupied. They should not be used to warn of children crossing at Zebra, Parallel or signalled crossings. Further guidance on their use may be found in TSM Chapter 4 Section 8.4. and for guidance on the product specification for amber flashing lights please contact the Street Lighting team.



Sign Diagram 545 (S2-2-25)



Supplementary plate

8.7. Signing at Low Bridges

Clear signing at low bridges is of key importance in seeking to reduce the number of collisions (bridge strikes) involving over-height vehicles. Bridge strikes cause major disruption to rail and road traffic and jeopardise the safety of both rail and road users. It is therefore particularly important that signs and markings on low bridges (those with a headroom of less than 16'6" (5.03m)) are correctly installed and maintained to a high standard. Where appropriate, Kent County Council will seek to improve signing at low bridges in partnership with Network Rail.

Detailed guidance on signing at low bridges is provided in TSM Chapter 4 Section 7. In accordance with TSRGD, heights on new signs must be shown in both imperial and metric units, calculated separately, and guidance on how to do this is included in TSM Chapter 4 Sections 7.4 and 7.5. When existing signs are replaced as part of general maintenance activities, the new signs should be compliant with the Regulations.

Arch bridges should be signed with warning signs, as the main risk to these comes from vehicles which, although low enough to pass through the central part of the arch, might strike the curved shoulder of the structure.

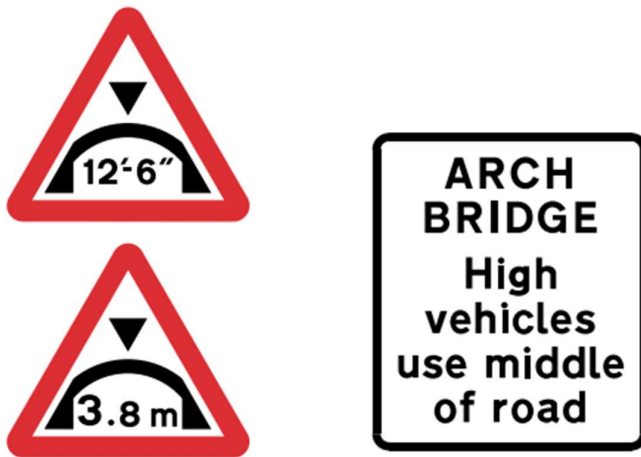
A sign to diagram 530A (S2-4-2) is to be placed on the structure itself and this sign is to be incorporated into any advance directional or advisory signage.



Sign to diagram 530A (S2-4-2)

Black and yellow hazard markings to diagram 530.2 (S2-5-4) should be used to increase awareness and help to identify the vulnerable parts of the structure.

Signs to diagram 531.1A (S2-4-3) and diagram 531.2 (S2-5-2) should be used in advance of the bridge on both approaches.



Signs to diagram 531.1A (S2-4-3) and diagram 531.2 (S2-5-2)

All flat soffit (non-arch) low bridges should be signed with regulatory signs as it provides a more effective protection. There is no requirement for a Traffic Regulation Order and no difference in terms of illumination requirements in upgrading this warning sign to a regulatory sign. Therefore, in Kent, as maintenance and improvement activities allow, any existing flat soffit (non-arch) low bridge with existing warning signage should be upgraded to regulatory signage. Continuity of signage in the area must be provided.

Regulatory signage for height limits is briefly covered in this manual in Chapter 9.

However, whether signing with warning or regulatory signs in Kent, our approach to the signing of low bridges follows the TSM advice and may be summarised as follows:

- Warning signs (or regulatory signs) should be provided on the bridge structure itself. The signs should have yellow backing boards as standard. Black and yellow hazard markings should also be installed.

- Warning signs (or regulatory signs) should be provided on both sides of the carriageway on the immediate approach to the bridge.
- Advance warning (or advance regulatory) signs to diagram 818.5 (S12-28-23), (or diagram 818.4 (S12-28-22)) should be provided at key junctions on the approach so vehicles may turn around or divert away.
- Low bridge information should be included on direction signs and on a wide basis on the principal network and routes to key industrial areas.
- Where a diversion route avoiding a low bridge is available, consideration should be given to indicating this on direction signs.

8.8. Hazard Markers and Bollards

8.8.1. Use of Hazard Markers and Bollards

Hazard markers (including verge markers) and bollards may be used to provide edge of carriageway definition or warning that an obstruction exists near the edge of carriageway. Guidance on their use may be found in TSM Chapter 4 Section 15.

Where there is a need to highlight the edge of the carriageway, consideration should first be given to the provision of edge of carriageway markings and road studs, and guidance on the use of these may be found in Chapter 13 of this manual.

Hazard markers should not be used in isolation but may be used in combination with edge of carriageway markings and road studs where additional definition is required. Bollards may be used in isolation in urban areas where the provision of edge of carriageway markings or road studs would not be in keeping with the environment.

Hazard markers or bollards may be provided in addition to edge of carriageway markings and road studs if required to warn of the following hazards:

- Significant reduction in carriageway width
- A bend or series of bends which have a radius of less than 450m
- The approach to a wall, parapet, building edge, large girth tree or other solid highway feature within 700mm of the carriageway edge, or to any obstruction adjacent to the highway with a fixed sign to diagram 528.1 (S2-2-20).

Where additional carriageway definition is required to guide drivers and riders through a bend or series of bends, hazard markers may be installed as an alternative to chevron signs. In such locations, bend warning signs to diagram 512 (S2-2-8), 512.1 (S2-2-9), 512.2 (S2-2-10) or 513 (S2-2-12) should also be provided to give drivers advance warning of the hazard ahead.

Hazard markers or bollards should not generally be necessary on a bend or series of bends within a 30mph speed limit and should not be provided except where there is an evidenced safety issue, other measures such as warning signs and edge of carriageway markings have

already been put in place, and a site assessment has indicated that there remains a need for hazard markers or bollards at the location.

As with other traffic signs, hazard markers and bollards should be provided only where they are needed and where alternative solutions have been considered and rejected. Bollards are frequently damaged, costly to maintain, and add to general street clutter. Bollards can also present a hazard for people with visual impairments and restrict available footway width.

When bollards are erected in the footway the desired width of 2.0m should be maintained but where this is not feasible due to physical constraints a footway width of 1.5m is generally acceptable. An absolute minimum footway width of 1.0m may be provided around an obstacle like a streetlight but the maximum length of this restricted footway width should be less than 6.0m.

Bollards are often requested as a means of stopping vehicles parking or driving on the footway or verge. Unfortunately, this is a widespread problem, and it would not be practical to try to control it by using ever-increasing numbers of bollards. Bollards should thus be used to prevent parking only where significant damage to highway infrastructure or statutory undertakers' services is occurring, and care should be taken to ensure that the bollards do not create additional hazards for drivers or vulnerable highway users.

Bollards should also not be used to protect pedestrians from vehicles. They may however be used to deter pedestrians or cyclists from exiting footpaths, cycle routes and alleyways at speed where doing so would present a risk to themselves or to other highway users.

8.8.2. Hazard Markers

Hazard markers (including verge markers) to TSRGD diagram 560 (S2-6-2) are black and white banded posts with reflective panels. As viewed by the drivers of approaching vehicles, these panels are:

- red on the left-hand edge of the carriageway,
- white on the right-hand edge of a single carriageway road, and
- amber on the right-hand edge of a dual carriageway road adjacent to the central reservation or a road carrying traffic in one direction only.

Hazard marker posts are generally of plastic construction and should be compliant with the passive safety standard BS EN 12767:2007. They are appropriate for use in rural areas, and on roads with a speed limit of 40mph or above.

In Kent, we generally use the Glasdon Hazardmaster, the Glasdon Vergemaster or Flexmaster marker post.



Photo: Glasdon Vergemaster

8.8.3. Bollards

Bollards are square section or ornamental posts with reflective panels or sleeves provided in accordance with the reflective requirements detailed below. Bollards should only be considered for use in areas with a 20mph or 30mph speed limit.

Generally, bollards should be of recycled plastic construction, as these are cost effective and safe. Plastic bollards should be provided in black except where they are required to match existing bollards or street furniture.

Wooden bollards may be more appropriate in rural areas and should be provided in pressure treated softwood. Consideration should be given to using timber from a local and/or sustainable source. Timber bollards should not be painted.

The use of metal bollards, including traditional cast-iron bollards, is not generally permitted in Kent, as they can result in injury if struck by vehicles. Exceptionally their use may be permitted, subject to a site-specific assessment, in conservation areas or town centres where they make a significant contribution to the street scene and where it has not proved possible to source an acceptable alternative.

Square section or ornamental bollards should not be less than 100mm in section or diameter. Ornamental bollards should not be more than 200mm in diameter or section at their widest part.

Bollards adjacent to the carriageway should be provided with reflective panels or sleeves to suit the following requirements:

- Circular reflective panels should not be used in Kent.
- A minimum visible reflective surface of 50mm by 200mm should be visible to approaching drivers, motorcyclists, cyclists, or pedestrians.
- The top of the reflective panel or band should not be less than 600mm or more than 1000mm above the surface of the adjacent carriageway.
- Where bollards are used in areas of high volumes of traffic or where there is a perceived road safety issue, a full reflective sleeve should be used giving a minimum depth of at least 2/3 of the overall height of the bollard.

- In conservation areas smaller reflective panels (50mm by 100mm) may be considered where there is not a significant risk to road or footway users.

8.8.4. Bell Bollards

The purpose of bell bollards is to deflect the wheels of heavy traffic, preventing vehicles from over-running the footway and protecting pedestrians, buildings, and assets such as highway structures or street furniture. As with all bollards, bell bollards should be provided only where they are needed.



Photo: Example Bell bollard from Furnitubes.com

Where a request for a bell bollard is received, the geometry of the road should be checked to ensure that the traffic using it is able to do so without over-running the footway. Any changes to the geometry of, for example, a junction which could prevent over-running should be made before bell bollards are considered. In areas where the speed limit is 30mph or lower, over-running is considered light and the risk low, ornamental bollards may offer a more appropriate option.

A bell bollard should be installed to provide the minimum clearance (generally 450mm) between the above-ground part of the bollard and the edge of the carriageway. Where a bell bollard is installed on a footway, an absolute minimum unobstructed width of 1.0m should remain available for pedestrians, and on a shared footway/cycleway the minimum width should be 2.0m, which may be reduced to 1.5m if forward visibility is good. Where these minimum clearances and widths cannot be achieved, a site-specific risk assessment should be carried out to determine whether the benefits of providing a bell bollard outweigh the risks.

Bell bollards should be manufactured in steel or cast iron with an integral below-ground base and should be installed in accordance with the manufacturer's instructions. In conservation areas, bell bollards should be painted black, and a contrasting band included to assist people with visual impairments. In other locations, bell bollards should be painted a highly visible colour such as white or yellow.

9. Regulatory Signs

9.1. General

Regulatory signs indicate requirements, restrictions, and prohibitions. Most are provided to give effect to a Traffic Regulation Order (TRO) or other statutory provision. Those intended for moving traffic are generally circular in shape, with signs giving positive instructions (for example, keep left) having a white border and symbol on a blue background, and signs indicating prohibitions generally having a red border. Notable exceptions include STOP and GIVE WAY signs and the rectangular signs indicating a bus, cycle or other lane restricted to particular vehicle types.

Other regulatory signs give details of waiting and loading restrictions and the use of on-street parking places. These are rectangular and generally mounted parallel to the edge of the carriageway.

Many regulatory signs must or may be supplemented by plates beneath, building on the message given by the sign. Other signs for static traffic include the rectangular signs indicating on-street parking controls.

Regulatory signs are prescribed in Schedules 3 to 10 of TSRGD, with those relating to temporary situations or traffic control measures in Schedules 13 and 14. Advice on the use of regulatory signs is given in TSM Chapter 3.

9.2. Stop and Give Way Signs

The STOP sign imposes mandatory requirements on drivers entering a major road or crossing a railway or tramway. Detailed guidance on its use may be found in TSM Chapter 3 Section 2. As noted there, it is expected that most junctions that satisfy the criteria for STOP signs already have signs in place. New junctions should not be constructed with very poor visibility, so the provision of new STOP signs should be exceptional.



Sign Diagram 601.1 (S9-2-1)

The GIVE WAY sign, together with its associated road markings, should be used as follows:

- In rural areas at all junctions of public roads with trunk and principal (A) roads.
- In urban areas at junctions of public roads with trunk and principal (A) roads. They should not be installed if the minor road is a residential or local street except where there is a safety concern at the junction.
- Where there is a safety concern at a junction due to traffic volume, speed, or road geometry and a safety assessment has indicated a need for this sign at the location.
- Exceptionally at roundabouts where there are traffic signals or a signalised crossing on the immediate approach and the associated green aspect might give the impression that a vehicle has priority entering the roundabout.
- Exceptionally at roundabouts where the normal give way rule is reversed.
- In exceptional cases at mini roundabouts where it is not possible to provide deflection.
- With the “dual carriageway” plate to diagram 608 (S3-3-2 & S9-2-3) on the approach to a dual carriageway road with a gap in the central reservation.

The use of a GIVE WAY sign should also be considered at the following locations:

- On non-signalised approaches to a partially signalised roundabout or gyratory
- Where the priority route through a junction is not clear (for example, where the priority route turns right or left at the junction).
- At the end of an un-signalised left turn filter lane at a signalised junction.

Except in the above locations or where there is an evidenced safety issue, the GIVE WAY sign should not be installed on residential streets or estate roads.

Where the GIVE WAY sign is installed, GIVE WAY road markings to diagram 1003A (S9-6-3) and diagram 1023A (S9-6-4) must also be in place.



Sign Diagram 602 (S9-2-2)

Where the use of a GIVE WAY sign to diagram 602 is not justified, it may be appropriate to provide GIVE WAY road markings without an upright sign. The GIVE WAY marking to diagram 1003A (double broken white line) is used at major / minor road junctions and may be accompanied by the approach triangle marking (diagram 1023A).

GIVE WAY markings to diagram 1003A with a GIVE WAY triangle to diagram 1023A should be used at the following sites:

- Any junction where there is a potential see-through issue, such as at a crossroads.
- Any junction with a principal (A) or trunk road in an urban or rural location.

GIVE WAY markings to diagram 1003A should be used alone at the following sites:

- Urban residential streets and estate roads.
- All other junctions where traffic is required to give way, where the junction does not involve a principal (A) road and where there is no evidenced safety issue.

9.3. Keep Left, Keep Right, Pass Either Side

The “keep left” (or “keep right”) sign to diagram 610 (S3-2-3) is used at traffic islands, refuges, and on the central reservations of dual carriageway roads, and may be erected without an order. The “pass either side” sign to diagram 611 (S11-2-73) is an informatory sign that is used on traffic islands separating traffic travelling in the same direction and where drivers passing either side of the sign reach the same destination immediately beyond.

