

## **GUIDE TO DESIGNING ROAD MARKING INSTALLATIONS IN LINCOLNSHIRE**

**HGD NO: 4.7**

**POST: PRINCIPAL ENGINEER (LIGHTING,  
SIGNS AND CAD)**

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### **1. Introduction**

The purpose of this document is to promote consistent and high standards of design for the installation of new road markings in Lincolnshire as well as promoting the review of existing markings when considering any maintenance or alteration to existing installations.

This document covers the most commonly encountered feasibility and design-related decisions when considering road marking alterations/additions in Lincolnshire and is provided to assist all those involved in planning and designing new/replacement road marking installations.

This document does not replace national regulations, standards and guidance. It complements these by collating local and best practice which applies to the information already contained within the Traffic Sign Regulations and General Directions (TSRGD), the Traffic Signs Manual (TSM) and, where relevant, the Design Manual for Roads and Bridges (DMRB) and guidance issued by the Office of Rail and Road ([www.orr.gov.uk](http://www.orr.gov.uk)).

### **2. Road Markings in Lincolnshire**

The design of road marking installations presents a challenge to the delivery of high quality highway improvement and maintenance projects. Successful project delivery is possible only with a high level of project management, co-ordination and attention to detail.

The design of road markings is work of a specialist nature and the final delivery of any scheme on site is very visible and public.

Traffic signs and road markings within Lincolnshire are considered to be free standing entities, but their usefulness and appropriateness needs to be considered not only in the context of where they are, but the wider area surrounding them; this is to ensure that a consistent approach is maintained across the whole county.

There are various Government targets: -

- Casualty reduction figures is always high on the political agenda, and it can be appropriate to consider the use of new product developments (enhancements) in the area of road markings, however these should be used only under the remit of the Lincolnshire Road Safety Partnership (LRSP) when funding is available and justified by a local safety scheme. New materials and methods can be trialled in other locations under the guidance of the Highways Standards Group.
- Aims to reduce clutter should result in schemes that adopt a 'designed to standards' approach and no more. Likewise, reviews of existing carriageway markings for maintenance purposes should question the logic of existing markings, seek an audit trail to document when enhancements have been justified, and apply current standards - not simply copy/reapply the previously used design.

### **3. National Design Guidelines and Standards**

This design guide clarifies Lincolnshire County Council's interpretation of national design guides and standards, mainly: -

- The Traffic Signs Regulations and General Directions (TSRGD) and
- Various Chapters of the Traffic Signs Manual (TSM)

but not exclusively.

The requirements contained in this document do not contradict national guidelines and standards; they form a collection of local and best practices that reflect local Policy and are set out to assist the design decision process and clarify any areas of ambiguity that may exist within national documents.

### **4. Preparatory Work**

Ideally, in order to progress any design, a full site investigation shall capture existing data. This data capture should not only include any existing road markings and signs, but also other relevant items (use of kerbs, kerb heights, access points/junctions, existing traffic restrictions and traffic regulation orders, bus stops, speed limits, road hierarchy, accident data, presence of street lighting etc.).

Another part of this preparatory work is to consider the location in terms of urban/rural, the exact extents of any speed limits including terminal speed sign locations, environmental restrictions e.g.,

conservation area, SSSI, protected roadside verge etc. so this can be taken into account during the design stage.

It is recognised that much of the data collection can take place within the office and with the lack of an LCC carriageway-marking data base, images provided by street view (Google maps etc.) are currently proving invaluable. However, if data available online is deemed out of date, and/or improvements are known to have been made since the date of the last Google survey, a site investigation is vital to provide assurances that the design is suitable for the environment.

If a carriageway marking design drawing is commissioned from TSP to complement road surface treatment works, it can save time/resources (and cost) if any photographs and data captured during existing site investigations for the surfacing works is included with the commission.

Risk assessments and safety audits must be carried out in accordance with Lincolnshire County Council Policies.

## 5. General

Road markings and studs shall only be provided in the circumstances outlined in the sections that follow.

Where existing markings/studs vary from this policy, with no audit trail or logical reason to determine why they vary, the markings should be amended accordingly during the next period of maintenance (back to basics).

Where maintenance takes place along a route as 'patches', it is generally good practice to reinstate existing and maintain continuity with adjacent line types, even if this means not adhering to prevailing standards. If there is a fundamental reason to alter a line type on a short length of patching which means it will differ from adjacent line types, then perhaps patching is not the best solution, and the choice of surfacing scheme should be questioned.

If a specific requirement arises for enhanced or bespoke markings, agreement to provide these markings beyond the remit of LRSP intervention must be approved in writing by the appropriate Senior Highway Manager or Principal Engineer (or similar), along with an audit trail to capture the reasons why. NOTE - IF this practice is not followed officers involved in future maintenance works will not know why the markings differ from the norm and consequently the markings may inadvertently get replaced/altered during maintenance works (a back-to-basics approach) – this places unnecessary reputational risk on LCC Highways.

For the purpose of this policy, the term 'urban' defines roads with speed limits up to and including 40mph, and 'rural' all roads with speed limits in excess of 40mph.

