**VOLUME 8 TRAFFIC SIGNS AND ROAD LIGHTING**

**SECTION 2 TRAFFIC SIGNS AND ROAD MARKINGS**

**PART 2**

**TD 25/01**

# INSPECTION AND MAINTENANCE OF TRAFFIC SIGNS ON MOTORWAY AND ALL-PURPOSE TRUNK ROADS


## SUMMARY

This Standard sets out the inspection and maintenance requirements and recommendations for road traffic signs on motorway and all-purpose trunk roads. It supersedes TD 25/86.


## INSTRUCTIONS FOR USE

1. This document supersedes TD 25/86, which is now withdrawn.

2. Remove TD 25/86, which is superseded by TD 25/01 and archive as appropriate.

3. Insert TD 25/01 in Volume 8, Section 2, Part 2.

4. Archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.

THE HIGHWAYS AGENCY

THE SCOTTISH EXECUTIVE DEVELOPMENT DEPARTMENT

THE NATIONAL ASSEMBLY FOR WALES
CYNULLIAD CENEDLAETHOL CYMRU

THE DEPARTMENT FOR REGIONAL DEVELOPMENT*

# Inspection and Maintenance of Traffic Signs on Motorway and All-Purpose Trunk Roads



* A Government Department in Northern Ireland

Summary: This Standard sets out the inspection and maintenance requirements and recommendations for road traffic signs on motorway and all-purpose trunk roads. It supersedes TD 25/86.

Volume 8 home page

## REGISTRATION OF AMENDMENTS

| Amend No | Page No | Signature & Date of incorporation of amendments | Amend No | Page No | Signature & Date of incorporation of amendments |
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# INSPECTION AND MAINTENANCE OF TRAFFIC SIGNS ON MOTORWAY AND ALL-PURPOSE TRUNK ROADS

**Contents**

Chapter



**Annexes**

# 1. INTRODUCTION

## General

1.1 This Standard sets out the inspection and maintenance requirements and recommendations for road traffic signs on motorway and all-purpose trunk roads. It supersedes TD 25/86. Variations to this document to cover national requirements in Northern Ireland are set out in the addendum at Annex D.

## Scope

1.2 This Standard sets out the inspection requirements for regulatory, warning, informatory and directional traffic signs, together with associated electrical equipment where appropriate, for use on motorway and all-purpose trunk roads. It also sets out the frequency of the inspections, by instrumental or visual means, to determine the condition of the signs. This should ensure that they are maintained to a consistent and satisfactory level and assist in planned maintenance.

1.3 Regulatory and variable message signs associated with traffic signals are dealt with in TD 24. (Ref. 1).

1.4 Light emitting variable message signs are not dealt with in this Standard. However, some guidance on these signs may be found in the Highways Agency Specification MCH 1553. (Ref. 2).

1.5 The inspection of gantries on which traffic signs are mounted is dealt with in BD 63. (Ref. 3).

1.6 The size of signs that may be attached to lighting columns is dealt with in BD 26. (Ref. 4).

## Implementation

1.7 This Standard should be used forthwith on all maintenance contracts on trunk roads, including motorways, on safety grounds unless there are very good reasons to the contrary. Maintaining Organisations should confirm its application to particular contracts with the Overseeing Organisation. In Northern Ireland the use of this Standard shall apply on those roads designated by the Overseeing Organisation.

## Abbreviations

1.8 “TSRGD” means the Traffic Signs Regulations and General Directions currently in force. (Ref. 5).

1.9 “TSM” means the Traffic Signs Manual.

1.10 “MCDHW” means the Manual of Contract Documents for Highway Works.

1.11 “RCD” means Residual Current Device.

1.12 “REC” means Regional Electricity Company.

1.13 “ILE” means Institution of Lighting Engineers.

1.14 “VMS” means Variable Message Sign.

1.15 “RMMS” means the User Manual for the Highways Agency’s Routine Maintenance Management System.

1.16 “SRMMS” means the similar system used in the Scottish Executive.

# 2. INSPECTION

## 2.1 General

The purpose of inspections is to detect sign defects including lighting failures associated with the performance of the sign as quickly as is reasonably possible after occurrence. Signs need to be inspected because:

(i) many signs are required by the regulations to be illuminated and therefore their legal status might be affected if the lighting were to fail (see TSRGD for illumination requirements)

(ii) deterioration of the structure supporting the sign may have occurred

(iii) to ensure that the signs can be seen, that is that they are not dirty or obscured by vegetation.