The 270mm and 300mm sizes for signs to diagrams 610 and 611 are intended for use on bollards, although some bollards will accommodate larger sizes.

Bollards displaying signs to diagrams 610 or 611 are of two types: base-lit bollards, which incorporate a lighting unit set into the ground with a translucent bollard above, and non-illuminated bollards, which are retroreflective. Both types of bollards are passively safe, with base-lit bollards being designed to shear off on impact leaving the lighting unit intact, and non-illuminated bollards being designed to deflect on impact and rebound to a vertical position.

In Kent, we use the Traffic Management Products (TMP) Metro 2.0 bollard (KL/KR) as our standard non-illuminated bollard in black.

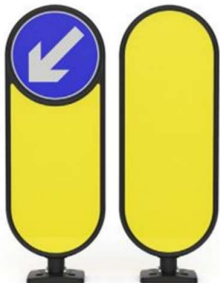


Photo: Traffic Management Products (TMP) Metro 2.0 bollard (KL/KR)

The choice of bollard type should be determined based on an assessment of risk. Whilst the use of non-illuminated bollards offers benefits in terms of reduced energy costs, in some circumstances the use of traditional base-lit bollards may still be preferable, particularly on high-

speed roads and in locations with known safety issues. It should be noted that non-illuminated bollards with a narrow side profile, may not be suitable for locations where traffic does not approach the bollard head-on.

On traffic islands and pedestrian refuges, non-illuminated bollards may be used and may be supported by a sign to the same diagram to the size specified in Appendix A of TSM Chapter 3 and lit in accordance with TSRGD 2016, mounted on a central island post. The decision on where to install a central island post should be made with reference to the TSM Chapter 4, point 22 *'Refuge indicator Lamps: The purpose of the lamp is to indicate the presence of a refuge which might be obscured by other traffic, the brow of a hill or a bend'*.

Traffic islands should only be installed where access for maintenance can be achieved without closing a lane to maintain the assets. The absolute minimum unobstructed width past the island either side on a single carriageway 40mph or less is 3.5m. The absolute minimum unobstructed width on a single carriageway above 50mph and above is 4.2m.

On buildouts within a priority working system, non-illuminated bollards may be used facing traffic where a sign to diagram 615 (S3-2-9) or 811 (S11-2-1) is used and lit in accordance with TSRGD 2016.

9.4. Prohibition of Traffic

9.4.1. Weight limits

The weight limit prohibition sign to diagram 626.2A (S9-4-2) indicates a structural limit and applies to all types of vehicles, including buses. The sign should be used in conjunction with a legal order prohibiting a vehicle above the maximum gross weight specified on the sign from driving on a weak bridge (or road).

The sign may indicate weights of 3t, 7.5t, 10t, 13t, 18t, 26t and 33t; these correlate to the classification divisions in the DMRB.



Sign Diagram 626.2A (S9-4-2)

Weight limit signs used to prohibit goods vehicles for environmental reasons are different. Reasons may be where roads are narrow and unsuitable for large vehicles, or to protect

residents from the nuisance caused by lorries in residential streets. For environmental reasons, the sign to diagram 622.1A (S3-2-13) is used to give effect to an order prohibiting goods vehicles with a plated maximum gross weight exceeding that shown on the sign (indicated in tonnes).

As this is an environmental weight limit there may be exceptions; a) "Except for access" b) "Except for loading" c) "Except for access to off street premises". The plate may indicate time periods (S3-3-8) where the lorry ban does not apply at all times or where the exceptions apply only at certain times and not for the full duration of the prohibition.

The sign to diagram 622.1A may indicate any appropriate weight limit, although 7.5 tonnes is the most common and the use of 7.5t or 18t limits is preferable, as vehicles of these weights are readily identifiable.

Both the structural and environmental weight limit signs must have the lower-case letter "t" to denote "tonnes". The capital letter "T" is no longer prescribed but any existing signs need not be replaced until necessary through routine maintenance.



Sign Diagram 622.1A (S3-2-13)

9.4.2. Width limits

The sign to diagram 629A (S3-2-26) is a combined metric and imperial version of the width limit sign and should be used in Kent in place of the sign to diagram 629 (imperial-only version, TSRGD 2002). The imperial-only sign is no longer prescribed, but existing signs may remain in use until they need to be replaced. Metric-only signs must not be used.

The imperial dimension should be 6 inches less than the narrowest part of the road, rounded to the nearest six inches downwards. The metric dimension should be obtained by measuring the narrowest part of the road in metres to two decimal places, subtracting 0.15 metres and deleting the second decimal digit.



Sign Diagram 629A (S3-2-26)

9.4.3. Height limits

The sign to diagram 629.2A (S3-2-27) (imperial and metric units) is a maximum height limit sign to be used at flat soffit (non-arch) bridges and other structures with a headroom less than 16'-6" (5.03m), as it can give more effective protection than warning signs. In such circumstances this sign can be provided without the need to make a traffic regulation order (direction 7(3)).



Sign Diagram 629.2A (S3-2-27)

Signs to diagram 629.2A (S3-2-27) should be used on the bridge structure itself and in advance of the bridge (usually on both sides of the carriageway). These should be yellow backed as standard. Black and yellow hazard markings to diagram 530.2 (S2-5-4) should be used on the lowest part of the bridge to increase awareness.



Photo: Typical layout of regulatory signs at a low bridge

Advisory signage to diagram 818.4 (S12-28-22) should be used in advance of the last turning opportunity or diversion on each approach.



Photo: Sign layout at key junctions on the approach to a low bridge with regulatory signs

These signs should not be used at arch bridges, as the risk to these is from vehicles which although low enough to pass through the central part of the arch, might strike the curved shoulder of the structure. Warning signs should be used instead.

Further guidance on the use of mandatory height limit signs at bridges, including height calculation and diversion route signing, can be found in TSM Chapter 4, section 7 and in Chapter 8 of this manual.

9.5. Speed Limits

9.5.1. General

Speed limits are signed using signs to diagrams 670 and 671 of TSRGD. Speed limit signs are of two types: terminal signs, which are used to indicate the start of a new speed limit, and repeater signs, which are used to ensure that drivers remain fully aware of the speed limit in force. Guidance on the use of speed limit signs may be found in TSM Chapter 3, Section 8.



Diagram 670 (S10-2-1): Maximum speed limit in miles per hour



Diagram 671 (S10 2 2): National speed limits apply

9.5.2. Speed Limit Gateways

Where speed limit terminal signs, in some cases accompanied by other signs, road markings or features, mark a change in speed limit, this forms a speed limit gateway. Speed limit gateways are two types: those where the speed limit sign is co-located with village or town boundary signs to diagram 2402.1 (S11-2-81) to form a village or town gateway, and those where the speed limit terminal signs are located independently. Guidance on the design of signing at town or village gateways may be found in Chapter 12 of this manual.

A speed limit gateway should be sited so that drivers do not encounter it suddenly. It should be visible for at least the minimum stopping distance in accordance with Table 8-3 of TSM Chapter 3.

Guidance on the use of road marking roundels may be found in Chapter 13 of this manual.

9.5.3. Speed Limit Terminal Signs

Signs should be sited so that they can be seen in good time to allow drivers to adjust their speed by the time they pass them. Obstructions to visibility such as vegetation, buildings, bends in the road and other topographical features should be considered when determining the terminal point for a speed limit order.

Sign sizes for speed limit terminal signs may be found in Table 8-1 and 8-2 of TSM Chapter 3. It is important to note that the size of speed limit terminal signs depends upon the approach speed limit, not the limit being signed.

There is no longer a requirement for these signs to be paired at the start of a restriction. Terminal speed limit signs may now be placed singly, however this does not mean that it is sufficient. Designers should assess site specifics and consider each location on its own merits. This relaxation may be particularly useful if there is difficulty in siting the offside sign, but designers need to ensure that the speed limit is always visible and well observed.

Where two signs are used, one on each side of the carriageway, they should be of the same size to produce a balanced appearance. Where signs of different diameters are to be mounted back-to-back (and a backing board is not used), consideration should be given to using the larger diameter for both, as this will result in a neater and less cluttered assembly.



Photo: The 30mph sign to Diagram 670 (S10-2-1) should be bigger to match the 40mph sign mounted back-to-back

9.5.4. Backing Boards for Speed Limit Terminal Signs

To improve visibility against a complex or dark background, a speed limit terminal sign may need to be mounted on a grey or yellow backing board. Backing boards should be grey as standard. Where it seems that a sign is not being noticed by drivers, it should be checked to ensure that it is well-sited, not obscured by vegetation or other obstructions and is of the appropriate size and in good condition before the use of a yellow backing board is considered.

All backing boards for speed limit signs must be rectangular in shape. A sign to diagram 670 mounted on a yellow circular backing board is unlawful. A backing board must not itself be provided with a border of any kind, and no legend may be applied to it.

Guidance on the design of backing boards incorporating both a speed limit terminal sign and a town or village sign may be found in Chapter 12 of this manual.

9.5.5. Mounting of Speed Limit Signs

Research has shown that the greater the number of signs that drivers are presented with simultaneously, the greater the difficulty they are likely to have in assimilating all the information. Terminal speed limit signs should therefore, where possible, be sited independently from other signs.

One exception to this, is to allow terminal speed limit signs to be co-located with simple boundary signs to diagram 2402.1 (S11-2-81), and guidance on the design of such gateway signs may be found in Chapter 12 of this manual.

The second exception is at junctions where signs are needed to indicate the start or end of zonal restrictions or a requirement to stop or give way. These signs may be co-located with terminal speed limit signs if separate mounting would cause one sign to obstruct the driver's view of another.

In such cases signs should be placed in the following order from top to bottom:

- STOP or GIVE WAY sign
- Terminal speed limit sign
- Other circular sign
- Rectangular zonal sign.

However, even in this event, not more than one sign should normally be erected on the same post as a terminal speed limit sign. Where a clearway sign to diagram 642 (S3-2-4) accompanied by either a distance plate or an “End” plate is mounted below a speed limit sign, the plate should be butted up against the lower edge of the clearway sign and there should be a space equal to twice the width of the red border between the roundels to make it clear to the driver that the “End” plate relates to the clearway and not to the speed limit.

9.5.6. Speed Limit Repeater Signs

There is no specific legal requirement to provide repeater signs, but they are still prescribed and so may be used as we deem necessary. Sign sizes recommended spacing and minimum clear visibility distances for speed limit repeater signs may be found in Table 8-4 of TSM Chapter 3.

To keep sign clutter to a minimum and avoid siting problems, repeater signs should generally be spaced at the maximum distance stated in the table. However, a flexible approach allows signs to be placed in the most suitable location for the message to drivers to be effective. For example, where there is a problem siting signs at the maximum distance due to a bend, they signs can be spaced closer together. Also, where a section of road has several geometric features which will be difficult to sign, the sign design can be “worked from the feature” toward the terminals in order to ensure that repeater signing can be placed where it is most critical. Designing in this way needs to be carried out on site to make the best use of available sign sites; it is not recommended that this is carried out as a desktop exercise.

The TSRGD (Schedule 10 General Direction 2) does not permit the use of 30mph speed limit repeater signs on a lit road since the default speed limit on a lit road is 30mph. Similarly, repeater signs must not be used on an unlit road subject to the national speed limit. Where a lit road is subject to the national speed limit, as is the case on some of Kent’s dual carriageways, repeater signs should be provided as per Table 8-4 of TSM Chapter 3 to remind drivers that the road is not a restricted road with a speed limit of 30mph.

Where possible, speed limit repeater signs should be mounted back-to-back on alternate sides of the carriageway. Repeater signs may be co-located with other signs such as warning signs, provided that the recommended spacing requirements are met; in such cases, the repeater sign should be mounted below the warning sign. Repeater signs should not be co-located with directional signs.

9.5.7. Extending the Length of an Existing 30mph Speed Limit

Any adjacent length of road to a 30mph section, which is also lit but is subject to a different speed limit, including the national speed limit, will normally have repeater signs.

Should an order be made to extend a 30mph speed limit into an adjacent length of road, the terminal signs should be moved to the new speed limit gateway, and any repeater signs within the length of road subject to the new 30mph speed limit removed. As regular drivers might not at first realise that the speed limit has changed, a sign to diagram 7032 (S13-6-38) should be erected to advise drivers that a new 30 mph speed limit is in force.



Sign Diagram 7032 (S13-6-38)

Schedule 13 General Direction 13 sets out the conditions, all of which must be met, for the use of the sign to diagram 7032; they are:

- The sign must indicate only a 30-mph speed limit (it must not be used to indicate any other speed limit)
- The road must be lit
- The road must have been subject to a higher speed limit (i.e., a sign to diagram 7032 is not used where the previous speed limit was 20 mph)
- The sign must be located as near as practicable to the point where the original 30 mph limit ended (i.e., where the previous terminal signs have been removed)
- The sign must not be used at the point where the new 30 mph limit ends and changes to another limit (i.e., the point where new terminal signs are placed), and
- The sign must be removed not later than six months after the day on which the new speed limit comes into force.

9.5.8. Informatory Signs for Speed Cameras

Speed enforcement should be highly visible, with drivers made fully aware of the presence of cameras and of the prevailing speed limit, and care should be taken to ensure that camera and speed limit signs are not obscured by other signs, street furniture or vegetation.

All camera sites within Kent should conform to the criteria set out by the Kent and Medway Safety Camera Partnership (KMSCP) as well as to the guidance below and should be in accordance with the latest DfT guidance. Where a speed limit is enforced using cameras, it is essential although not a legal requirement to sign the presence of cameras, that the signs, their visibility and visibility follow the guidance set out in TSM Chapter 3 Section 8. [The DfT Circular](#)

[1/2007 Use of speed and red-light cameras for traffic enforcement: guidance on deployment, visibility and signing](#) also provides relevant guidance.

Each highway authority is responsible for the general maintenance of the camera housing and associated signs and road markings that are in place on their part of the network. So, for Kent, any changes to signage, specifically, will need to either go through the Road Safety and Active Travel team (for new) or Highway Operations for replacement (The KMSCP hold the budget for this provision but do not have any design resource).

Signs prescribed by the TSRGD for indicating speed cameras are diagrams 878, 880 and 880.1 (S11-2-63, 64 and 65 respectively). The sign to diagram 878, with the legend “Speed cameras”, is used to indicate the boundary of an area where camera enforcement is taking place. The sign to diagram 878 may also be placed within such an area to act as a reminder to drivers that cameras are being used, and for this purpose the legend may be omitted.



Signs to diagram 878 (S11-2-63)

Where possible, diagram 878 signs used as reminders should be co-located with speed limit repeater signs; however, they may be placed independently from the repeater signs where the site requires. Where co-located, the colour of the backing board may be grey or yellow (as shown below).



