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**VOLUME 8    TRAFFIC SIGNS AND  
LIGHTING**  
**SECTION 2    TRAFFIC SIGNS AND  
ROAD MARKINGS**

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**PART 2**

**TD 33/05**

**THE USE OF VARIABLE MESSAGE  
SIGNS ON ALL-PURPOSE AND  
MOTORWAY TRUNK ROADS**

**SUMMARY**

This standard gives the criteria affecting the selection, siting and use of variable message signs on All Purpose and Motorway Trunk Roads. This issue of TD 33 incorporates Interim Advice Note 43/02 (IAN 43/02) and updates The Traffic Signs Regulations and General Directions references to the 2002 version (SI 2002 No 3113). It also incorporates organisational and constitutional changes since the 1990 issue, including the creation of the four Overseeing Organisations.

**INSTRUCTIONS FOR USE**

This Standard is to be incorporated in the Manual.

1. This document supersedes TD 33/90.
2. Remove Contents pages for Volume 8 dated February 2005.
3. Insert new Contents pages for Volume 8 dated November 2005.
4. Remove TD 33/90 from Volume 8, Section 2, Part 2.
5. Insert TD 33/05 into Volume 8, Section 2, Part 2.
6. 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.



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Welsh Assembly Government

**WELSH ASSEMBLY GOVERNMENT  
LLYWODRAETH CYNULLIAD CYMRU**



**THE DEPARTMENT FOR REGIONAL DEVELOPMENT  
NORTHERN IRELAND**

# **The Use of Variable Message Signs on All-Purpose and Motorway Trunk Roads**

**Summary:** This standard gives the criteria affecting the selection, siting and use of variable message signs on All Purpose and Motorway Trunk Roads. This issue of TD 33 incorporates CHE Memo 112/02 (IAN 43/02) and updates Traffic Signs Regulations and General Directions references to the 2002 version (SI 2002 No 3113). It also incorporates organisational and constitutional changes since the 1990 issue, including the creation of the four Overseeing Organisations.

**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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# 1. INTRODUCTION

1.1 Variable message signs (VMSs) are used to direct and inform drivers where there are changing traffic conditions, traffic routes and statutory provisions.

1.2 This Standard sets out the Overseeing Organisation's design standards and methodology for the choice and use of VMSs. It shall be read in conjunction with TA 60 (Ref 1).

1.3 Where reference is made in this document to "Class" of sign, this refers to the classification of VMSs given in Appendix A of TA 60 (Ref 1).

1.4 For details of the test criteria to meet the performance for VMSs, together with procedural arrangements, reference shall be made to TRG 0600 (Ref 3) and TR 2516 (Ref 12) for discontinuous VMSs and TR 2517 (Ref 2) for electromechanical VMSs.

1.5 Any requirements of this standard for goods or materials shall be made in accordance with the Manual of Contract Documents for Highways Works, Volume 1 - Specification for Highway Works, Series 100 - Preliminaries, Clause 104.

1.6 The height of characters given in Tables 1-3 accord with established British practice which corresponds to the methodology set out in International Commission of Illumination (CIE) Publication No 74 - Roadsigns (Ref 4).

1.7 Any reference to 'the Regulations' or 'the Directions' is a reference to the Traffic Signs Regulations and General Directions 2002 applicable to England, Scotland and Wales. In Northern Ireland the relevant legislation is the Traffic Signs Regulations (Northern Ireland) 1997.

## 2. SCOPE

2.1 The requirements of this Standard shall be applied to all VMSs used on trunk roads and trunk road motorways with the exception of the following types:

- (a) lane control light signals (diagrams 5001.1 to 5005.1 in Schedule 10 Part 1 of the Traffic Signs Regulations and General Directions (Ref 5));
- (b) light emitting matrix signals when used in motorway signalling systems (diagrams 6001 to 6032.1 in Schedule 11 to the Traffic Signs Regulations and General Directions (Ref 5)).

### 3. DEFINITIONS

3.1 The x-height is the height in millimetres of the lower case “x” of the Transport alphabet in use.

3.2 For Transport alphabet, the Stroke Width is nominally one quarter of the x-height. For matrix characters, it is the width of the solid stroke of a character or, if the stroke of a character consists of more than one line of cells or elements adjacent to one another, the Stroke Width shall be taken as being the overall width of all the lines of cells or elements which make up a stroke of a character.

3.3 The term Overseeing Organisation means the Highways Agency, the Scottish Executive, the Welsh Assembly Government or the Department for Regional Development, depending on which is the Highway Authority.