(iv) after a period of years the visual performance of a sign begins to degrade

## 2.2 Elements of Inspection

The aspects requiring inspection where appropriate are to be agreed with the Overseeing Organisation.

2.2.1 Signs shall be inspected for the following:

(i) visual performance (see 2.3.3 (i))

(ii) electrical safety and operation (see 2.3.3 (ii)) and

(iii) structural integrity (see 2.3.3 (iii))

## 2.3 Types of Inspection

### Night-time Patrols - Lit Signs

2.3.1 For lit signs, night-time patrols shall be carried out on trunk roads every 14 days in winter and every 28 days in summer for trunk roads, and on motorways every 28 days all year round. Inspectors should report signs with poor lantern alignment, and those that appear poorly lit as well as signs that are completely unlit, identifying single outages as much as possible. This is at the same frequency as 'Safety Inspections' in TD 23 and may therefore be carried out at the same time. (Ref. 12).

### Detailed Inspections - All Signs

2.3.2 All signs should be inspected (ie detailed inspections) at 12 month intervals for the aspects listed at 2.3.3 (i) and (iii) but in the case of lit signs, the aspects listed at 2.3.3 (ii) should be inspected only at 24 month intervals.

This is at the same frequency as 'Detailed Inspections' in TD 23 and may therefore be carried out at the same time. (Ref. 12).

2.3.3 The following aspects shall also be visually inspected (i.e. cursory inspection only) during lantern cleaning operations and bulk lamp changes of all illuminated signs:

(i) visual performance:

(a) obscuration, for example by, dirt, graffiti, foliage or other signs or structures

(b) loss of sign face material

(c) correct orientation relative to driver

(ii) electrical safety and operation:

(a) general condition and safety

(b) operation of luminaires

(c) alignment of luminaires

(d) operational effectiveness

(iii) structural integrity:

(a) condition of the sign plate

(b) condition of clips, rails or other fixings

(c) elements of sign post inspection

The requirements of BS 7671 (Ref. 6) for street furniture shall be taken into account for installation, inspection and testing, and the methods used shall be in accordance with the ILE Code of Practice (Ref. 7), unless otherwise specified. The frequency of lantern cleaning and bulk lamp changes shall be as specified in Table A1 of Annex A.

2.3.4 All defects that are observed shall be reported.

### 2.3.5 Inspection of Large Sign Structures

The structures which support large signs should be inspected in accordance with BD 63. (Ref. 3).

### 2.3.6 Sign Plate Replacement and Visual Performance Inspections

2.3.6.1 After a period of years the visual performance of a sign begins to degrade due to fading, ingrained dirt, a reduction of the retroreflective properties of the sign face material and of the performance of the lighting system, peeling or loss of the legend, damage and vandalism. Therefore, in addition to the regular inspections detailed in paragraph 2.3, all signs should be inspected 10 years after installation and every two years thereafter.

Provided there is no fading, peeling or loss of legend, and the information on and the location of the sign are both still correct, then no action is necessary except checking for the coefficient of retroreflectivity of white sheeting and the degradation of colour of the coloured sheeting.

As a guide when assessing colour degradation samples of new sheeting of the original colour and grade, produced by the same manufacturer, should be used for comparison during inspections.

Changes either to the highway, its surrounds or the traffic sign regulations may render a sign obsolete, inappropriate or inaccurate.

**Coefficient of retroreflection**

2.3.6.2 The coefficient of retroreflection should be measured at an observation angle of 20' and an entrance angle of -5°. Only white areas, both original and replacement parts if any, need be measured. The sign face should be cleaned before the test is carried out. The coefficient of retroreflection measured should be greater than 144 cd/lx/m$^2$ and 40 cd/lx/m$^2$ for Class 1 and 2 material respectively.

Notes:

1. The values quoted above should be taken as the normal intervention levels. They are 80% of the values for new signs from BS 873: Part 6, Table 1 (Class 1) and Table 2 (Class 2), (Ref. 8). Signs to Table 3 (Class 3) are no longer specified.

2. Intervention levels for microprismatic sheetings will be specified when a British Standard for such materials has been published. In the meantime, the coefficient of retroreflection need not be checked for these materials.