Co-located speed limit sign to diagram 670 and camera reminder sign to diagram 878

There should be at least one diagram 878 reminder sign between the diagram 878 terminal sign and the camera in all speed limits. Where a local distributor road joins a main road with a speed camera, a diagram 878 sign (co-located with a speed limit repeater except in a street lit area with a 30mph speed limit) should be provided within 50m of the junction in the direction of the camera location.

The size of a sign to diagram 878, when including a legend, is related to the speed of traffic and is given in TSM Chapter 3, Appendix A. The size of a sign to diagram 878 without a legend will depend on whether it is co-located with a speed limit sign:

- Where it is mounted on its own, the height of the sign should not be less than the size of the speed limit repeater sign as specified in the preceding section of this manual and TSM Chapter 3, Table 8-4. On lit 30mph roads, as repeaters are not permitted, the 300mm size should be used.
- Where the sign to diagram 878 is co-located with a speed limit sign to diagram 670 or 671, the size of the camera sign should be relative to that of the speed limit sign: details of the size and layout of the sign and backing board are given in TSM Chapter 3 Section 8.

As repeater signs are not permitted on lit roads with a 30mph speed limit, the sign to diagram 880 (S11-2-64) may be used to advise drivers that a 30mph speed limit is being enforced by cameras. This sign must not be used as a substitute for terminal or repeater signs, or to indicate any other speed limit. Only one size of sign is prescribed for diagram 880 as it is only ever used on a road with a 30mph speed limit.



Sign to diagram 880 (S11.2.64)

A sign to diagram 880 should be placed on the approach to an enforcement camera and not more than 100m from the camera, so that it is visible to the driver in the same view as the camera. The sign may be placed on either side of the road to attain the visibility requirements.

See Chapter 13 of this manual for information on camera markings.

9.6. Regulatory Signs for Cycle Facilities

9.6.1. General

Guidance on the signing of cycle facilities, including cycle lanes and tracks, cycle routes shared with pedestrians, and cycle parking places, may be found in TMS Chapter 3, Section 11. This section of this manual deals with regulatory signs only; guidance on directional signing for cyclists may be found in Chapter 10 of this manual.

In accordance with *Local Transport Note 1/20: Cycle Infrastructure Design* and Kent's Active Travel Strategy, signing of cycle facilities on Kent's highway network should always be designed to encourage cycling by providing routes which are coherent, direct, safe, and comfortable and attractive to use. This includes not providing unnecessary signs which could have the effect of deterring cyclists.

Cycle lanes run along the road on the carriageway whereas cycle tracks are separated from the carriageway and therefore provide segregation from traffic flow.

See Chapter 13 of this manual for information on cycle markings.

9.6.2. Cycle Lanes

Cycle lanes may be mandatory, where other vehicles are excluded for at least part of the day, or advisory, where other vehicles may enter if necessary and when it is safe to do so. A mandatory cycle lane only requires an order when it is a contraflow lane, and a contraflow lane must be always operational.

For mandatory with-flow cycle lanes; The sign to diagram 959.1 (S9-4-9) is to be placed as near to the start of a cycle lane as possible, just beyond the taper marking. There is no specific requirement to use repeater signs, but it is for the designer to decide how many are required and where they are placed. Signs should normally be placed every 300m to serve as reminders or just beyond side roads where traffic would be able to join the main carriageway and would need informing.

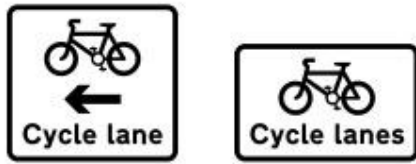
Signs to diagram 958.1 (S11-2-38) are similar to that of 959.1 discussed above, but they are used in advance of the cycle lane to inform road users of one's presence ahead.

The signs to 958.1 and 959.1 both may display times of operation or may have the bottom panel omitted. When the panel is omitted, it means that the cycle lane operates for 24 hours on every day of the week.



Signs to diagram 958.1 (S11-2-38) and 959.1 (S9-4-9)

The sign to diagram 962.1 (S11-2-35) is intended mainly for use in conjunction with contraflow cycle lanes. However, it may be provided on side roads to warn emerging drivers of the presence of a with-flow cycle lane on the major road, although this is not essential. The arrow on the sign indicates the direction of travel within the cycle lane and will normally point to the left.



Signs to diagram 962.1 (S11-2-35)

For advisory with-flow cycle lanes; the sign to diagram 967 (S11-2-44) is used at the start of the lane. Again, there is no specific requirement to provide repeater signs, but the designer should consider using reminders and in a similar manner to the sign to diagram 959.1 they should consider placing one after each side road junction. As advisory with-flow lanes are always available, time plates are not used with the sign to diagram 967.



Sign to diagram 967 (S11-2-44)

For mandatory contraflow cycle lanes, the sign to diagram 960.1 (S9-4-6) should be located at the beginning of the road on both sides. Again, there is no specific requirement to provide repeater signs, it is for the designer to determine how many are required and where they are placed. However, to ensure that drivers, whether entering from a side road or proceeding alongside the contraflow cycle lane, are informed, or reminded of the restriction, a sign should normally be placed just beyond each side road. Additional repeater signs should be considered where the distance between them would otherwise exceed 300 m. Where a traffic island segregates traffic from the opposing cycle lane, any offside sign should be located on this island. The number of arrows pointing upwards on the left-hand side of the sign should be varied to indicate the number of lanes available in that direction.



Sign to diagram 960.1 (S9-4-6)

For advisory contraflow cycle lanes, the sign to diagram 960.2 (S9-4-7) should be located at the beginning of the road on both sides. Again, there is no specific requirement to provide repeater signs, it is for the designer to determine how many are required and where they are placed. However, to ensure that drivers, whether entering from a side road or proceeding alongside the contraflow cycle lane, are informed, or reminded of the restriction, a sign should normally be placed just beyond each side road. Additional repeater signs should be considered where the

distance between them would otherwise exceed 300 m. This is particularly important where the lane is not marked on the carriageway throughout its length.



Sign to diagram 960.2 (S9-4-7)

9.6.3. Cycle Tracks

A cycle track may be a physically segregated part of a road or a different route entirely. It may be used for cycles only or be a shared or segregated route for cycles and pedestrians.

The sign to diagram 955 (S3-2-28) indicates an off-road cycle route for use by cycles only.



Sign to diagram 955 (S2-2-28)

Where a footway or footpath has been converted to an unsegregated route shared by pedestrians and cyclists, this is indicated by the sign diagram 956 (S3-2-29). This prohibits the use of the route by any other vehicles and should be located where the shared route begins. Repeater signs may be placed along the route to remind both pedestrians and cyclists that pedal cycles may legally be ridden on the footway or footpath. Where ridden horses are permitted to use an unsegregated cycle and pedestrian route, the sign to diagram 956.1 (S3-2-30) should be used.



Sign to diagram 956 (S3-2-29) & diagram 956.1 (S3-2-30)

A segregated route is indicated by the sign to diagram 957 (S3-2-32). This is placed at the start of the route as it prohibits motor vehicles. It may also be used as a repeater sign to remind pedestrians and cyclists which side of the track they should be using. If this is to the right of the pedestrian part of the track (in the direction of travel) the cycle symbol on the upright sign faces right.



Sign to diagram 957 (S3-2-32)

Sign mounted bollards are a good option to minimise visual intrusion on cycle tracks.

In Kent, we generally use sign carrying bollards like the Glasdon Mini-Ensign or the Glenwood™ 170 Signhead Post.



Photo: Glasdon Glenwood bollard

9.6.4. 'End of Route' Signs

The end of a mandatory cycle lane is normally indicated by the termination of the continuous white line to diagram 1049B. The end of an advisory with-flow cycle lane is normally indicated by the termination of the boundary line to diagram 1004 or 1004.1. The road markings to diagram 1057 (cycle symbol) and diagram 1058 (END) may be used in both cases also.

The TSM Chapter 3 recommends the “end of cycle route” sign to diagram 965 (S11-2-45) should not be used in either case unless the lane ends at a hazardous location where cyclists would need to take extra care. As such, this sign should be used sparingly, and designers should consider the purpose it is meant to serve.



Sign diagram 965 (S11-2-45)

The sign to diagram 965 (S11-2-45) (END OF ROUTE) may be used (with markings or on its own) to indicate the end of a cycle track, where a numbered route ends or where cyclists rejoin the main carriageway of a road at the end of a shared footway.

9.6.5. 'Cyclists Dismount' Signs

The sign to diagram 966 (S11-2-46) (CYCLISTS DISMOUNT) should only be used in situations where it would be unsafe or impractical to continue to cycle.



Sign diagram 966 (S11-2-46)

10. Directional Informatory Signs

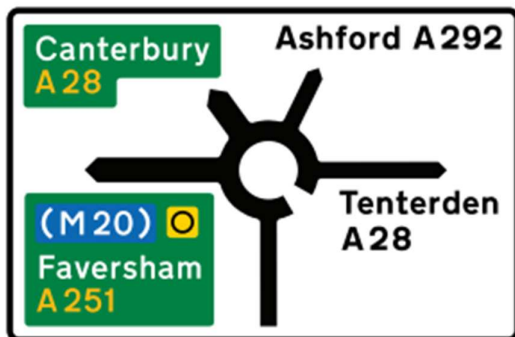
10.1. General

Informatory, directional and tourist signs generally give highway users information about a route or places and facilities of particular value or interest. Most informatory signs are rectangular, including advance direction signs placed in advance of a junction. Direction signs at junctions, often known as flag-type signs, usually have one end pointed.

These signs are prescribed in Schedules 11 and 12 of TSRGD (and Schedule 13 for temporary situations). Guidance on the design and use of informatory signs may be found in Chapter 7 of the TSM and in LTN 1/94: *The Design and Use of Directional Informatory Signs*.

This chapter deals with directional informatory signs and includes Kent-specific requirements and guidance. Information and guidance specific to tourist signs may be found in Chapter 11 whilst Chapter 12 provides information and guidance on miscellaneous informatory signs.

Direction signs can be generally categorised into six types, as follows:



Advance direction signs



Direction Signs



Route confirmatory signs



Fingerposts



Public rights of way signs



Cycle direction signs

Direction signs are colour coded to indicate the category of route being travelled or the route traffic is being directed to. Direction signs can support a signing strategy and assist with restrictions by using positive signing.

Direction signing needs to be simple and well-sited to keep traffic moving safely on the network. Signs need to have appropriate letter height (x-height) for the approach speed of the road as these signs need to be read by approaching drivers.

These signs are often the largest on the highway and are subject to numerous “add-ons”, either by adhesive patches being added to the original sign face or by additional signs being fixed to the same posts. Tourist destination and lorry route signs, are often added at a later date. These “add-ons” can lead to too much information being provided, or to the original signs becoming obscured and illegible. For this reason, in most cases “add-ons” should not be approved. Instead, the original sign should be redesigned to include the approved additions or changes, with new posts and foundations being provided to ensure structural stability of the arrangement.

10.2. Map Type Direction Signs

In general, the use of map type direction signs should be limited to roundabouts or for highway layouts which cannot be effectively signed using warning signs and stack and flag type direction signing. Map type signs should not be used to give advance warning of junctions on bends as the signs will be diagrammatic only and can give a misleading idea of the geometry of the bend ahead.

10.3. Route Hierarchy

The route network is split into defined categories as follows:

- Primary route network (PRN): defined nationally and regionally. Includes the national motorway and trunk road network, as well as some locally maintained primary routes.
- Secondary routes: defined locally. Comprises the non-primary ‘A’ road network in Kent.
- Other routes: defined locally. ‘B’, ‘C’ class and lower category roads in Kent.

10.4. The Number and Order of Destinations

The categories of place names and the order in which they should appear from top to bottom, on directional informatory signs are as follows:

- Regional destinations (e.g. The NORTH)
- Motorway destinations (route number patches on all-purpose roads)
- Place name destinations: these should be in the order of the furthest first. Where destinations with different bracketed route numbers are associated with the same direction, they should be listed in the order in which each junction is reached
- Car park destinations
- Panelled destinations in the following order: tourist attractions, advisory lorry routes, cycle routes and Ministry of Defence establishments.

No more than five destinations should appear on a direction sign on a primary or secondary route. Destinations should be indicated in the following priority:

- The nearest primary destination
- The nearest secondary destination
- The nearest goods vehicle destination
- The nearest local destination
- The nearest tourist destination with a current application (see tourism signing for details).

On other categories of road, no more than three destinations should appear on a direction sign. They should be indicated in the following priority: -

- The nearest local destination (within 5 miles)
- The nearest tourist destination with a current application (see tourism signing for details).
- Any individual destination such as local cottage hospital.

10.5. Primary Destinations

These are destinations of regional significance and are as defined by the Department for Transport in Annex A of *Guidance on road classification and the primary route network* and detailed in LTN 1/94.

Ashford	Hastings
Bromley	Heathrow Airport
Bexleyheath	London
Canterbury	Lewes
Channel Tunnel	Maidstone
Croydon	Margate
Dartford Crossing	Ramsgate
Dover	Sevenoaks
East Grinstead	Sheerness
Folkestone	Tunbridge Wells
Gatwick Airport	Thamesport

Table 10.1 - Primary Destinations

10.6. Secondary Destinations

These are defined at a county level. They are destinations with populations of more than 15,000 and/or strategically important destinations.

Aylesford	Hawkhurst	Rye
Broadstairs	Herne Bay	Sandwich
Biggin Hill	Hextable	Sellindge
Borough Green	Hurst Green	Sittingbourne
Charing	Hythe	Snodland
Chatham	Lamberhurst	Strood
Cranbrook	Lenham	Sturry
Crowborough	Limpsfield	Swanley
Dartford	Longfield	Tenterden
Deal	Lydd	Tonbridge
East Malling	Meopham	Wadhurst
Edenbridge	Northiam	Westerham
Farningham	New Hythe	West Malling

Faversham	Northfleet	Whitstable
Gillingham	Orpington	Wrotham
Godstone	Paddock Wood	Wrotham Heath
Goudhurst	Rainham	Any major retail outlet with more than 4000 car parking spaces
Grain	Redhill	Large general NHS hospitals with A & E facilities
Gravesend	Rochester	

Table 10.2 - Secondary Destinations

10.7. Local Destination Types

Local destinations may be added to highway direction signing as follows:

- Towns, villages, and hamlets: this includes all towns and villages identified on 1:50 000 Ordnance Survey maps which are not classed as primary or secondary destinations. Towns, villages, and hamlets shown on direction signing should be eligible for standard village/ town nameplates as described in Chapter 12.
- Districts within towns: should be as identified on 1:50,000 Ordnance Survey Maps. Districts will not always be eligible for village/town nameplates as described in Chapter 12.
- Local destinations with no criteria: the following destinations may be added if this facility is present and open within expected hours at the indicated location. These facilities will only be provided with signing if their location is not a main or arterial route or where private signage located on the premises cannot reasonably be seen by passing traffic.