3.4 VMSs are devices within the meaning of regulation 58 of the Traffic Signs Regulations and General Directions (Ref 5).

3.5 Matrix Signs include signs within the meaning of regulation 46 of the Traffic Signs Regulations and General Directions (Ref 5).



## 4. STATUTORY REQUIREMENTS

4.1 The statutory requirements for VMSs are given in direction 56 of the Traffic Signs Regulations and General Directions (Ref 5).

4.2 Any sign legends, x-heights, symbols, or character forms that do not conform with those prescribed in the Traffic Signs Regulations and General Directions (Ref 5), or any flashing amber lamps used with VMSs, shall be specifically authorised by the Overseeing Organisation before being used on any road.

## 5. SIGN FACE APPEARANCE

5.1 A sign shall exhibit a black rectangular area to approaching drivers when a message is not being displayed. To satisfy this requirement, whenever the sign is in this state, all of the moveable elements and/or surfaces of mechanical/manual and electromechanical signs that are revealed shall be coloured black, and there shall be no light emitted from wholly electrical type signs. The rectangular area shall encompass all parts of the front face that are used to display a message.

5.2 The appearance of a sign when displaying a message shall comply with the appropriate Clauses of Chapter 6, Clauses 6, 7 and 6 and Chapters 9 and 10.

5.3 Any part of a sign surrounding the rectangular area used to display a message shall be coloured grey in accordance with Chapter 6, Clause 4, unless the VMS is attached to the same post as that on which light signals are mounted; in that case the colour shall be black.

## 6. SIGN CONSTRUCTION

6.1 Signs shall be constructed to comply with the requirements for Statutory Type Approval (see Section 1.4).

6.2 The Highway Authority's responsibility for the adequacy of the supporting posts, sign gantry structures, foundations and fabrication details for VMSs used as Permanent Traffic Signs shall extend to include the sign enclosure and supporting structure associated with trailer mounted signs.

6.3 Moving mechanisms associated with remotely and automatically controlled signs of Classes 10, 12 and 13, which are mounted within easy reach of the general public, shall be totally enclosed.

6.4 All parts of a sign housing including any boxes, cabinets, electrical conduits, trunking and cable trays/ racks, and any posts supporting the sign, except any parts coloured black in accordance with Chapter 5 above, shall be coloured grey to accord with Table 5 of BS 873: Part 6: 1983 (Ref 6). Aircraft Grey No 693 of BS 381C: 1996 (Ref 7) will satisfy this requirement.

6.5 Light dimming circuitry shall be included in the design of light-emitting type matrix displays and brought into operation to ensure that the legibility of legends is maintained for each of the different operating conditions in which the sign operates.

6.6 The legends of signs of Class 1 (see TA 60) shall be formed from fluorescent yellow elements, contrasted against a black background. The equipment and components used to construct and illuminate the sign shall be designed and selected in order to maintain the yellow colour under day and night-time conditions.

6.7 In the case of VMSs of Classes 2, 16, 17, 18 and 19 of TA 60 (Ref 1), the immediate background to the cells or elements of the matrix, apart from any reflectors, shall be coloured black. The colours used for the legends of signs of Classes 2, 16, 18 and 19 shall accord with prescribed signs. Any departure from this requirement shall be referred to the Overseeing Organisation for approval. For signs of Class 17 see also Section 9.3.6.

6.8 The legends of signs of Class 3 of TA 60 (Ref 1) shall be formed from yellow elements contrasted against black. The colour yellow shall comply with the colorimetric requirements given in Clause 4.3.3 of BS 873: Part 6: 1983 (Ref 6). Lemon No 355 of BS 381C: 1996 (Ref 7) will satisfy the requirement.

## 7. REFLECTORISATION AND DIRECT ILLUMINATION

7.1 Retroreflective materials shall comply with Clause 4.3 and Table 1 of BS 873: Part 6: 1983 (Ref 6). Recommendations on the choice of retroreflective material by application are given in TA 19 (Ref 8).

7.2 Signs which are not faced with retroreflective material and all those erected within 50m of any electric lamp forming part of a system of street lighting (at least 3 such lamps not more than 183m apart) shall be light emitting signs or provided with internal or external direct illumination at night and comply with regulations 18 and 19 in TSRGD (Ref 5). External direct illumination shall comply with the requirements of BS 873: Part 5: 1983 (Ref 6).

7.3 Provision shall be made to avoid lighting a blank face unless signs are required to display messages rapidly and frequently (eg queue ahead, overheight vehicle divert), and/or there is some delay in providing full illumination due to “warm up time” of the light source. In these cases the sign shall be illuminated throughout the hours of darkness.