All road marking and stud applications shall be in general accordance with the Traffic Signs Regulations and General Directions unless site-specific markings have been specially authorised by the Secretary of State.

Further guidance is provided in TSM Chapter 5 titled: - Road Markings.

Where road markings are to be refreshed or laid as part of new highway works care should be taken at the extents of the scheme to ensure that the markings tie in seamlessly with the existing carriageway marking layouts, adjacent line types are consistent, and/or there is logical reason where line types terminate.

## **6. Longitudinal Lines**

### **6.1. Centre Lines**

Providing criteria in TSM Chapter 5 is met: -

- a) *Shall* be used on all Hierarchy 1 and 2 roads.
- b) *May* be used on Hierarchy 3 and 4 roads where one or more of the following additional factors exist: -
  - (i) Traffic flow exceeds 500 vehicles per day
  - (ii) LRSP recommends such markings
  - (iii) Road is subject to persistent poor weather conditions such as fog

### **6.2. Warning Lines**

Providing criteria in TSM Chapter 5 is met: -

- a) *Shall* be used on all urban Hierarchy 1 and 2 roads.
- b) *Shall* be used on all rural Hierarchy 1, 2 and 3 roads.
- c) *May* be used on urban Hierarchy 3 and 4 roads and rural Hierarchy 4 roads where one or more of the following additional factors exist: -
  - (i) Traffic flow exceeds 500 vehicles per day
  - (ii) Accident investigation recommends such markings
  - (iii) Road is subject to persistent poor weather conditions such as fog

- d) Shall be laid in accordance with the 85th percentile speed visibility distance and/or number of marks criteria shown in the Traffic Signs Manual.

### **6.3. Edge of Carriageway Lines**

- a) Shall be used on all rural Hierarchy 1 and 2 roads.
- b) May be used on other roads where one or more of the following factors exists (Refer to Section 2 (General)): -
  - (i) LRSP recommends such markings
  - (ii) Road is subject to persistent poor weather conditions such as fog
  - (iii) Persistent overrunning of the edge of carriageway occurs
  - (iv) Any deep ditches/drains close to the carriageway edge at the discretion of the Local Highway Manager
- c) Raised rib edge of carriageway are used in accordance with TSM Chapter 5. However, Departures from Standard have been documented by LRSP (Audit trail) to use this type of line without hard strip or hard shoulder.

## **7. Double White Line Systems**

Always considered in accordance with TSM Chapter 5. Forward Visibility Surveys can be arranged in accordance with Lincolnshire County Councils Safety Code of Practice. However, due to the cost involved a commission is required (providing a cost code).

Prior to commissioning a forward visibility survey, it is good practice for local highways to arrange for the removal of any objects considered as removable (such as the encroachment of trees/foliage or hedging etc.).

## **8. Road Studs – Reflective**

- a) Centre of carriageway studs shall be used on all Hierarchy 1 and 2 roads.
- b) Centre of carriageway studs may be used on Hierarchy 3 and 4 roads where one of the following factors exist (Refer to Section 2 (General)): -
  - (i) Accident investigation recommends such studding
  - (ii) Road is subject to persistent poor weather conditions such as fog
- c) In (a) and (b) above, the centre of carriageway studs may be omitted on all roads (except high speed all-purpose) where there is a system of street lighting. However, in order to maintain continuity, studs may be extended through short lengths of less than 500m of carriageway lit with street lighting. Double white line systems shall always be studded (refer to note below for level crossings).

d) Edge of carriageway studs may be used on the edge of rural Hierarchy 1 dual and single carriageways where one of the following factors exist:

- (i) Accident investigation recommends such studding
- (ii) Road is subject to persistent poor weather conditions such as fog
- (iii) Raised rib edge markings have been used

Studs within a double continuous white line over a level crossing and within 2m of a running rail shall be white plastic. Installation should be carried out in consultation with Network Rail and in accordance with TSM Chapter 5.

Refer to Section 11 in this document for road studs at controlled pedestrian crossings.

## **9. Traffic Signal Stop Lines**

Traffic signal stop lines shall always be 300mm wide in Lincolnshire and positioned 3.0m in advance of the near side primary signal.

## **10. Yellow Box Junction Markings**

There is a history of improper use of yellow box markings in Lincolnshire; their use must adhere to prevailing regulations and any used incorrectly should be considered for removal as part of maintenance or improvement works when the road surface is being replaced.

The correct use of a yellow box marking should result in the improved through-flow of traffic, used in a method that will allow vehicles to cross a line of congested traffic to join the free flowing carriageway beyond. This does not include the use of a half box marking from a side road to join an existing queue of traffic.

When such markings are being considered in close proximity to Traffic Signals, LCC Traffic Signals team [trafficsignals@lincolnshire.gov.uk](mailto:trafficsignals@lincolnshire.gov.uk) MUST always be consulted in order to maintain asset records and ensure existing phasing of signals is not compromised. In many cases, a perception of congestion can be addressed by a review of Traffic Signals phasing, or the team may have knowledge of a short-term problem that is causing temporary congestion issues.

If/when used, a yellow box marking cannot be used with other markings. Lane markings and arrows must therefore be omitted when choosing to use a yellow box marking.