Facility	Named or generic
Town centre	Generic
Police station	Generic
Village hall	Generic unless there are other village halls in close proximity, in which case it may be named
Post office	Generic
Colleges and universities	Named

Council offices	Generic
Car park	Generic – may be used with addition information see LTN 1/94 for information
Bus station	Generic – may also display the coach or bus symbol
Rail station	Generic – unless more than 1 station is within close proximity. May also display the rail symbol
Courts	Crown court, County court or Magistrates court
Library	Generic - may also display information tourism symbol*
Crematorium	Generic
Toilet	Generic - may also display the WC symbol and the disabled symbol where appropriate
<i>*Any facility which displays the information tourism symbol must comply with the requirements of Kent for this facility.</i>	

Table 10.3 - Local Destinations

10.8. Other Local Destinations

The signing of other destinations should be restricted to minimise highway signing in urban areas. Destinations which are visited almost exclusively on a pre-planned basis, for example:

- Doctors' surgeries
- Schools
- Churches
- Health centres

should not be provided with destination signing unless the facility generates more than 50 non-planned vehicle trips per day and:

- there is an evidenced safety issue that could be improved with local direction signing, or
- there is a strategically more appropriate route to the facility which will not be obvious to the visitor, or
- there is more than one facility within close proximity which confuses visitors.

All local destinations should be promoting their location through publicity literature and/or online publicity material and should be able to evidence this. Destination signing will not support any signing of local destinations which could be construed as advertising. Some facilities may qualify for tourism signing instead: See Chapter 11 of this manual.

10.9. Retail

Large retail estates which do not qualify as secondary destinations may only be signed in line with the following:

- The facility must not front on to a main road where private signage located on the premises is visible from the road.
- The facility must be open to the public within expected opening hours for the type of retail.

Signing will only be provided to the outmost boundaries of the built-up area in which the retail estate is situated. An individual store should not be signed unless it is classed as a superstore (see below).

10.10. Hospitals

Large general National Health Service (NHS) hospitals with accident and emergency (A&E) facilities are treated as secondary destinations. These may be named hospitals, for example, William Harvey Hospital.

Smaller local NHS hospitals without A&E facilities should be signed within the outmost boundaries of the built-up area in which they are situated. They should be signed with either the red or blue miscellaneous informatory sign to diagram 827.1 (S11- 2- 66), 827.2 (S11-2-66) or 827.3 (S11-2-66).

If there is more than one NHS hospital within the area the red or blue signs may be mounted as patches on black/white directional signs with either the specific name of the hospital or a description of the facility, for example, "Ear, nose and throat".



827.1 (S11-2-66) 827.2 (S11-2-66)

In England 'Minor Injury Unit' (MIU) has been superseded and we now use 'Urgent Treatment Centre' (UTC).



Hospital with Urgent Treatment Centre (alternative types)

10.11. Private Hospitals and Clinics

The use of the H symbol implies that an NHS “walk-in service” is available. These symbols should not be used for private hospitals or clinics unless they provide a non-planned “walk-in” facility for the NHS.

Private hospitals which have over 300 beds and which provide a level of pre-planned service to the NHS may be signed with a black and white direction sign with the words “Hospital” or “Clinic” (Figure 1). The name of the facility may only be used on the sign where there is more than one facility in close proximity. (Figure 2).



Figure 1



Figure 2

Private hospitals which do not provide any level of service to the NHS should not be provided with signs unless there is an evidenced safety issue that could be improved with local direction signing.

10.12. Superstores

A sign to a superstore should only be installed if the superstore does not front onto a main or arterial route where private signing on the premises can be seen from the highway. The superstore should be a standalone store, not on a large retail park which is already signed as a secondary or local destination. Directions to a superstore should not be placed on a primary route.

A sign may be installed for a superstore which has a concealed access or access directly off a major junction which may be confusing for visitors. (Figure 3).



Figure 3

Superstores are classified as self-service stores selling mainly food, or food and non-food goods, usually with more than 2,500 square metres trading floor space, with supporting car parking.

Stores smaller than this are classified as supermarkets and should not be given local direction signing.

10.13. Recycling Centres

Signs should only be provided to recycling centres which are designated household recycling or recycling centres provided by Kent County Council. Signs should not be provided to smaller facilities. All Kent County Council recycling centres are eligible for signing from the nearest junction only.

Signs to S12-11-14 should only be placed on non-primary routes.



Sign to diagram S12-11-14

10.14. Traditional Direction Signs

Traditional direction signs, sometimes called fingerposts, make an important contribution to the local character and identity of suburbs, villages, and rural areas across Kent, and should be retained as functional signs. Kent County Council will not remove any existing traditional direction sign unless this is necessary for reasons of safety. Such signs should be maintained and refurbished in their original form, or in a manner sympathetic to their original form as far as practicable. However, as these signs are traditionally made from oak or cast iron, they are expensive assets to purchase, and full replacement of these assets is no longer provided by our service. More cost-effective alternatives may be sought.

Decorative fingerpost signs may be requested and funded through parish or member funds; however, the scheme promoter will need to secure funding to cover the cost of future maintenance as and when this is required.



Photo: Typical heritage fingerpost signs in Kent

10.15. Pedestrian Direction Signs

These signs are used in town centres to direct pedestrians to facilities and places of interest and may be of traditional or contemporary design. The number of directional arms depends on the number of destinations in the local area. Like litter bins and other street furniture, these assets are owned and maintained by local borough/district councils under agreement with Kent County Council.

To keep sign clutter to a minimum, signs of this type should not be used to sign cycle routes. Guidance on the use and design of direction signs for cyclists is given in the following section.



Photo: Example of pedestrian signage

Pedestrian signing may include all local destinations as follows:

- Town centre
- Police station
- Village hall
- Post office

- Colleges and universities
- Council offices
- Car park
- Bus station
- Rail station
- Courts
- Library
- Toilet
- Local tourist facilities (with a current approved application)
- Local tourist destinations (with a current approved application)
- Local public buildings

Signs to individual retail outlets should not be included on pedestrian signing.

Pedestrian signs may be provided in various materials including powder coated aluminium, recycled plastic, and wood, and the style, colour, and lettering may be varied to suit the style of the town centre street furniture. The type of material selected should take into consideration the environment in which the sign is to be installed, the likelihood of vandalism, installation cost, safety and style required. Whilst some heritage cast iron versions remain, new cast iron pedestrian signs should not be provided as they are expensive, costly to maintain and hazardous if hit by vehicles. Replica finger post style pedestrian signs are available in plastics, cast aluminium and composite plastic/metal.

Like other signs, pedestrian signs should be sited in line with the guidance in this manual regarding mounting height and siting. The lettering and background colour should be contrasting, and the lettering should be of appropriate style and size for its purpose.



Public Rights of Way (PROW) (such as public footpath, public bridleway, restricted byway and byway open to all traffic) must be signposted at every junction with a metalled highway.

This requirement may result in sub-optimal placing so care should be taken that signs do not cause a danger or nuisance or obstruct visibility and it may be necessary to consider placing the signpost on the opposite side of the road and/or using reverse mounted finger arms. Alternatively, PROW finger arms may be fitted to existing street furniture. This will avoid cluttering where it is safe to do so and will obscure neither the highway sign nor the PROW sign.

Where possible, signs to indicate public rights of way (should be obtained from stocks held by the Public Rights of Way and Access Service, in order to maintain consistency in design across

the network. Where this is not possible/practical signs should be end mounted and double sided so that they may be read when approached from both directions. Standard mounting is on a 76mm diameter alloy or steel post with end cap and base plate.

The Public Rights of Way and Access Service team record, protect, maintain, and develop the network, which is classified as publicly maintainable highway too. Please contact the Public Rights of Way and Access Service at PROW@kent.gov.uk for further guidance.

10.16. Cyclist Direction Signs

Direction signs for cyclists typically have white letters and symbols on a blue background and are usually double-sided and mounted as fingerposts.

Although permitted, our preference in Kent is not to provide distance and journey times on cycle direction signs.

Routes signed for cyclists include national cycle routes (see Sustrans' website for details), local cycle routes, and short links offering cyclists a safer or more direct route. Cycle routes may be entirely on the public highway or may include off-highway sections.

National cycle route signs should include the route number on a red coloured patch. We don't use local cycle route numbers on blue patches in Kent. Short sections of cycle links generally do not form part of a numbered cycle route.



Example cycle direction signs with and without a national route number

The introduction of large numbers of cycle routes and links within the county has resulted in many cycle signs. These can be visually intrusive in both rural and urban areas, and in urban areas can also create obstacles for other highway users.

To keep clutter to a minimum, adhesive patches should be used as much as possible to indicate changes in direction of travel. Patches should indicate the route number and be colour coded to suit the type of route. These patches may be adhered to the posts of existing direction signs or lighting columns and should be mounted at a minimum of 1500mm above the surface of the road or track.



Example adhesive patch design

Where there are no direction signs or lighting columns to which patches may be attached, the use of bollards should be considered. Several standard plastic bollards are available which include the required size of signs. Plastic 'wood effect' bollards may be the most appropriate in rural environments. As elsewhere, cast iron or other metal bollards should not be used.

Signs should be provided only where there is a change of direction of the route, or where a long section of cycle route requires a route confirmatory sign. Cycle signs should be kept to the minimum size required, with an x-height of 25mm used for lettering.

10.17. Lorry Direction Signs

Kent has many bridges, narrow routes and environmentally sensitive areas which are not suitable for lorry access. Whilst it is possible to install restriction on access for lorries, this requires enforcement, greater compliance of these restrictions is achieved through the positive signing of advisory lorry routes.

Lorry routes can form part of a local or regional strategy, and when considering the installation of a signed route, consideration of continuation of this route across the county boundaries should also be taken into consideration.

The use of satellite navigation systems has resulted in high numbers of breaches of lorry restrictions nationally, particularly as lorry drivers do not always have a heavy goods vehicle (HGV) specific system and use car systems.

Direction signing is a key tool in managing the movements of heavy goods vehicle traffic. Specific attention will be paid to providing concise signing between the principal road network and areas which are major generators of goods vehicle traffic, and of an equal importance, on the return route to the principal network.

When the route to the industrial area is different from the route to the town or other general area where it is situated, black background goods vehicle direction signing will be considered.

Black background direction signing will normally be based on a collective destination from the principal network (e.g. 'Sittingbourne industry'). Where practical, signing to significant individual industrial areas within the collective destination will be provided where the route to them diverges from the route to the collective destination.

Where possible, routes for goods vehicle traffic should avoid low bridges. Where this is not possible, clear signing of the low bridge will be included within the direction signs, and the signing at the location of the low bridge should be a high priority for the provision of enhanced warning signs (refer to Chapters 8 and 9).



Photo: A 'collective' goods vehicle destination where the route is different from that for other traffic



Photo: Signing to individual destinations where the routes diverge



Photo: Low bridge information included in the direction signs, where it cannot be avoided

Local direction signs should be considered for licensed operators' premises or lorry destinations which generate over 30 heavy goods vehicle (HGV) movements a day only where:

- The destination or operator location is not signed on any other direction sign
- Access to the operator premises or destination is not readily visible from an A road, and this creates a strategic or road safety problem which can be evidenced.

or

- Access to the operator premises or destination is not suitable for HGV traffic, and an alternative route which is not obvious to visitors is more suitable.
- Access to the operator premises or destination is extremely remote: in this case direction signing may only be provided from the nearest village, town, or hamlet.

Direction signs should not be provided to smaller operators and destinations with fewer than 30 HGV movements a day unless there is a significant road safety or strategic need which can be evidenced.



Sign S12-11-2 & S12-2-7



Sign S12-11-2 & S12-2-7

11. Tourist Signs

11.1. Tourist Destinations

Tourist signs typically have white letters and symbols on a brown background.

Kent County Council has introduced a policy for assessing tourist signing schemes following consultation with district councils and partners. The policy has been developed to fit within the national framework set out by the Department for Transport.

Tourist signs will be provided only upon successful application to Kent County Council. Applications should identify whether a destination is considered a tourist destination, and whether the destination fulfils the requirements set out in this manual for the provision of tourist signs.

A tourist destination is defined as:

“A permanently established attraction or facility which attracts or is used by visitors to an area, and which is open to the public without prior booking during its normal opening hours”.

11.2. Tourist Attractions:

Tourist attractions are places of interest, open to the public, offering recreation, education historic interest. They include:

- Pleasure or theme parks
- Historic buildings: castles, historic houses, English Heritage sites, National Trust properties, cathedrals and churches
- Museums and galleries
- Zoos and wildlife parks
- Parks, gardens and vineyards
- Pottery/craft centres
- Natural attractions: nature reserves, beaches and viewpoints as designated on Ordnance Survey maps.

11.3. Tourist Facilities:

These are places where visitors can rest, take refreshment, or obtain information. They include:

- Hotels and guesthouses
- Self-catering accommodation (with some available for casual visitors)
- Caravan and camping sites

- Youth hostels
- Catering establishments such as restaurants and public houses where food is served, coffee shops and tea rooms
- Some sports and leisure facilities
- Tourist Information Centres (staffed)
- Picnic areas, country parks and woodland recreation areas
- Viewpoints
- Fisheries
- County tours and tourist routes
- National Parks and Areas of Outstanding Natural Beauty.

Retail establishments do not qualify for tourism signs but may be eligible for direction signage for traffic management or safety reasons: see the direction signing guidance in Chapter 10.

11.4. Criteria for Tourist Signing

To be eligible for signing, it must first be agreed that the business is a tourist destination as defined above. Secondly, the tourist destination must meet the following criteria:

- It must be permanently established.
- Visitors will normally expect to find signed destinations open at reasonable times and a minimum period of opening will normally be required before signing can be considered. For general establishments, these requirements are a minimum of four hours per day, 150 days per year.
- Destinations must demonstrate that they seek to attract visitors from outside the local area through publicity and advertising. Some evidence of this will be required in support of entitlement to signing. This might include leaflet distribution to tourist information centres, websites or participation in joint tourism marketing initiatives. Publicity must provide clear directions, and ideally a map.
- No highway signs will be permitted for destinations which have off-highway advertising signs other than those situated at the destination itself.
- It is expected that the facilities will be available without pre-booking and have no membership conditions attached.
- Signing for tourist destinations will not be permitted if the premises are located on and accessible from a main 'A' road and clearly visible to passing traffic.
- The establishment must fully comply with statutory regulations including planning, fire and environmental health regulations and the Equality Act.

- The establishment must have an access statement.
- There must be adequate parking on site or close by, including provision for visitors with disabilities. The signs should direct road users to the parking facilities rather than the destination itself.
- There must be adequate toilets on site or close by, including provision for visitors with disabilities.
- The establishment must be of general good quality and be well maintained.