7.4 Where in daylight conditions the sign face of signs of Class 1 can be in shadow the sign shall be illuminated when a message is being displayed. Where in addition the exceptional circumstances given in Chapter 2, Clause 3 apply, these signs shall be illuminated throughout the daylight hours.

## 8. FLASHING LAMPS ASSOCIATED WITH VARIABLE MESSAGE SIGNS

8.1 Flashing amber lamps are subject to the provisions of regulation 58(6) of the Traffic Signs Regulations and General Directions (Ref 1). Flashing red lamps are subject to the provisions of regulation 37 of the Traffic Signs Regulations and General Directions (Ref 1).

8.2 Where flashing lights are to be used with a sign there shall be four in number. Normally, two shall be positioned above the displayed message and two below it. Alternatively, where through constraints of sign dimensions or sighting difficulties this is not practical, the lamps may be positioned either side of the displayed message. In either case they shall be positioned at or near each corner of the sign and within the grey surround to the message display area described in Chapter 5. Amber lamps shall be switched in pairs alternately top to bottom in such a manner that one horizontal pair of lights is always shown when the other horizontal pair of lights is not shown. Red lamps shall be switched in pairs alternately left to right in such a manner that the lights of one vertical pair are always shown when the lights of the other vertical pair are not shown.

8.3 The use of flashing lamps to accompany any sign not prescribed to be accompanied by flashing lamps shall be submitted to the Overseeing Organisation for authorisation.

## 9. FORMS AND SIZES OF LEGENDS AND SYMBOLS

### 9.1 General

9.1.1 For the purpose of interpreting Tables 1, 2 and 3 in Clauses 9.2.1, 9.2.3, 9.3.6, 9.3.7 and 9.3.8, each place name or landmark to be referred to on a sign shall count as one word even though it might consist of two or more, eg Stoke-on-Trent, Forth Road Bridge. Similarly, place names with associated compass directions, eg Slough (West), also distances, eg 300 yds, and route numbers, eg A405, (A146), shall count as one word. All other words, irrespective of their length, shall each count as one word, as shall each arrow and symbol on a sign. Punctuation marks, dashes, strokes, brackets, also exclamation and question marks shall not count as words.

### 9.2 Flexible Roller Blind, Rigid Plate Display and Transilluminated Display Face Signs

9.2.1 Signs of Classes 5, 6, 10 to 13 and 22 shall have sign faces which conform in size, colour and shape with the Traffic Signs Regulations and General Directions (Ref 5) and the Traffic Signs Manual (Ref 9). The minimum x-heights to be used shall be as given in Table 1 (but see Section 9.2.3).

9.2.2 Any proposal for a non-prescribed message shall be produced using the appropriate Transport alphabet prescribed in regulation 13 and illustrated in Schedule 13 of the Traffic Signs Regulations and General Directions (Ref 5) and shall, where applicable, incorporate prescribed symbols wherever possible. Any such proposal shall be submitted to the Overseeing Organisation for authorisation.

9.2.3 The minimum x-heights of worded signs mounted over the carriageway shall be as given in Columns 3 and 4 of Table 2.

### 9.3 Matrix Signs

9.3.1 The colours of the faces of signs of Classes 1, 2, 3, 16, 18 and 19 are given in Clauses 6.6, 6.7 and 6.8.

9.3.2 The legends and symbols used on signs of Class 1 shall conform with the character set given in Appendix A and symbols given in Appendix B of this document. The parts of the cells or elements coloured yellow shall have a minimum width of  $0.085H$ , a

minimum surface area of  $0.01H^2$  and the gap between adjacent exposed elements shall not exceed  $0.04H$ , where  $H$  is the actual upper case letter height obtained using these elements.

9.3.3 The spacing between letters within a word and between letters and associated numerals on signs of Class 1 shall be at least equal to the Stroke Width and the spacing between brackets and the adjacent letters or numerals contained within the brackets shall exceed one Stroke Width.

9.3.4 The vertical space between lines of matrices on signs of Class 1 shall be not less than  $0.43H$ , nor more than  $0.75H$  between any individual lines which form part of a continuing statement, where  $H$  is the height of the capital letters used.

9.3.5 If a sign of Class 2, 3, 16, 18 or 19 is to be used, the proposed character set, symbols and spacings shall be agreed with the Overseeing Organisation.