**Obsolete Signs**

2.3.6.3 Redundant signs and posts are a distraction to road users and should be removed to reduce clutter and maintenance costs.

2.3.6.4 The TSRGD require all remaining pre-Worboys signs (ie signs first erected before 1964) to be replaced by 2005. However, if any such signs remain on trunk roads, they should be replaced as soon as practicable since they cannot be performing to the standard required for present day conditions.

2.3.6.5 Signs to diagram 7014 (New Road Layout Ahead, etc) must be removed within three months of completion of the works (see TSRGD 1994, Direction 32).

## 2.4 Summary of Frequency of Inspection & Maintenance

2.4.1 14/28 days, Night-time Patrols - Lit Signs

| | |
|---|---|
| See para. 2.3.1 | Same frequency as 'Safety Inspections' in TD23 |

2.4.2 12 monthly, Detailed Inspections - All Signs

| | |
|---|---|
| See para. 2.3.3 (i) | Visual Performance |
| See para. 5.1.2 | Cleaning - General |
| See para. 5.1.4 | Signs Obscured by Vegetation |
| See para. 2.3.3 (iii) | Structural Integrity |
| See para. 5.1.6. | Sign Post - Structural/ Mechanical Integrity |

2.4.3 2 yearly, Detailed Inspections - Lit Signs & rotating plank or prism VMS only

| | |
|---|---|
| See para. 2.3.3 (ii) | Electrical Safety & Operation |
| See para. 5.1.1 | Routine Maintenance - General |
| See para. 5.1.10 | Feeder Pillars |

In addition during lantern cleaning and bulk lamp change shall be visually inspected (ie cursory inspections only).

2.4.4 Within a maximum of six years - Electrical Testing - see para. 5.1.9.

2.4.5 10 years after installation and every two years thereafter - Detailed Inspections

| | |
|---|---|
| See para. 2.3.7.1 | Sign Plate Replacement |
| See para. 2.3.7.2 | Visual Performance |

In addition Large Structures shall be inspected in accordance with BD 63.

2.4.6 Bulk Lamp Changes - See para. 5.1.5

Where appropriate bulk lamp changes shall be carried out at the same time as other work in order to reduce the traffic management requirements. Where bulk changes are more frequent than the above inspection, then when they are carried out, a cursory check of those items in para. 2.3.3 should be carried out at the same time.

# 3. CATEGORY OF DEFECT

**General**

3.1 The condition of traffic signs shall be monitored through inspections listed in 2.3. Traffic signs defects identified through inspections or random reports shall be categorised as specified in Table 1.

3.2 The Agent shall be responsible for the categorisation of signing defects in accordance with the guidance given in Tables 1 and 2.

| Category of Defects | Description |
|---|---|
| Category 1 | A defect which requires prompt attention because it represents an immediate or imminent hazard or because the sign is of a regulatory or mandatory type. This includes electrical or structural hazards. |
| Category 2 (High and Medium Priority) | A defect which results in an unacceptable quality of sign or its structure or presents a safety hazard to maintenance personnel. |
| Category 2 (Lower Priority) | All other defects which are considered to be less critical and can be left to the next routine maintenance or repair visit. |

**TABLE 1 CATEGORY OF DEFECTS**

3.4 Table 2 includes some typical defects and their recommended category. Other defects should be categorised with respect to the perceived risk to the user and general public.

| Category of Defect | Typical Examples of Defects |
|---|---|
| Category 1 | Major sign plate or structural failure.<br>Electrically or otherwise unsafe apparatus, or damage which may cause a dangerous obstruction to road traffic or other road users.<br>Missing regulatory or warning signs or belisha beacons. |
| Category 2 (High and Medium Priority) | Obscuration or failure of illumination to a regulatory or warning sign except when this is considered to be a Category 1 defect.<br>A structural fault requiring maintenance in advance of the next routine maintenance visit; eg misaligned sign causing confusion |
| Category 2 (Lower Priority) | Dirty signs (unless Category 1 or 2 High or 2 Medium)<br>Signs obscured by vegetation (unless Category 1 or 2 High or 2 Medium).<br>Signs when coefficient of retroreflectivity and degradation of colour assessments failing to meet the criteria in para. 2.3.6.2<br>Replacement of defective components.<br>Random outages to lit signs other than regulatory and warning signs.<br>Replacement of end-of-life equipment.<br>Replacement of cabling having failed electrical testing. |