11.5. The Application Process

An application form for tourist signing may be downloaded from the Kent County Council website or requested from the Road Safety and Active Travel team. The application form should be completed and submitted with a non-refundable payment. Application fees are subject to change, and details of the current application fee may be found on the Kent website page listing highways fees and charges.

Applications are internally processed, and we will check if a destination qualifies as a tourist destination and is eligible for signing. The decision on signing is entirely at our discretion. There is no statutory right of appeal.

If the application is successful, we will provide a quotation for progressing the detailed design of the sign(s) (location and sizes etc.). Additional fees will be payable for each unique sign design required. As part of the design fee we will provide another quotation for the cost of manufacturing the sign/s and installing them. All costs are to be borne by the applicant.

Any replacement for damaged or stolen signs will be at the tourist business' own risk. We will require advance payment for the replacement costs.

Signs on motorways and trunk roads are not the responsibility of Kent County Council, and a separate application should be made to National Highways.

11.6. Siting of Tourist Signs

Provision of flag type and direction signs to a tourist destination or facility should be considered from the nearest 'A' road. When the nearest 'A' road is more than three miles from the destination, signing should be considered from the nearest 'B' road. When more than one 'A' road is within three miles of the destination, signing should be provided from the most heavily used and easily accessible road. If all 'A' roads in the area can be considered significant access roads, then signing may be considered on all.

In exceptional circumstances, consideration may be given to installing signs where the criteria have not been met but where there is an evidenced traffic or safety issue due to traffic travelling to the destination which may be mitigated by the provision of appropriate signs.



Tourist facilities: Sign Diagram 2324 (S12-2-5)



Tourist facilities: Sign Diagram 2325 (S12-2-5)

If a sign cannot be provided in a safe, sensitive, and appropriate location, we may refuse installation.

11.7. Number of Signs

Given our approach in Kent to reducing sign clutter, the minimum number of signs should be provided to each destination. In general, signing should only be considered up to three signs away from the destination in urban areas, whilst up to four signs may be considered for rural destinations.

Where a new tourist destination is to be signed and there is already a sign to an existing tourist destination in the same direction, the existing sign should be replaced with a new sign pointing to both.

11.8. Mounting of Tourist Signs

New posts or any required alterations to existing signs or post arrangements should be funded by the tourism applicant. The general guidance in this manual relating to the mounting of signs applies to tourist signs.

11.9. Hierarchy of Signing

Large urban areas with qualifying tourist destinations and facilities may have “menu boards” provided.

These are signs to diagram 2215 (S12-28-8) varied to provide the urban area name in the top panel, with or without a directional arrow. Up to five destinations may be provided on the lower section of the board. Only attractions and facilities which already have tourist signing should be included on menu boards.

Destinations and facilities shown on the lower panel should conform to the following criteria for inclusion. Five destinations are the maximum; however, a lower number of destinations may reduce the size of the sign, and hence the post sizes, which may make siting the menu boards easier and cheaper. All destinations and facilities included on the “menu board” must be within the identifiable urban area described on the top of the board.

If more than five destinations are eligible for inclusion on the “menu board”, destinations and facilities should be ranked on visitor numbers, and the top five attractions selected for inclusion.

The installation of such large signs may be problematic in urban environments, where they can be unsightly and available sites may be limited. On high-speed roads the installation of such signs may be expensive as passively safe posts will be required. Where these signs cannot be installed safely, sensitively, or appropriately we may refuse their installation.



Sign to diagram 2215 (S12-28-8)

“Menu boards” should not be installed for urban areas with a population of less than 40,000. Towns and villages which would like to promote local tourist destinations or facilities may have signs installed to 2403.1 (S11-2-82) with up to three tourist symbols. See Chapter 12 for Village and Town Gateway signs.



Sign to diagram 2403.1 (S11-2-82)

Where “menu board” type signs are requested for smaller urban areas having a population below 40,000, the sign to diagram 2328 (S12-2-5) may be used. For other requirements regarding this type of sign see below.



Sign to diagram 2328 (S12-2-5)

11.10. Symbols

Signs to diagrams 2215, 2403.1 or 2328 may, at our discretion, include any of the symbols included in TSRGD Schedule 12 Parts 14 to 16 including permitted variants. Where a title is included, it may be either generic (e.g. "Castle") or destination specific (e.g. "Leeds Castle").

Any tourist destination or facility indicated by a symbol must meet the current criteria for tourist signing as outlined above and have an approved application within the last 10 years. If an existing application does not exist, a new application must be made before the relevant symbol is included.

11.11. Tourist Signs: Terms and Definitions

Signs installed to diagram 2328 (S12-2-5) should not include any descriptive terms which are not a historic, evidenced, and unchangeable fact. For example, terms such as "longest, tallest, largest" must not be used as this could be factually changed. Historical facts which can be challenged should not be included.

Terms such as "Historic Market Town", "Heritage Town" and "Historic Village" do not have any definable criteria, and so (although permitted by TSRGD) they should not be used in Kent.
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12. Miscellaneous Informatory Signs

All miscellaneous informatory signs should be designed in accordance with the TSRGD 2016, the TSM chapters 1 to 8 and the following Kent-specific guidance.

12.1. Village and Town Gateways

12.1.1. General

Informatory signs to diagram 2402.1 (S11-2-81) may be provided where a road enters a town or village. These boundary signs may be co-located with terminal signs indicating a change in speed limit or may be located independently. Where possible, to reduce street clutter, speed limit terminal gateways and village or town gateways should be co-located. Village and town gateways may also include road markings and other features included in Kent's gateway toolkit in Chapter 13.

Village or town gateways may be sited to suit the environment. Where there is no change in speed limit, forward visibility is not as critical as with speed limit gateways, although it should be ensured that sufficient verge width is available to accommodate any enhancement features used from the gateway toolkit. All signs and features should be placed where they are not obstructed by vegetation or other street furniture or where they will not cause an ongoing maintenance issue.

12.1.2. Village or Town Gateway Signs Incorporating Speed Limit Signs

Where a speed limit terminal sign to diagram 670 is mounted with a town or village boundary sign to diagram 2402.1 (S11-2-81) and an (externally funded) white gate is being used, the village boundary sign is usually fixed to the gate and the speed limit sign erected on a post behind it.

Where a speed limit terminal sign to diagram 670 is mounted with a town or village boundary sign to diagram 2402.1 (S11-2-81) and a white gate is not being used to support the signs, a grey (or in certain circumstances yellow) backing board may be used. To promote a Kent identity, backing boards should be rectangular in shape. The figure below shows a typical example. Existing curved/mantle variations should be phased out in time.



Signs to diagram 2402.1 (S11-2-81) Kent standard front and back assembly

If a speed limit terminal sign to either 670 or 671 is mounted back-to-back with the boundary sign (as in the above example), the backing boards should be designed to match the largest backing board to create a tidy appearance.

As drivers need to be made fully aware of the speed limit, it is important that any town or village boundary sign co-located with a speed limit sign is of a simple design. For this reason, a speed limit sign should not be mounted with a city, town, or village sign to diagram 2403.1 (S11-2-82). The speed limit sign must never be incorporated within the boundary sign.

Where a village or town boundary sign to diagram 2402.1 (S11-2-81) is co-located with a speed limit terminal, the following variants ONLY are permitted in Kent:

- “Welcome to” should be used as the standard introductory phrase or may be omitted.
- No Invicta Horse should be used on this sign
- A road safety message, “Please drive carefully” or similar appropriate, may be used below the village or town name or on the back of the sign, or may be omitted.
- The sign should be provided with a white background with black border and black text. No other colours may be used.
- Shaped “mantle” type backing boards should not be used.



Photo: The inappropriate use of the Kent Horse symbol and visually intrusive yellow backing board



Photo: The incorrect use of a shaped backing board and safety message

12.1.3. Village or Town Gateway Signs Without Speed Limit Signs

Where located independently from a change of speed limit, the village or town boundary sign to diagram 2402.1 (S11-2-81) should be used as shown below.



Signs to diagram 2402.1 (S11-2-81): Kent standard front and back assembly

To promote a Kent identity as part of the village or town boundary sign, the following variants **ONLY** are permitted:

- The sign should be rectangular in shape.
- The sign should be provided with a white background with black borders and text. No other colours may be used.
- The Invicta Horse symbol should be included, placed at the top centre of the sign. No other emblems or logos may be used.
- A road safety message, “Please drive carefully” or similar appropriate, may be used below the village or town name or on the back of the sign, or may be omitted.
- Up to three tourist attraction symbols may be added on a brown panel or may be omitted.

Terms such as “Market town”, “Historic market town”, “Historic village” or “Heritage town” do not have definable criteria and should therefore not be included on signs in Kent.



Photo: Road safety messages should not be provided as seen here without the village or town name

12.1.4. Area of Outstanding Natural Beauty Village or Town Nameplates.

An area of outstanding natural beauty village or town nameplate may be used to replace the standard village or town boundary sign. This unique style of sign has been developed by the Area of Outstanding Natural Beauty (AONB) team in Kent. Applications of this type of sign should be made through Kent Downs AONB unit by contacting mail@kentdowns.org.uk.

These signs may be provided instead of the village or town boundary signs to diagrams 2402.1 (S11-2-81) and 2403.1 (S11-2-82). No other type of sign may be used.



Photo: Example AONB sign

12.1.5. Twinning and Cinque Ports Signing

A sign for Twinning or Cinque Port status may be provided, to be located either below an existing or new village or town boundary sign or at an independent location to suit the site.

This sign should have a white background with black border and text. The sign should read, as appropriate, either:

- “Twinned with (up to 2 place names)”. This may include up to 2 flags or emblems.
- “A Cinque Port Town”. This may include up to 2 flags or emblems.



Photo: These complex village boundary signs should be placed independent of speed limit gateways

12.1.6. Application for Village, Town, Twinning, or Cinque Port Boundary Signs

All requests for new boundary signs should be made through the relevant town, parish, borough, or district council to the Road Safety and Active Travel team of Kent County Council.

12.1.7. Mounting of Village or Town Gateway, Speed Limit Gateway and Twinning or Cinque Port Signs

All signs should be mounted on standard tubular steel galvanised posts (wide based where lighting is required). For signs in conservation areas, the posts, sign backs and associated fixings should be coloured black.

Gateway signs may be mounted on ornamental gates, but this enhancement is not provided by our service. Ornamental gates may be requested and funded through parish or member funds; however, as they are purely decorative, the cost of maintaining them will not be met by Kent County Council, so the scheme promoter will need to secure funding to cover the cost of future maintenance as and when this is required. Ornamental gates should only be used at the entrances to rural villages and towns located within a 30mph or lower speed limit. Ornamental gates should not be provided at the entrances to urban or suburban areas.

To promote a consistent identity in Kent, we normally specify the 3 slat, 1800mm tall (1300mm above ground) Glasdon recycled plastic gate in white, although the size may be adjusted to suit site requirements.

12.2. Passing Place Signs

Signs to diagram 822 (S11.2.9) PASSING PLACE should be used only on the rural highway network; they are not appropriate for use on urban or estate roads. They are a useful tool in highlighting places where vehicles may stop to allow opposing traffic to pass them on narrow rural roads.

12.3. Concealed Entrance Signs

There are no prescribed signs in the TSRGD to indicate a concealed entrance, and therefore such signs should not be installed on the public highway.

12.4. Temporary Event Signs

Temporary signs may be provided for events which attract enough visitors to cause traffic management problems in the vicinity of the venue. These events may range in size from local fetes through to major sporting events and shows. These signs may be provided by external contractors (often by the AA or RAC), but they are required to make application to the Street Works manager for the area in which the event is to be staged.

Signing of this type in Kent should comply with the following standards:

- Temporary event signs will only be agreed where an appreciable traffic management benefit would result.
- Temporary event signs will only be considered from the point where visitors may become confused over directions to the destination. This will normally be from the point at which the route to the event (or parking) deviates from the route to the town, village or location shown on permanent direction signs.
- For exceptionally large events, which are expected to generate large volumes of traffic, additional signing may be needed. Such events may require considerable planning of traffic management with other agencies (e.g. police) so extended periods to agree the signing may be necessary.
- Events which are not open to the public should not normally be signed.
- Legends shown on signs must be concise, limited to the name of the event (e.g. Pop Festival, County Show) and must not include advertising logos, names of promoters or product names. Dates are not permitted within the sign legend, only days, abbreviated to three letters (e.g. Sat/Sun; Mon-Fri). AA or RAC logos are permitted in the corner of the sign face.

The application procedure, and requirements for organisations carrying out the work are as follows:

- The application should be sent to the Street Works manager in whose area the event is to be staged. In some instances, signing may be required in adjoining areas, and in these cases, the Street Works manager in whose area the event is to be staged will act as co-ordinator for approvals. In the case of major events, which may generate very large volumes of traffic, a team may be assembled to co-ordinate traffic management, and is likely to include other agencies (e.g. police). In these instances, the temporary signing requirements will be determined by the plans prepared by the team. Examples of such events are the County Show, the Open Golf Championship, and the Tour de France.
- Requests for agreement of temporary event signs on trunk roads and motorways should be sent to National Highways.
- Applications must be made by representatives of the organisation which will erect the signs, and must be made on the appropriate form, which may be obtained from the Street Works manager.
- Signs and fixings must be erected or removed within 72 hours of the event taking place. Any remaining outside this period will be removed by Kent County Council and the costs incurred will be re-charged to the applicant. For very large events, the timescale will be agreed by the team co-ordinating traffic management.
- Care should be taken to ensure the design and installation of temporary event signs does not impair visibility for road users or obstruct use of any carriageway, footway, or cycleway by road users. Kent County Council reserves the right to remove any sign or fixing which it considers a danger to road users without notice, and to recover the costs incurred from the applicant.
- It is expected that most temporary event signs will be erected on supports to existing street furniture. Where separate posts are required, notification will be required under the New Roads and Street Works Act 1991, and this may extend the timescales for approvals. Signs may not be erected on Belisha beacon posts, traffic signal posts, stop signs, in the vicinity of level crossings, on posts owned by utility companies or public transport operators. Signs may only be erected on lighting columns with prior approval from the Kent Street Lighting team.
- Applications for temporary event signs, other than for large events, must be received at least four weeks before the event is planned to take place. Applications received which give inadequate notice will be rejected unless a prior arrangement has been agreed with the local Street Works manager. In the case of major events, six months' notice will normally be required to enable co-ordination and development of traffic management plans with other agencies such as the police

- In the case of applications for five or fewer temporary event signs, applicants may assume approval and commence installation after receipt of an acknowledgement from the local Street Works manager that the application has been received. In all other cases, a formal approval must be received before work can commence.