## **11. Road Studs – Controlled Pedestrian Crossings**

LCC has a preference for cored white thermoplastic over metal.

## **12. Bus Markings**

‘Bus Stop’ legend and cage markings on the carriageway may only be used with a bus stop clearway marking and relevant upright sign. Refer to Alliance Management System processes: -

- Bus Stop Clearways  
[//hp\\_deg/users/USERS/QMS/Alliance/web%20pages/BUS%20STOPS.htm](//hp_deg/users/USERS/QMS/Alliance/web%20pages/BUS%20STOPS.htm)
- Bus Stop Maintenance  
[//hp\\_deg/users/USERS/QMS/Alliance/web%20pages/BUS%20STOP%20MAINTENANCE.htm](//hp_deg/users/USERS/QMS/Alliance/web%20pages/BUS%20STOP%20MAINTENANCE.htm)

### 13. Railway Level Crossings

Signs and lines in the vicinity of a level crossing must be maintained in accordance with the Level Crossing Order.

Changes to existing signs and lines in the vicinity of Level Crossings must be carried out in consultation with Network Rail.

### 14. Limited Waiting and Parking Restrictions

It is very important for Civil Parking Enforcement purposes that carriageway markings relate to a Traffic Regulation Order (TRO). Every time a new marking is used, or an existing one maintained the Database must be referred to:

- [Link to Location Centre](#)

Anomalies between what is signed/lined on the ground and what is recorded on the database can occasionally occur due to unsupervised or historical maintenance works – these anomalies MUST be reported to the Civil Parking Enforcement Team so that they can advise on the best course of action. If the signs/markings on the ground are maintained the TRO on location centre must be brought up to date.

### 15. Speed Roundels

Speed roundels will generally only be provided where the speed limit reduces. They can also be used adjacent to upright speed repeater signs and other locations in certain specific circumstances in accordance with TSM Chapter 3. Future maintenance of the markings should be assessed, and their use should generally be considered in the design of genuine traffic management/traffic calming schemes and not as a basic design principle.

### 16. Slow Markings

SLOW markings will only be provided adjacent to upright signs to help reinforce the message being provided to road users.

### 17. Keep Clear Markings

Used in accordance with guidance in Traffic Signs Manual, in some cases this marking can be considered as an alternative to a Yellow Box marking.

If consideration to the use of this marking is being given in the vicinity of Traffic Signals please refer to the Traffic Signals team, for the reasons given in item 10 (above).

## 18. H-Bar Markings

A much over-used marking in Lincolnshire, it tends to be applied when requested by residents/businesses. This practice has to stop as it is becoming unsustainable. When requests are received to lay this marking in the future the customer should be asked to state the problem, not their perception of the solution.

Civil Parking Enforcement team have powers to target persistent offenders that choose to park over dropped kerbs.

Also refer to Highway Guidance Document [HGD 4.6](#) for the use of H-Bar markings.

## 19. Conservation Areas

Where road markings are to be provided in an environmentally sensitive or conservation area care should be taken to use the correct colour and width (particularly for yellow lines). However, when considering the maintenance of markings in a conservation area the overall aesthetics of the finished product can be more important than the use of a different shade or thickness of line to that which already exists.

Care should also be taken not to over mark the carriageway when using visually intrusive setting out spray paint; particularly on pavements or upright kerbs which won't be worn by passing traffic and could remain for some time.

## 20. Setting Out

Not exhaustive, but the following is a list of relevant notes that can help when setting out carriageway markings: -

- Should be set out/supervised by a competent person in the presence of the lining gang wherever possible. It is good practice to provide an 'approved for construction' drawing, and many contractors will insist on it. Works should also be supervised where possible.
- Always measure and maintain an average running width wherever possible, for example if the road width fluctuates where an area of hatching is intended for use any variance in the available width of carriageway can be adapted within the hatching. In this example it is not good practice to simply state "800mm minimum wide hatched central area", it is better to specify "maintain 3.0m running lanes with central hatch to suit".
- Tying into existing markings – this must be seamless. It may seem obvious, but if this is not specified on the 'approved for construction' drawing do not be surprised when new/old markings do not marry up. It may be some time since the original markings were laid, standards/environment etc. may have changed since they were first laid. If within the design process (preparatory work) anomalies are spotted, they should be addressed and not left to the contractor to guess what to do on site. For example, width/colour of yellow parking restriction lines; if there is a change of line type/colour/width which results in two different line types not being able to seamlessly tie in, the best method is to stop each line type with



the specified end bar before starting the next line type with minimal gap in-between (100mm is normal).

- White lines of varying width/length have more flexibility; tolerances are permitted in the Traffic Signs Manual which should be adhered to. This may mean alterations to a greater length of line in order to obtain a final result of the appearance of a seamless tie in.

For advice that isn't covered in this document please refer questions/observations to [signsandmarkings@lincolnshire.gov.uk](mailto:signsandmarkings@lincolnshire.gov.uk).

### **Superseded Document/Instruction**

HAT 31-2-18

### **Review Date**

The review date for this HGD is February 2023

### **Appendices**

N/A