**TABLE 2 EXAMPLES OF DEFECTS**

# 4. RESPONSE TIMES

**General**

4.1 All defects shall be repaired according to the category of failure within the response time specified in Table 3.

| Category of Defect | Maximum Response Time* | Additional Requirements |
|---|---|---|
| Category 1 | If possible these should be made safe at the time of inspection. Where this is not practicable they should be dealt with within 24 hours | Maintenance operatives shall work within the road safety requirements of section 6. |
| Category 2<br>(High and Medium Priority) | 7 days for urban all-purpose trunk roads<br>14 days for other road types | Where roads are restricted to routine maintenance closures the defects shall be repaired at the next routine closure. The REC shall be notified of any supply failures within 24 hours. |
| Category 2<br>(Lower Priority) | 6 months | Incorporate repairs into a planned programme of works, wherever practicable.<br>Defects identified as requiring large scale replacement in schemes which are considered to be at the end of their useful life shall be reported to the Overseeing Organisation |

*Defects shall be repaired within the specified response time following notification to the Agent.

**TABLE 3 RESPONSE TIMES**

4.2 Any departure from the specified response time should be agreed with the Overseeing Organisation before the maximum response time has elapsed.

# 5. MAINTENANCE

## 5.1 Routine Maintenance

### 5.1.1 General

Unless otherwise specified, routine maintenance of electrical equipment shall be in accordance with the methods specified in the ILE Code of Practice (Ref. 7). The following work shall also be carried out at two-year intervals, during cleaning and bulk lamp change operations:

(i) cleaning and lubrication of moving parts of variable message signs, door locks, hinges, bollard securing bolts, springs, catches, gallery screws etc

(ii) thorough cleaning out of the base compartment using a non-conductive brush

(iii) examination, cleaning and renewal as necessary of all electrical terminations, particularly security of earth terminations

(iv) examination and replacement as necessary of the correct type and rating of fuses

(v) tightening and adjustment of brackets, bolts and fittings

(vi) examination and repair as necessary of frames and stiffeners

### 5.1.2 Cleaning - General

All roadside mounted sign faces and their reference numbers shall be cleaned at two-year intervals and coincident with bulk lamp changes where possible. All low level signs, including illuminated and reflective bollards, will accumulate dirt and grime faster than other signs and therefore additional cleaning may be required on an "as required" basis, which will depend on the weather and other local conditions. Gantry mounted sign faces shall be cleaned as required and where possible as part of a lane closure for other works. Sign luminaires, beacon bowls and illuminated bollards shall be cleaned during bulk lamp changes. Any variation to the cleaning frequency to take account of local conditions must be approved in advance by the Overseeing Organisation.

### 5.1.3 Sign Face Cleaning

Sign faces can be damaged by inappropriate cleaning with abrasive materials. Permanent damage can also result if cleaning is not carried out at sufficiently frequent intervals. Follow the cleaning recommendations of the sign face or reflective sheeting supplier to ensure that cleaning methods and materials do not cause damage to the sign face.

### 5.1.4 Signs Obscured By Vegetation

5.1.4.1 Signs must remain clearly visible in accordance with the visibility distances in tables 4, 5 and 6. This shall form part of Detailed Inspections. The clear visibility distance is to be maintained to all parts of the sign face, when viewed from the centre of the near side lane. For signs mounted on the off side of the road, visibility distance should be measured from the centre of the closest lane in the viewing direction.

| x - height mm | Desirable m | Absolute minimum m |
|---|---|---|
| 75 | 60 | 45 |
| 100 | 80 | 60 |
| 125 | 100 | 75 |
| 150 | 120 | 90 |
| 200 | 160 | 120 |
| 250 | 200 | 150 |
| 300 | 240 | 180 |
| 400 | 320 | 240 |

**Table 4 Clear visibility distance for directional and other worded signs**

Note:

The desirable clear visibility distance should always be restored when reasonably practicable, eg by cutting back overhanging foliage. If the absolute minimum distance cannot be restored, this should be reported to the Overseeing Organisation.