12.5. Temporary Housing Development Signs

Signs to housing developments are permitted for both the construction and marketing phases of housing developments. These signs are semi-permanent in nature. Consequently, all the national and Kent specifications for permanent signs apply. In particular, the temporary event sign processes above do not apply to applications for these signs.



Example temporary housing development sign

Signing of this type is required to comply with the following standards in Kent:

- AA or RAC logos may not be displayed on the faces of these signs.
- Signs are only permitted where there are 30 or more bedrooms and must be removed immediately once 80% of the properties have been sold.
- Signs will not be agreed unless there is a defined traffic management need.
- Signs should contain only the name of the development and the house logo. They may not include the name of the developer or building contractor.

The application procedure, and requirements for organisations carrying out the work are as follows:

- The application for housing development signs should be sent to the relevant Street Works manager.
- All housing development sign applications will be subject to agreement by affected parish and/or town councils.
- Exceptionally, signs for construction traffic may be permitted, but only with the approval of the parish councils where residents are affected by construction traffic. The signs should be in place during the construction work and be removed immediately afterwards.
- The cost of all housing development signs will be borne entirely by the developer and designed and manufactured to Kent specifications, and an application fee may be charged to assess these.

- In contrast with temporary event signs, housing development signs often need to be in place for many months. Therefore, contractors will need to meet normal Kent standards if they wish to provide and install housing development signs. Full design drawings, fixing details and location plans will need to be submitted for approval (these will need to be to the same standard as required for a Section 278 agreement proposal).

In practice, availability of these signs has resulted in an increase in the number of unlawful signs which are designed to look like official signs. Such signs are frequently poorly made, badly erected and sign sites which do not qualify for official signs. They are also often attached to existing street furniture, often with a detrimental effect on road safety and safe passage of pedestrians. Kent County Council has the power to remove these signs as unlawful signs.

12.6. Unlawful Signs

Signs installed on the highway without proper authority are unlawful and may present a risk to highway users. Such signs may constitute an obstruction, present a physical hazard (for example, where an inadequately mounted sign falls and causes injury or damage), obstruct sight lines, or distract the attention of drivers.

As a highway authority, Kent County Council has powers under the Highways Act 1980 to serve notice on anyone installing such a sign requiring them to remove it, and to remove the sign if we have reasonable grounds for considering that it constitutes a danger to users of the highway. Section 149 of the Act states:

Removal of things so deposited on highways as to be a nuisance etc.

- (1) If anything is so deposited on a highway as to constitute a nuisance, the highway authority for the highway may by notice require the person who deposited it there to remove it forthwith and if he fails to comply with the notice the authority may make a complaint to a magistrates' court for a removal and disposal order under this section.*
- (2) If the highway authority for any highway has reasonable grounds for considering—*
 - (a) that anything unlawfully deposited on the highway constitutes a danger (including a danger caused by obstructing the view) to users of the highway, and*
 - (b) that the thing in question ought to be removed without the delay involved in giving notice or obtaining a removal and disposal order from a magistrates' court under this section, the authority may remove the thing forthwith.*

Highway managers should thus take a risk-based approach to unlawful signs, including arranging for them to be removed as soon as practicable if they present a danger to highway users.

13. Road Markings

13.1. General

Road markings, including road studs, are markings on the surface of a road for the control, warning, guidance, or information of road users. They include longitudinal and transverse markings, text, arrows, and other symbols, which may be applied using a variety of materials.

Road markings and road studs may only be placed on the public highway by the highway authority or with the consent of the highway authority (Section 132 of the Highways Act 1980). Authorities may only use road markings prescribed in the TSRGD or authorised by the Secretary of State. Some road markings may only be used if supported by a Traffic Regulation Order or other statutory provision and further information on how to go about requesting or making traffic regulation orders in Kent, may be obtained by emailing TRO@kent.gov.uk. Other road markings have legal implications in that not complying with them could constitute a traffic offence under Section 36 of the Road Traffic Act 1988 (regulation 10).

Road markings are prescribed in the TSRGD, and guidance on their design and use may be found in TSM Chapter 5. Where markings are used to supplement upright signs or placed in connection with traffic signals and pedestrian crossings, guidance may be found in the relevant sections of Chapters 3 and 6 of the TSM.

Road markings serve an important function in conveying to road users' information and requirements where this might not be possible using upright signs. They can often be seen when an upright sign is obscured and can provide continuing messages and additional information. Road markings can provide clearer carriageway definition, increase junction capacity, and make best use of available road space, improving safety and traffic flow.

Road markings have their limitations. They can be obscured by snow, parked vehicles, or queuing traffic, and can become worn or dirty quickly, especially where they are subjected to heavy traffic. For markings to be effective, they must be clearly visible both day and night, and it should be noted that they tend to become less visible during heavy rain or when viewed with dirty headlights or windscreens. A variety of factors can affect the visibility of road markings and should be taken into consideration by the designer. These include the choice of line width or mark-to-gap ratio (where more than one option is permitted), the retro-reflectivity of the marking and its contrast with the road surface, and the resistance of the material to wear.

In Kent, we keep our line marking under review to ensure their effectiveness and these are inspected at regular intervals along with our other assets. We do not have specific renewal intervals as the life of these assets varies greatly but we have a 50% worn investigation criteria and will refresh them based on assessed risk.

Kent County Council maintain all white road markings (except dog bone markings to private accesses) and some yellow road markings like junction boxes. Yellow road markings for parking restrictions and bus stop clearways are maintained by district/borough councils.

District/borough councils undertake the civil parking enforcement and receive the revenue funding for their refreshment. Some councils are quite proactive with lining refreshments, and some are less so. Kent County Council may undertake refreshments as more of a 'failsafe' if things aren't getting done and we need it to. However, there is no budget allocated for this so we should ask the district to undertake the work first.

13.2. Materials

The functional life of a road marking depends on several factors including whether the marking is over-run by traffic, the type and condition of the road surface on which it is laid, and the type of material used. The performance of road marking materials and testing is set out in BS EN 1436:2018.

Designers should select lining materials carefully. The materials used for road markings need to be durable, offer suitable skid resistance, be suitable for purpose, be cost effective, and have retroreflective qualities where appropriate.

In Kent the following materials should be used:

Location Type	Kent Preferred Thermoplastic Material	Retro-reflectivity Value	Min. Skid Resistance	Durability
C class and Unclassified roads - with and without street lighting	Hi-Brite White 100	100 mcd	45 SRV	-
	Hi-Brite Yellow	Non reflective	45 SRV	-
A and B roads - With street lighting	Hi-Brite White 100 AR	100 mcd	45 SRV	High
	Hi-Line Yellow 45	Non reflective	45 SRV	High
A and B roads - Without street lighting	Hi-Brite White 150/55 AR	150 mcd	55 SRV	High
	Hi-Line Yellow 45	Non reflective	45 SRV	High
Crash sites and hazardous locations (Where deemed appropriate)	Hi-Brite White 150/55 AR	150 mcd	55 SRV	High
	Hi-Line Yellow 45	Non reflective	45 SRV	High

Table 13.2

In addition to the above thermoplastic lining materials, methyl methacrylate (MMA) can be used. This material is highly durable and adheres very well to concrete and block paving materials. However, it is significantly more expensive (400%) and takes considerably longer to cure.

Its application is well suited to areas with a substantial amount of vehicle overrun like mini roundabouts and yellow box junction markings.

In Kent, we permit warning signs to be conveyed as preformed thermoplastic road markings. However, the use of these should be minimal and restricted to locations where there is an identified safety need to improve awareness of a post mounted sign or where one cannot be installed due to physical site constraints.

To keep usage low, all proposals for the use of preformed road markings should be approved by the Signs & Lines asset manager or agreed as part of the technical approval process.

13.3. Specification Properties

Road markings fall into two categories, those which must be illuminated with retro-reflecting material, and those which may be so illuminated, and guidance on which road markings fall into each category may be found in TSM Chapter 5 Table 12-1. Typically, road markings that have a guidance function are required to be reflectorised and yellow lining to waiting / parking restrictions do not.

The EN1436 recommends a minimum reflectivity class for any type of lit road of R2 (100 mcd) and for unlit or partially lit roads it recommends R3 (150 mcd). Historically Kent County Council, like other authorities locally, have specified the lower Class R2 for both lit and unlit locations on the local road network. We have upgraded this specification for use on unlit A and B roads and recommend designers consider the higher class of reflectiveness at potentially hazardous locations.

Reflectorisation is achieved by the addition of glass beads to the markings. These reflect light from vehicle headlamps back towards the driver, making the markings appear much brighter than they would otherwise. It is however a trade-off between the reflectivity properties and the skid resistance, as a gain in one property is often achieved at the expense of the other.

The minimum skid resistance class specified for white and yellow road markings on local roads should be Class S1 (45 SRT). Designers should consider using a material with higher skid resistance of Class S3 (55 SRT) at potentially hazardous locations so where braking or turning is likely to occur on markings which cover a large area of the trafficked road surface. This may include transverse yellow bar markings, yellow box markings, zebra crossings, arrows, texts, and symbols particularly in locations with higher speeds and severe bends or gradients.

A higher skid resistance is achieved by the addition of aggregates to the marking material.

13.4. Statutory Colours

Road markings are prescribed in the colours white, yellow and red.

In conservation areas and other heritage sensitive situations the standard colour of yellow may be changed to “primrose yellow” (BS381C No. 310). Deep cream, although permitted under the regulations, should not be used in Kent.

Black material for masking road markings (for example, during road works) must be temporary (less than 3 months) and must conform to BS 7962:2000 with Amendment 1, dated 2004, or an equivalent EEA Standard.

13.5. Application of Markings

Where it is proposed to apply road markings to existing road surfaces, it will be necessary to assess the condition of the road pavement and to consider whether the surface first needs to be renewed.

Where a road marking is laid parallel to a kerb, it should be a minimum of 225mm from the kerb face to maintain a clear drainage channel at the edge of the road, and consideration should be given to providing gaps adjacent to gullies or other highway drainage features.

Road markings should not generally exceed 6mm in overall height to prevent interference with surface water drainage. Ribs of raised markings may be higher as the markings will incorporate drainage gaps. When road markings are refreshed, the height of the existing line underneath may mean a second layer could exceed 6mm; in this instance the existing road marking should be removed before the new marking is applied.

Where lining within the limits of high friction surfacing (HFS), the line marking should be provided first, masked over while the HFS is applied around it and the lining topped up if necessary. Line marking should not be laid directly on top of HFS. However, if using a coloured MMA surfacing, the markings should be applied on top of the coloured surface.

13.6. Removal of Markings

It is essential that all road markings which are obsolete be removed as soon as possible, particularly where they might give a misleading or contradictory indication. Obsolete road markings should be completely removed by hydro-blasting, or mechanical scabbling to grind off thicker markings. Hot compressed air lances, overpainting or over banding with black lining material or tape (other than at temporary road works) should not be used.

Where changes to a road layout require the removal of large quantities of road marking, consideration should be given to micro-surfacing the area, as this may be cost-effective and achieve a better result.

13.7. Centre Lines

Centre lines dividing opposing flows of traffic on carriageways 40mph or less are provided using lane lines to diagram 1008 (S11-4-6), which is a 2m line and 4m gap or warning lines to

diagram 1004 (S11-4-2) on the approach to a hazard, which consists of the opposite, a 4m line and a 2m gap.

Centre lines dividing opposing flows of traffic on carriageways over 40mph are provided using lane lines to diagram 1008.1 (S11-4-7), which is a 3m line and 6m gap or warning lines to diagram 1004.1 (S11-4-3) on the approach to a hazard, which consists of the opposite, a 6m line and a 3m gap.

It is evident in Kent, centre lining to diagram 1004 has been overused in place of diagram 1008. This uses more material and subsequently increases costs. Designers and those undertaking maintenance activities should be aware of this and put back the correct lane line marking for each scenario.

Detailed guidance on the use of each line type is available in TSM Chapter 5, Part 2.

13.8. Edge of Carriageway Lines

Where there is a need to highlight the edge of carriageway, consideration should first be given to the provision of edge of carriageway markings to diagram 1009A, 1009B, 1010 1012.1 or 1012.2., incorporating ribs if appropriate.

In Kent, edge of carriageway markings are not normally installed on roads where there is street lighting.

Edge of carriageway markings are generally provided where there are no kerbs, where they can be very effective at keeping vehicles on a clearly defined path. Where short sections of kerb have been installed to assist drainage, edge of carriageway markings should be provided in advance and past the hazard.

Where there is an existing road safety issue at a hazard, the edge of carriageway markings may be enhanced by the provision of road studs.

Where edge of carriageway markings are provided at a hazard and where the carriageway is less than 5.5m wide, the centreline markings should be removed.

13.9. Vehicle Access Markings / Dog Bones

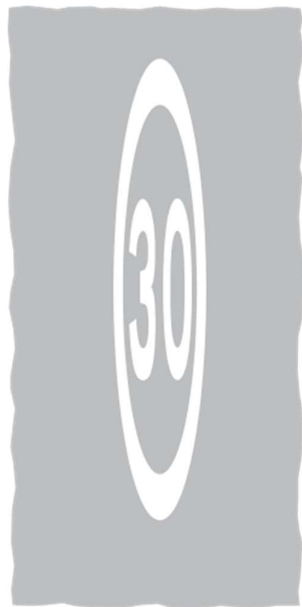
Vehicle access markings/dog bones to diagram 1026 may be used to highlight the presence of a crossing point, access road or driveway. Although both Kent County Council and borough/district authorities have permissive powers to install these markings on the highway, neither we nor they have the power to enforce them. They are advisory markings only and have no legal standing. As such, we will only install these markings as a safety measure, particularly at drop kerb pedestrian crossing points. Where these are provided across private accesses, this is at the discretion of the borough/district authority.

Vehicle access markings may only be positioned where there is an approved dropped kerb and should only be provided and maintained where there is a persistent obstructive parking issue.

The resident or owner of a property may apply for a vehicle access marking to be installed or refreshed by contacting their borough/district council. As these markings are for the benefit of the applicant the costs incurred are to be borne by the applicant.

13.10. Speed Limit Roundels

Road marking roundels to diagram 1065 (S10-2-9) may be used to supplement upright signs, or on their own as repeater signs or traffic calming features in 20mph zones. The road marking roundel must not be used on its own where a speed limit commences; if provided it must be used in conjunction with an upright terminal sign to diagram 670, 674, 675A or 676 (TSRGD Schedule 10 General Direction 5).



Road marking to diagram 1065 (S10-2-9) indicating maximum speed limit

As with the upright sign, the marking must not be used as a repeater on a lit road subject to a 30mph speed limit (TSRGD Schedule 10 General Direction 2). The table below sets out where road marking roundels may be placed with speed limit repeaters.

Speed Limit	Carriageway roundel		
	Use	Exception	Location
20mph	Should be installed	None	Should be placed in pairs with alternate speed limit repeater signs to suit the environment
30mph street lit	Not permitted	Not permitted	Not permitted
30mph non street lit	Should be installed	May be omitted if they are not in keeping with the environment	Should be placed in pairs with alternate speed limit repeater signs to suit the environment
40mph	Not normally used	Should only be used where observation of the speed limit is poor	Should be placed in pairs with alternate speed limit repeater signs to suit the environment
50mph	Exceptionally used	Should only be used where observation of the speed limit is poor or there is significant hazard within the speed limit	Should be placed in pairs with alternate speed limit repeater signs to suit the environment or should be placed in pairs adjacent to the speed limit roundels on the approach to a hazard
60mph	Not permitted	Not permitted	Not permitted

Table 9.5 – Speed Limit Road Markings

The larger marking (7500mm) should be used at the start of a speed limit if approaching traffic is subject to a limit higher than 40mph, otherwise the smaller size (4300mm) should be used.

The size of repeater markings should be appropriate to the speed indicated, with the smaller roundel being used where the limit is 40mph or less.

At an enhanced speed gateway, a road marking roundel to diagram 1065 showing the appropriate speed should be placed on each side of the carriageway. The exception to this is where the national speed limit applies; in this case, a single roundel should be placed on the left-hand side (near side) of the road as viewed by a driver entering the lower speed limit.

13.11. Coloured Surfacing

There is a need to differentiate between high friction surfacing (HFS) required for its skid resistant properties, and coloured surfacing required for aesthetic purposes to highlight hazards on the highway.

Technical guidance on the use of HFS will be available in the Kent Pavement Construction and Maintenance Manual. This asset is a Highways Asset Management and Inspections team asset and falls outside the scope of this document, but it is worth noting that this material will only be used where it is a legal requirement to do so or where its skid resistant properties are required to address a safety issue.

The use of coloured asphalts and coloured lining materials should be kept to a minimum. There is no legal requirement, and generally no need, for bus lanes or cycle tracks to be surfaced in a contrasting colour to the road or footway. Where coloured material is used, its use should be

restricted to the start and end of lanes/tracks and to junctions or other points of potential conflict.

Where decorative coloured surfacing has been provided and there is no safety justification for its use, the cost of maintaining it will not be met by Kent County Council, the scheme promoter will need to secure funding to cover the cost of future maintenance as and when this is required.

Coloured surfacing (MMA) may be installed at the following gateway locations:

- Rural gateways where the speed limit is 40mph or lower.
- 30mph urban sites where the entry road has been of a rural nature for some distance on the approach.

Coloured surfacing (MMA line marking material) should not be used where speed limits are 50mph or higher.

Where a speed limit gateway into a 30mph speed limit is separated from a village gateway and the gateways are within 250m of each other, coloured surfacing should be installed at the speed limit gateway only.

MMA cold applied line marking products such as PumaTrack, should be used in preference to HFS in Kent, when colour is the desired property in locations 40mph or lower. Designers must ensure that a textured finish is provided with an appropriate skid resistance (PSV 45 – 55) for each application by specifying that the material is laid with a rolled finish or by the application of aggregates.

To support a consistent appearance of gateways across the county, red surfacing should be used, except within a conservation area or Area of Outstanding Natural Beauty (AONB), where buff coloured surfacing should be used.

Where used in Kent, an area of coloured surfacing located at a gateway should be 10m in length with the 7500mm high roundel.



Photo: Red MMA surfacing used at a speed limit gateway



Photo: Buff MMA surfacing used inappropriately outside of a conservation area

13.12. Gateway Toolkit

The following features may be provided at speed limit, village, or town gateways, as specified below. No other variants are permitted.

Virtual Narrowing

Only hatched edge line markings to diagram 1040.4 may be used. This type of feature may only be installed at 30mph and 40mph sites.

Gateway “Dragons Teeth” Markings

“Dragon’s teeth” markings are not a prescribed road marking and should not generally be used in Kent except where there is a need to increase visibility to address a significant safety issue and more traditional engineering solutions would not be practicable or have proved unsuccessful. Approval must first be obtained through the technical approval process.

Virtual Humps

Virtual humps may be used in 30mph and 40mph gateway features. If required, they may also be continued throughout the speed limit co-located with speed limit repeater signs as a speed management feature in poorly observed limits.

Ghost Islands

Ghost islands may be used in sites where the speed limit is 20mph and where there is low cycle and motorcycle use, or in sites where the speed limit is 30mph, traffic flows are low, and the site is not on an A or B road.

Vertical and Horizontal Gateway Features

Physical measures such as horizontal and vertical deflections should not be used in isolation. Where there is a continuation of features throughout a speed limit as a speed management system, the first feature may be incorporated within the gateway feature. All vertical and

horizontal features should be designed in accordance with the [LTN 1/07 - Traffic Calming](#) and Using Traffic Calming to Manage Speed in Kent.

13.13. SLOW Markings

In Kent, SLOW markings to diagram 1024 should only be used where co-located with an appropriate warning sign.

When the marking is used in isolation it does not convey a meaningful message to the road user, and therefore is unlikely to have any significant effect. Overuse of this marking also leads to lack of observation. As stricter criteria regarding installation of warning signs are detailed in Chapter 8 of this guidance, there should be a reduction of the SLOW marking use.

13.14. KEEP CLEAR Markings

KEEP CLEAR markings tend to be over-used and should be used only where traffic waiting at one junction, blocks traffic at another (not obvious) junction, and waiting times would otherwise be unacceptable. KEEP CLEAR markings may also be used to prevent obstruction of the access to a premises, but only where the premises is used by the general public. Where needed, they should be installed in accordance with TSM Chapter 5 section 11.4.

13.15. Camera Markings

Camera markings are the responsibility of the Kent and Medway Safety Camera Partnership (KMSCP). They are installed by specialist contractors, as they require the use of special materials and certification of conformity for enforcement purposes.

Where planned highway works, typically resurfacing, will affect camera markings, the team planning the works should give the KMSCP advance notice by emailing kmscp@kent.gov.uk and providing a cost code to which the cost of replacing the markings should be charged. This will enable the KMSCP to arrange for their specialist contractors to programme in the replacement of the markings.

13.16. Yellow Box Markings

Yellow box markings are a strategic tool used to maintain traffic flow. They are mainly used on the principal road network but may be used on lower classes of road. Guidance on yellow box markings may be found in TSM Chapter 5, Section 8.

Schedule 9 Part 6 of TSRGD 2016 defines two purposes for the yellow box marking to diagram 1043 or 1045:

- to mark an area of carriageway conveying the prohibition that a person must not cause a vehicle to enter the box junction so that the vehicle must stop within the box junction due to the presence of stationary vehicles (S9-7-11). A vehicle waiting to turn right at a junction between two or more roads may stop within the box junction for so long as it is

prevented from completing the right-turn by oncoming vehicles or other vehicles which are stationary whilst waiting to complete a right-turn.

- when used at a road narrowing, conveys the prohibition that a person must not cause a vehicle to enter the box junction so that the vehicle must stop within the box junction due to the presence of oncoming vehicles or other stationary vehicles beyond the box junction.

A Traffic Regulation Order is not required to install a yellow box marking, although the views of the police should always be sought before installation. As these markings are not enforced by the parking wardens of local district/borough councils, Kent County Council maintain these yellow markings.

In Kent, yellow box markings have historically been overused and are expensive to install and maintain, often requiring road closures at highly trafficked sites. Approval for use of these markings must first be obtained through the technical approval process.

To maintain the usefulness of yellow box markings and to keep complex maintenance to a minimum, designers should be prepared to justify the decision and the marking should only be proposed for installation at the following locations:

- Fully signalised roundabouts where the signal operation and capacity are severely compromised by queuing traffic.
- Signalised junctions where the signal operation and capacity are severely compromised by queuing traffic.
- Non-signalised junctions where strategic routes meet.
- A series of yellow box markings may be considered where a succession of junctions gives rise to queuing back with a minimum of 20m gap between successive boxes.
- Locations where police, fire or ambulance stations or hospitals access directly onto a highway when requested by the relevant emergency service.

Yellow box markings should not be used at the following locations:

- Roundabouts which are not fully signalised.
- Junctions of strategic routes with minor roads (A KEEP CLEAR marking to diagram 1026 may be more appropriate at these locations).
- Non-signalised junctions where there are a high number of right-turning vehicles, as these markings are not effective in this situation.

13.17. Transverse Bar Markings

Transverse bar markings are prescribed for use only on approaches to roundabouts on motorways and dual carriageways subject to the national speed limit. These markings to

diagram 1067 should not be used in an attempt to reduce speeds on approach to other hazards and should be considered as an enhancement, only after all other signage is checked and provided appropriately.

Transverse bar / countdown hazard identification markings in other colours such as red, are not prescribed road markings and should not generally be used in Kent except where there is a need to increase visibility to address a significant safety issue and more traditional engineering solutions would not be practicable or have proved unsuccessful. Approval must first be obtained through the technical approval process.

13.18. Yellow Waiting and Loading Restriction Markings

The use of yellow lines to indicate waiting and loading restrictions should be kept to a minimum: careful design may remove the need for Traffic Regulation Orders and associated yellow lining.

In conservation areas and environmental improvement schemes, waiting restriction lines should be 50mm in width and “primrose yellow” (BS381C no. 310) in colour to minimise visual intrusion, and similarly on the occasional instance where waiting restrictions are required in a village. In all other locations, the 75mm or 100mm width variants and standard yellow colour should be used.

13.19. Road Studs

13.19.1. General

Retroreflective road studs, also known as “cats’ eyes”, are frequently used to supplement longitudinal road markings. They operate by reflecting the light from approaching vehicle headlamps and can be particularly effective in wet weather conditions and in areas prone to fog, when the effectiveness of road markings may be reduced. Guidance on the use and colour of road studs may be found in TSM Chapter 5 section 4.

The TSRGD (S9-8-19 and S9-8-11) requires white road studs to be used in conjunction with the double white line system to diagrams 1013.1 and 1013.5 (S9-6-23 and S9-6-24 respectively). If road studs are not present, the road markings cannot be legally enforced.

Elsewhere, (not including motorways) there is no statutory requirement for highway authorities to provide retroreflective road studs. They are recommended for use on high-speed all-purpose roads (dual carriageways), even when street lighting is provided.

In Kent, we generally install road studs on all ‘A’ roads, except where these have street lighting or are within 30mph speed limits. On other roads, we would generally install retroreflective road studs only in exceptional circumstances, for example as part of a safety improvement scheme.

Where a road is to be resurfaced, the need for road studs should be reviewed, and they should not automatically be replaced.

13.19.2. Types of Road Stud

Road studs may be permanent or temporary.

Temporary road studs are usually self-adhesive. Self-adhesive studs should be removed upon completion of road works.

Permanent road studs in Kent should generally be Halifax-type depressible road studs mounted in a base unit embedded in the road surface. Retro-reflective face studs should be used (not glass lens).

There are many new products on the market, and the design of new schemes often provides a chance for more innovative use of products and materials as these technologies develop. The use of new types of road stud may be considered subject to trials and technical approval.

All retroreflective road studs used on the public highway must satisfy the performance requirements specified in TSRGD Direction 7 by reference to the appropriate classes set out in parts 1 and 2 of BS EN 1463. Type approval by the Secretary of State will continue to be needed for studs outside the scope of this standard, for example for light emitting studs.

13.19.3. Installation of Road Studs

All road studs should be installed in accordance with the manufacturer's instructions.

Location plans should be provided to the contractor detailing the road markings which are to be supplemented by road studs, the extent of their installation, their type, colour, spacing, and any other relevant details. Road stud quantities, broken down by type where appropriate, should be included in the note's column of each road marking drawing.

Cutting into the surface course of the road pavement for the installation of road studs should be by milling or diamond cutting methods only. The maximum prescribed height for a depressible stud is 25mm and for a non-depressible stud 20mm.

13.19.4. Maintenance of Road Studs

Once road studs have been installed on Kent's highway network, we will aim to maintain them and replace any which are missing or defective. An exception to this may be where there has been a change to the road layout or speed limit, or where a section of road is to be resurfaced, and an assessment has indicated that road studs are no longer needed. In such cases, consideration should be given to removing all the road studs in an area to avoid patchy provision.

Priority for replacement will be given to:

- Sites with double white lines, where road studs are a legal requirement.

- Sites where multiple studs are missing along a section of road where there are significant hazards in the road, for example at a sharp bend.

13.19.5. Removal of Road Studs

Where a line of road studs is no longer required due to changes in the road layout, the housings should be removed as soon as possible, since any housings left in place can give a misleading indication of the road layout ahead. Reinstatement of the road surface must be carried out using permanent (not temporary) material.

13.19.6. Road Studs at Pedestrian Crossings

Road studs to TSRGD diagram 1055.1 are arranged in two lines across the carriageway. They delineate the limits of the crossing. Legally, they may be omitted at zebra crossings because the stripes indicate the extents of the crossing and similarly at parallel crossings because of the stripes and use of diagram 1055.3 for this purpose. However, to be legally enforceable, road studs to diagram 1055.1 must be provided at all other crossings.

In accordance with the Kent County Council Design Guide for Pedestrian Crossing Facilities, all controlled crossing places should be marked with purpose-made studs, in accordance with the Regulations. These studs need to be selected with due regard to their skid resistance and the danger to cyclists and motorcyclists of losing control, particularly on bends. Kent prefers the use of surface textured, 100mm square metal studs.



Photo: Example of a surface textured pedestrian crossing stud

Road marking material applied to the surface of the carriageway, although permitted by the TSRGD will not be acceptable in Kent. The only exception to this is where the absence of a crossing facility may endanger pedestrians then, as a temporary measure for no more than one month, a crossing may be delineated with road markings that comply with the required dimensions for studs.

Further information is available in TSM Chapter 6 and a current copy of the Kent County Council Design Guide for Pedestrian Crossing Facilities is available upon request from the Traffic Operations and Technology manager.

14. Highway Mirrors

Kent County Council allows limited use of traffic mirrors on the public highway at specific locations to assist in the delivery of the key objective of reducing road casualties.

Kent County Council will only consider traffic mirrors on the public highway where all the following criteria are met:

- There is a crash history relating to a lack of visibility.
- Visibility for vehicles emerging from the side road is severely restricted.
- A visibility improvement scheme is not feasible.
- Visibility cannot be improved by removing hedges, walls, trees, or other obstacles.
- The speed limit on the major road is above 30mph.
- There are no other reasonable standard highway improvements possible.

Kent County Council will bear the costs of installation and maintenance of a traffic mirror if introduced as a casualty reduction measure. However, if a County Member wishes to fund a mirror or if a member of the public requests a traffic mirror to assist with exiting private property, then they would have to fully fund the work including the full investigation, approval, and any future maintenance costs. An application may be made upon enquiry to Kent County Council's Road Safety and Active Travel team.