| Height of triangular warning signs (mm) | Minimum clear visibility distance (m) |
|---|---|
| 600 | 60 |
| 750 | 60 |
| 900 | 75 |
| 1200 | 90 * |
| 1200 | 105 ** |
| 1500 | 120 |

**Table 5 Clear visibility distance for warning signs**

**Note:**
* for single carriageway roads
** for dual carriageway roads

| | SPEED LIMIT SIGN (mph) | | | |
|---|---|---|---|---|
| | 30 | 40 | 50 | 60 |
| APPROACH ROAD SPEED LIMIT FOR FOR PRIVATE CARS (mph) | Clear Visibility Distance (m) | | | |
| 70 | 165 | 140 | 110 | 75 |
| 60 | 115 | 95 | 65 | – |
| 50 | 75 | 50 | – | – |
| 40 | 40 | – | – | – |

**Table 6 Clear visibility distance for speed limit signs**

5.1.4.2 Where signs are obscured by trees, pruning shall be carried out following liaison with the environmental manager of the Agent Authority. The Overseeing Organisation's environmental manager will advise on all other aspects of vegetation control.

5.1.4.3 Pruning of trees and shrubs on private property are subject to Section 154 of the Highways Act 1980 or to Section 91 of the Roads (Scotland) Act 1984. (Ref. 10).

5.1.4.4 Where excavation is necessary near trees, care must be taken not to damage the roots. Further advice is given in the document NJUG 10 (Ref. 11).

5.1.4.5 Where trees or shrubs persistently obscure a sign, consideration should be given to re-locating the sign or, subject to the approval of the Overseeing Organisation's environmental manager, removal of the tree or shrub.

5.1.4.6 The effect on existing vegetation must be considered when signs and other equipment are to be installed, as the soft estate is not normally expendable. Vegetation may have ecological or landscape value. When locating signs the environmental manager of the Agent Authority should be consulted. When locating large signs visible from beyond the road the Overseeing Organisation's environmental manager should be consulted.

### 5.1.5 Bulk Lamp Changes

Bulk lamp changes shall be carried out at regular intervals as specified in Table A of Annex A to maintain light output efficiency and to reduce the level of random failures. Care shall be taken to fit the correct lamp for the unit. Lamps shall be indelibly marked with the date of installation to enable any warranties to be claimed in the event of premature failure (see para 5.1.11).

### 5.1.6 Sign Post - Structural/Mechanical integrity

The sign post shall be inspected for any structural or mechanical defects, in accordance with the Institution of Lighting Engineers Technical Report Number 22, Lighting Columns and Sign Posts: Planned Inspection Regime, (Ref. 9) and TD 23 Section 5.27, Annex D, Table 9 (Ref. 12).

### 5.1.7 Sign Post - Painting

5.1.7.1 Painted steel posts shall be repainted in accordance with any agreed schedule incorporating any local landscape strategy or when inspections prove it necessary. Bulk painting shall be subject to approval by the Overseeing Organisation.

5.1.7.2 All paint used shall be compatible with the existing protective coating and is subject to approval by the Overseeing Organisation.

5.1.7.3 Plastic coated and concrete posts shall not be painted.

### 5.1.8 Numbering of Signs

All signs, bollards and beacons shall be numbered to assist night-time patrols and inventory systems. Numbers should preferably be on adhesive labels consisting of black numerals on a white reflective background, fixed to the sign post or bollard in a position that can be readily seen from a moving vehicle. Under no circumstances must reference numbers be applied to any part of the sign face. On high speed roads numerals up to 75 mm high would be appropriate otherwise a character height of 50 mm should be adequate.

### 5.1.9 Testing for Electrical Safety

All lighting units and private cabling systems shall be tested for electrical safety as required by BS 7671 within a maximum of 6 years after installation. (Ref. 6). The method and forms used shall be as specified in the ILE Code of Practice (Ref. 7).

All signs on the central reserve and in other vulnerable positions must have power supplied by private service cables. All private service cables must be labelled at each end.

### 5.1.10 Feeder Pillars

The feeder pillars shall be inspected and cleaned during the corresponding bulk lamp change unless they are part of the maintenance regime of TD 23 (Ref. 12). The following operations shall be carried out in addition to those specified in para 5.1.1 if the feeder pillars for signs are stand-alone type:

(i) doors, locks and hinges shall be inspected and repaired as necessary

(ii) missing or inaccurate identification labels on the door and each incoming and outgoing cable shall where necessary be replaced

(iii) circuit diagrams shall be checked for accuracy and amended if necessary

(iv) where electrical schematic and layout diagrams have deteriorated with age, new diagrams shall be provided

(v) missing spare fuses shall be replaced and broken fuses and other debris removed

(vi) the operation of any RCDs, contactors, anti-condensation devices and lights within the feeder pillar shall be checked for correct rating and replaced as necessary

(vii) failed photocells used for group switching shall be replaced at each bulk lamp change

### 5.1.11 Guarantees

The Agent Authority shall ensure that guarantees and/or warranties are obtained and enforced for all work carried out and material supplied where reasonably possible and practicable.

## 5.2 Non-Routine Maintenance

5.2.1 Defects noted as a result of the inspections called for in Chapter 3 fall into three categories; Category 1 and Category 2 and its subdivisions. The agent is responsible for determining within which category a defect lies and its respective response time in accordance with the guidance in Chapters 3 and 4.

## 5.3 Replacement and repair

5.3.1 Replacement or repair of traffic signs shall comply with the Highways Agency's Specification for Highway Works, (MCDHW 1), (Ref. 13). Where a replacement sign is required, the appropriate Overseeing Organisation should confirm whether any changes are needed, to avoid replicating obsolete sign faces. Plating of signs where minor changes are required should be in accordance with the guidance set out in Section 11 of TSM, Chapter 7, The Design of Traffic Signs (Ref. 14).

5.3.2 Where signs are to be lit, (excepting illuminated bollards and belisha beacons) externally illuminated retroreflective signs should normally be used in preference to internally illuminated signs, as they are likely to be significantly less expensive, and will maintain better performance and legibility than internally illuminated signs in the event of lighting failure. Internally illuminated signs might be justified in exceptional circumstances, eg where environmental and aesthetic considerations are paramount. However, proper policing systems to combat vandalism and cost effective repair measures will be needed to support their use.

5.3.3 All new illuminated signs should be photocell-controlled with the exception of belisha beacons. Where a sign is fed from a street light the photocell controlling the street light should be used to control the sign as well, and the label on the incoming cable should state this.

5.3.4 All new illuminated bollards should be of the base-lit type, and where the location is considered vulnerable, flexible bollard shells should be used.

5.3.5 Where belisha beacons are prone to vandalism, beacon posts should be extended to the maximum permitted height, with the lowest part of the globe 3.1m above ground level and sturdy anti-vandal guards fitted.

# 6. ROAD SAFETY

6.1 To protect personnel during maintenance operations, traffic management shall comply with the requirements of the TSM, Chapter 8, (Ref. 15) as amended and updated by TA61/94, TD 49/97, TA 63/97 and TA 64/94 (Ref. 16).

6.2 Maintenance personnel should be suitably trained and qualified and operate the applicable safety regulations for any maintenance activity.

# 7. RECORDS AND INVENTORY

**Records**

7.1 An inspection report in a format (eg RMMS or SRMMS) agreed by the Overseeing Organisation for all inspections shall be maintained.

7.2 All defects identified during inspection or maintenance work shall be reported and recorded, including details of any action taken or required.

7.3 Records of inspection and repair shall be retained for a minimum of seven years. These records shall be handed over to the Overseeing Organisation or their agent on termination of the agreement.

7.4 An annual report including a summary of inspections, routine maintenance operations and changes in the network shall be supplied to the Overseeing Organisation at the end of the financial year. Relevant parts of the report shall be included in the Agent's Business Plan.

7.5 "As installed" drawings shall be kept up-to-date.

**Inventory**

7.6 An accurate computerised inventory shall be maintained and made available to the Overseeing Organisation on request.

7.7 The inventory shall include data to satisfy the requirements for the procurement of electricity, the effective maintenance of lighting systems, and other useful information to support maintenance strategy and policy.

7.8 The inventory shall include the records specified in Annex B Table B.

7.9 For lit signs the inventory should be updated at least every 3 months, or as agreed with the electricity supplier and others, to provide the necessary information for electricity procurement and maintenance management.

7.10 The inventory shall be stored, using commercially available software, on a computer system which is able to output records in a format agreed by the Overseeing Organisation.

7.11 The integrity of the inventory should be maintained through back-up facilities and procedures operated on a regular basis.