Mirrors may be sited off the highway on private land, and that is a matter for the landowner and the person who places the mirror. Planning permission may be required, and any applicant should be directed to the local planning authority. Should any private mirror overhang a highway maintainable at public expense, then a licence is required from Kent County Council. Should Kent County Council ascertain that road safety is being compromised because of a private mirror being placed near to the public highway, the County Council will use its powers to remove the mirror.

General purpose traffic mirrors for providing additional visibility must be convex with a single colour frame (black/grey/yellow/ white) in accordance with TSRGD Schedule 11. Part 2. Item 75.

If mirrors are to be attached to signal head poles, Trixi Mirrors must be used (convex 300mm – 500mm dia.) in accordance with TSRGD Schedule 14. Part 1. Para 27 and you must have prior approval from the Traffic Operations and Technology manager.

In Kent, highway mirrors are not to be attached to street lighting columns.

15. Pedestrian Guardrailing

Pedestrian guardrailing is intended to channel pedestrians and/or cyclists to designated crossing points, allowing movement of all road users to be better managed, especially at signal-controlled crossing points and junctions. Guidance on its use may be found in DfT Local Transport Note 2/09, *Pedestrian Guardrailing*.

Whilst the use of pedestrian guardrailing in appropriate locations can contribute positively to highway safety, it has historically been over-used, placing unnecessary restrictions on people's freedom of movement and adding to street clutter.

Given the current desire to improve the street scene and make the public realm a more pedestrian- and cyclist-friendly environment, the use of pedestrian guardrailing should be carefully considered.

New highway improvement schemes should only provide pedestrian guardrailing where there is an identified and evidenced need, and installation of new guardrailing should not be considered if other suitable safety measures can be used instead.

Where existing pedestrian guardrailing is assessed as unnecessary it should be removed. A road safety assessment should be undertaken prior to any removal, and guidance on this may be found in LTN 2/09. Existing pedestrian guardrailing subject to minor damage should be replaced on a like-for-like basis except where it has been assessed as unnecessary.

There are three general types of pedestrian guardrail and in Kent we use all of them: PG1 is a full height panel and PG2 has a small visibility gap at the top of the panel.



PG 1 (Full)

PG 2 (Letterbox)

The third type uses staggered infill bars for improved visibility. It is generally used on curvatures and angled approaches near schools and in other busy pedestrian locations.

There are variations on this staggered design, suitable to different road speeds and viewing angles: Low (V2), moderate (V4), and high-speed roads (V8). Initially these designs were patented by the designer so only he could manufacture them but now licenses exist for other

companies to manufacture Visirail under their own unique product names such as Optirail and Visiflex for example.



Example Fast-Vis4 product from fastlinesteel.com

It is for designers to decide which type of guardrailing is most appropriate for use at each individual location being assessed.

Pedestrian guardrailing should generally be left with a galvanised steel finish but may be powder coated black in conservation areas. The use of ornate pedestrian guardrailing should be kept to a minimum but may be acceptable in conservation areas and town centres.

16. Approvals and Consultations

16.1. Technical Approval

In Kent we have introduced a technical approval process for all schemes which will lead to new highway assets being added to our inventory or which include alterations to existing highway assets. It includes both in-house and developer schemes but does not cover like-for-like maintenance work such as the replacement of a damaged sign or post or the refreshing of road markings.

The overarching aim of the technical approval process is to apply sound asset management principles to the design of new highway assets and alterations to existing highway assets.

This is achieved by:

- Encouraging designers to consider lifecycle costs and maintainability as part of the design process, and to balance these against other drivers such as safety and local character.
- Giving asset managers a greater say in the design of assets to be added to the highway inventory, using their and their teams' expertise to guide designers towards options which offer good whole-life costs and avoid known maintenance issues.

To ensure technical compliance and good practice, every scheme

- which adds, removes, or alters large numbers/lengths of unlit signs, road markings or pedestrian guardrails or proposes these for adoption or
- includes signs or markings not prescribed in the TSRGD 2016 or proposed in accordance with the Kent preference as detailed in this manual

should be submitted for technical approval, and no works started on site until any issues have been resolved and approval has been granted.

Copies of the technical approval forms and guidance are available to our staff on the in-house website KNet.

16.2. Structural Approval

In addition to the general technical approval process, the structural design of some traffic signs, their supports and foundations must be approved by our Structures team. This includes, but is not limited to, the design of:

- Portal and cantilever signs and/or signal gantries
- Traffic sign/signal posts of more than 7m in height

It should be noted that the Structures team does not have the resources to provide a design service: all structural designs must be carried out by a qualified structural engineer, with the responsibility for the design remaining with the designer. The aim of the approval process is simply to identify any aspects of the design which, based on technical knowledge and experience, would appear to present a potential risk to highway safety if insufficiently designed, constructed or maintained in the future.

Full details of requirements are available on request from the Structures team, and designers are strongly advised to contact the Structures team at an early stage in the development of their proposals.

The approval of the Structures team will also be required for any proposals affecting a highway structure, including the fixing of signs, or installing sign supports on bridges, retaining walls or other structures.

Any works requiring the approval of the Structures team must not be started on site until approval has been granted.

Any sign assembly which is 4 metres or greater in height (measured from ground level to top of sign face) must have a structural check carried out by a qualified structural engineer and be approved by our Structures team. No sign of this size may be installed until the structural check has been provided and approved.

16.3. Other Approvals and Consultations

Depending on the location and the type of scheme proposed, it may also be appropriate for the designer of a scheme including traffic signs to consult with other Kent County Council teams and external bodies. These may include borough/district conservation officers for schemes in conservation areas.

17. The Design Pack for the Contractor

17.1. General

The design pack for any scheme including signs and/or road markings should include the following:

Signs

- Location plan
- Sign face design drawings for all non-standard signs
- Sign schedule
- Take-down schedule

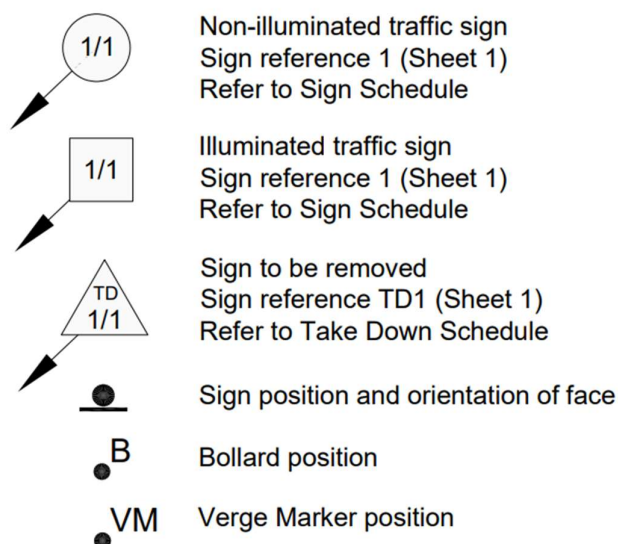
Road markings

- Location plan with quantities

All documents should be checked and approved in line with the designer's team's or organisation's checking procedure and any health and safety information supplied.

17.2. Sign Location Plans

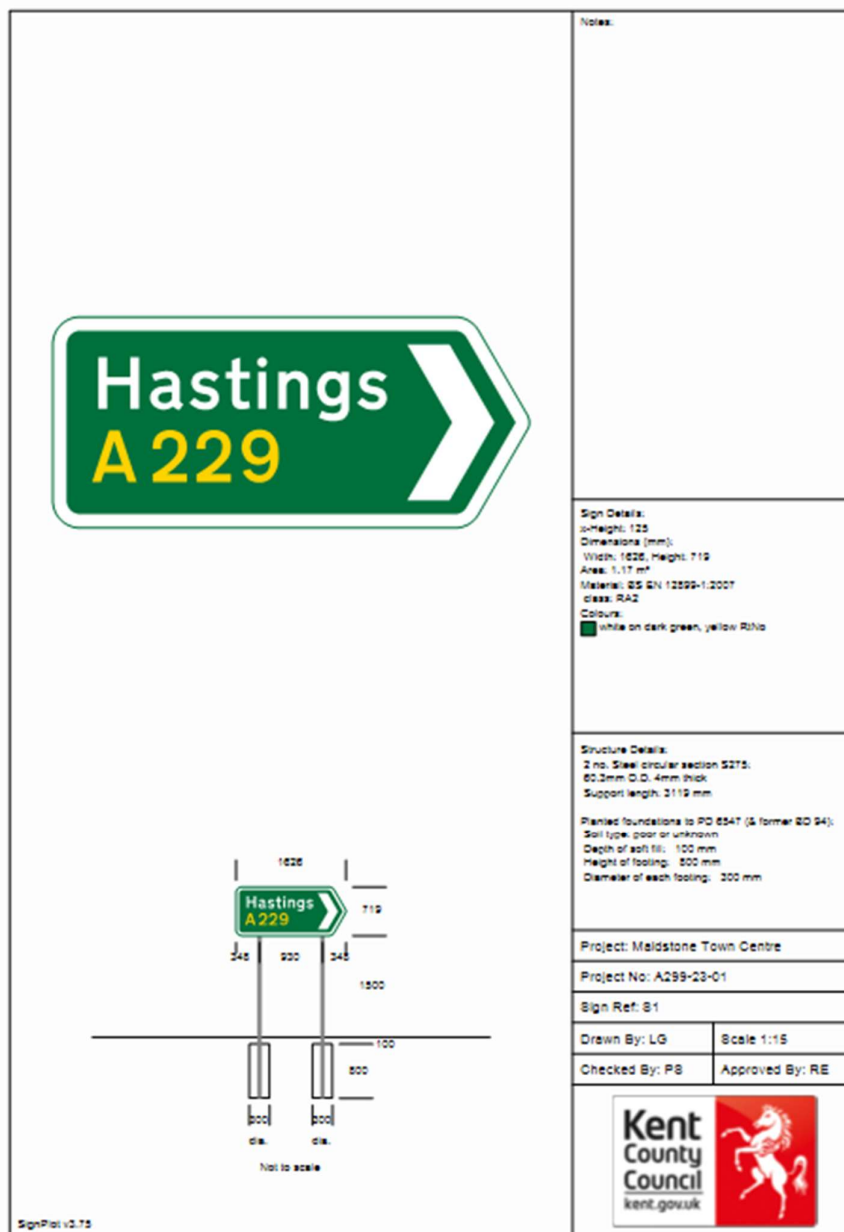
Sign location plans should be provided detailing the location and orientation of signs to be removed (take-downs), signs to be installed, cleaned, or rotated. They should be denoted by the following symbols:



17.3. Sign Face Drawings

Sign face drawings should be provided for signs that are not standard and require specific wording or numerals.

Signs face drawings should be in A4 portrait format, and of a suitable scale to ensure that the sign design is legible. The drawing should include a title block, the sign face drawing, panel details and post design details as required. The sign reference/references should be clearly stated on the drawing and any other important or unusual information that needs highlighting provided in the notes.



Example of a sign face drawing

Extracts from the standard sign schedule are shown below.

Traffic Signs Schedule - Unlit Signs

Traffic Signs Schedule - Lit Signs

		Take-down Schedule Unlit Signs (Amey)			PROJECT TITLE SCHEME REF			
SIGNS					NON-SIGNS	TAKE-DOWN OPTION		ADDITIONAL REQUIREMENTS
REFERENCE NUMBER	DIAGRAM NUMBER (TSRGD 2016)	SIGN TEXT / IMAGE	NO. OF POSTS	POST LOCATION	DESCRIPTION	REMOVE AND TAKE TO APPROPRIATE RECYCLING UNIT	REMOVE AND RETAIN FOR FUTURE USE ON SCHEME	

Take-down Schedule - Unlit Signs

		Take-down Schedule Lit Signs (Bouygues)			PROJECT TITLE SCHEME REF						
SIGNS						NON-SIGNS	TAKE-DOWN OPTION		ELECTRICAL DETAILS		ADDITIONAL REQUIREMENTS
REFERENCE NUMBER	DIAGRAM NUMBER (TSRGD 2016)	SIGN TEXT / IMAGE	NO. OF POSTS	ILLUMINATION	POST LOCATION	DESCRIPTION	REMOVE AND TAKE TO APPROPRIATE RECYCLING UNIT	REMOVE AND RETAIN FOR FUTURE USE ON SCHEME	GAZ REFERENCE	POWER SUPPLY REQUIREMENTS	

Take-down Schedule - Lit Signs

References

Government Publications

[Traffic Signs Regulation and General Directions 2016](#)

[Traffic Signs Manual Chapter 1 – Introduction \(2018\)](#)

[Traffic Signs Manual Chapter 2 – Primary Route Destinations in England by Region](#)

(Note: Chapter 2 has yet to be updated)

[Traffic Signs Manual Chapter 3 – Regulatory Signs \(2019\)](#)

[Traffic Signs Manual Chapter 4 – Warning Signs \(2018\)](#)

[Traffic Signs Manual Chapter 5 – Road Markings \(2019\)](#)

[Traffic Signs Manual Chapter 6 – Traffic Control \(2019\)](#)

[Traffic Signs Manual Chapter 7 – The Design of Traffic Signs \(2019\)](#)

Traffic Signs Manual Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations (2009)

[Part 1: Design](#)

[Part 2: Operations](#)

[Part 3: Update \(2020\)](#)

[LTN1/94 -The Design and Use of Directional Signs](#)

[LTN 1/07 - Traffic Calming](#)

[LTN 2/09 - Pedestrian Guardrailing](#)

[DfT Circular 01/2007 – Use of Speed and Red-light Cameras for Traffic Enforcement: Guidance on Deployment, Visibility and Signing](#)

[The Design Manual for Roads and Bridges \(DMRB\)](#)

Kent County Council

[Highways Asset Management Plan 2021/22 to 2025/26](#)

[Appendix A: Summary of Asset Condition](#)

[Appendix B: Service Level Risk Assessments](#)

[Appendix C: Forward Works Programme](#)

The Kent Pedestrian Guardrailing Policy 2012

Policy for the use of mirrors on the highway in Kent - Cabinet Paper Nov 2012

Using Traffic Calming to Manage Speed in Kent. Available at

https://www.kent.gov.uk/_data/assets/pdf_file/0016/13039/Making-it-Happen-Using-traffic-calming-to-manage-speeds-in-Kent-practitioners-guide.pdf

The Kent County Council Design Guide for Pedestrian Crossing Facilities. Issue 2.1, 2021

Other References and Sources of Guidance

<https://uk.glasdon.com/>

<https://www.fastlinesteel.co.uk/>

<https://www.furnitubes.com/>

<https://www.tmp.solutions/>

BS EN 12899-1:2007. Fixed, vertical road traffic signs.

BS EN 1436:2018. Road marking materials - road marking performance for road users and test methods.