# 8. REFERENCES

1. Standard TD 24 - Maintenance of Traffic Signals (DMRB 8.1.1).

2. Highways Agency West Midlands Routine Maintenance Specification MCH 1553: Variable Message Signs.

3. Standard BD 63: Inspection of Highway Structures (DMRB 3.1.4).

4. Standard BD 26: Design of Lighting Columns (DMRB 2.2.1).

5. The Traffic Signs Regulations and General Directions currently in force.

6. BS 7671:1992: Institution of Electrical Engineers Wiring Regulations - 16th Edition.

7. Institution of Lighting Engineers, Code of Practice for Electrical Safety in Public Lighting Operations.

8. BS 873: Part 6:1983: Road traffic signs and internally illuminated boards: Specification for retroreflective and non-reflective signs.

9. The Institution of Lighting Engineers, Technical Report Number 22 Lighting Columns and Sign Posts: Planned Inspection Regime.

10. The Highways Act 1980 and Roads (Scotland) Act 1984.

11. National Joint Utilities Group Publication Number 10, The Planning, Installation and Maintenance of Utility Services in Proximity to Trees.

12. Standard TD 23/99, Trunk Roads and Trunk Road Motorways, Inspection and Maintenance of Road Lighting, (DMRB 8.3.1).

13. Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, (MCDHW 1).

14. Traffic Signs Manual, Chapter 7 - The Design of Traffic Signs. The Stationery Office (1997).

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3. Traffic Signs Manual, Chapter 3 - Regulatory Signs. The Stationery Office.

4. Traffic Signs Manual, Chapter 4 - Warning Signs. The Stationery Office.

5. Traffic Signs Manual, Chapter 6 - Illumination of Traffic Signs. The Stationery Office*.

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7. British Standard 873 - Road traffic signs and internally illuminated bollards. Parts 1, 2, 3, 5, 6, 7 and 8.

8. Departmental Standard BD 18 - Maintenance Painting of Highway Structures. Procedural, Contractual and Technical Requirements. [Scottish addendum applicable in Scotland].

9. Trunk Roads Maintenance Manual, Volumes 1-3. The Highways Agency. Publications Unit.

* To be published.

# 10. ENQUIRIES

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# ANNEX A LANTERN CLEANING INTERVALS AND LAMP BULK CHANGE INTERVALS



**TABLE A:**

**LANTERN CLEANING INTERVALS AND LAMP BULK CHANGE INTERVALS**

| Lamp type | Abbreviation | Bulk change interval in burning hours | Bulk change interval in months |
|---|---|---|---|
| Fluorescent | MCFE, SL & PL | 8,000 | 24 months |
| Pressed Glass Lamps | PAR | 2,000 | 6 months |
| High Pressure Mercury | MBFU | 8,000 | 24 months |
| Tungsten Filament | Long life GLS | 2,000<br><br>or in accordance with manufacturer's recommendations | 3 months<br><br>or in accordance with manufacturer's recommendations |

Note 1: The bulk change interval in months is given for "dusk to dawn" operation or in the case of the tungsten filament lamps for belisha beacon operation. Lamps on "24 hour" operation are changed at half this interval.

Note 2: Sign lanterns shall be cleaned at the time of the bulk lamp change operation.

# ANNEX B INVENTORY RECORDS

**Table B:**

**Inventory Records**

| | Record | Notes |
|---|---|---|
| 1 | Road Name, Number and carriageway (where applicable) | Reference commonly used for road location |
| 2 | Area Location Description | Street name, Village name, Junction reference, etc |
| 3 | Sign plate details and photograph | Diagram number to TSRGD or other authorised documentation |
| 4 | Sign reference number | In-situ numbering system, eg bar code |
| 5 | Date erected or replaced | Or best estimate |
| 6 | Date of last cleaning | Or best estimate |
| 7 | Date of last visual performance audit or instrumental measurements if applicable | |
| 8 | Class of sign and whether the sign is lit or reflectorised, and class of reflectorisation | |
| 9 | Other useful information not covered above | eg Specially authorised (non prescribed) sign, or authorised documentation, maintenance management issue, policy issue, historical information, etc |

# NORTHERN IRELAND ADDENDUM

In Northern Ireland reference shall be made to the Overseeing Organisation for inspection and maintenance requirements for traffic signs.