9.3.6 The size, colour and shape of legends used on signs of Class 17 shall conform as near as practicable with the Traffic Signs Regulations and General Directions (Ref 5) and the Traffic Signs Manual (Ref 9). Any proposed character set, symbols and spacings to be used for this Class of sign shall be referred to the Overseeing Organisation for approval. The minimum x-heights to be used shall be as given in Table 1 (but see Clause 9.2.3).

9.3.7 The minimum heights for the characters to be used on signs of Classes 1, 2, 3, 16, 18 and 19 are given in Table 3 (but see Clause 9.3.8).

9.3.8 The minimum letter heights of worded signs of Classes 1, 2, 3, 16, 18, and 19 which are mounted over the carriageway shall be as given in columns 5 and 6 of Table 2.

### 9.4 Shaped Tubing Signs

9.4.1 No specific requirements can be given for signs of Class 23. If a sign of this type is proposed for use, the agreement of the Overseeing Organisation shall be obtained.

## 10. STANDARDISATION OF MESSAGES

10.1 Messages shall be as short as possible conducive to full understanding by all drivers. In no circumstances shall they consist of more than 10 words nor shall there be, on any one VMS, messages with conflicting priorities.

10.2 Messages, symbols and any abbreviations used on VMSs shall conform to regulation 58 and Schedule 15 of the Traffic Signs Regulations and General Directions (Ref 5). Messages shall also conform to the Joint ACPO and HA Policy and Procedures for the use of VMS by the Police and Regional Control Centres (Ref 11) and such additional local message lists as may have been agreed for specific control rooms and specially authorised.

10.3 Standard messages shall be from the Transport alphabets, the character set prescribed in regulation 13 and illustrated in Schedule 13 Part V of the Traffic Signs Regulations and General Directions (Ref 5) or other agreed font (see Clause 10.5) as appropriate for the type of sign (see Chapter 9).

10.4 If it is necessary to tell drivers that a particular class of vehicle should divert, eg heavy goods vehicles and motorcycles, symbols may be used to reduce the amount of wording required.

10.5 The use of non-prescribed characters, symbols and messages shall be submitted to the Overseeing Organisation for authorisation.

## 11. SITING REQUIREMENTS

11.1 Signs mounted on central reserves of dual carriageways shall be provided only to duplicate or complement signs on the verge. The x-heights and character heights of central reserve mounted signs shall comply with columns 9, 10 or 11 of Tables 1 and 3 respectively.

11.2 In no circumstances shall the lateral clearance between the edge of the carriageway, hard shoulder or hardened verge and the nearest edge of the sign be less than that given in Table 4.

11.3 Gantries shall be provided only to mount Variable Message Signs when such a provision can be justified by reason of siting, safety or obscuration difficulties.

11.4 On motorways and on all-purpose trunk roads with 85 percentile approach speeds (see Ref 9 for method of measurement) of private cars of 40 mph or over, two VMS displaying the same legend shall be provided where possible. This is to cater for the case when it is required to give alternative or conflicting legends to those given by permanent fixed directional informatory signs, eg VMS indicating mandatory or advisory diversions. Their siting shall follow the principles shown in TD 46, Drawings 1 to 7 (Ref 10). In relation to strategic VMS provision located near to the one mile and 1/2 mile ADS, where there is a conflict between the requirements of the strategic and other legends the one mile VMS shall have a tactical legend priority and the 1/2 mile VMS shall have a strategic legend priority. When other fixed direction signs, such as tourist signs, have already been sited between fixed advance direction signs, it may be necessary to reposition these signs in order to accommodate the VMS. The VMS shall not be co-located with fixed signs. The minimum distance between any two verge mounted signs, or between a verge mounted sign and a cantilever column, shall normally be 300 metres but not less than 200 metres, to ensure that drivers have sufficient time to read both signs. The minimum distance between two gantry columns shall normally be 300 metres but not more than 400 metres.

11.5 Tourist (or other) signs are normally sited 3/4 and 1/4 miles in advance of junctions, midway between the one mile and 1/2 mile ADS, and the 1/2 mile ADS and the final ADS. When there is a conflict between the VMS upstream of the 1/2 mile ADS and the tourist

sign, the tourist sign should be relocated upstream midway between the one mile ADS and the VMS upstream of the 1/2 mile ADS. When a VMS is placed between ADSs spaced at 2/3 and 1/3 mile, it will be necessary to replace any tourist or other verge mounted signs with new signs in the format "For xxx follow yyy" located at least 1/3 mile prior to the 2/3 mile ADS.

11.6 A route confirmatory sign, or a sign indicating the distance to the next motorway service area, that is within 200 metres of a VMS should be relocated further from the junction, preferably to achieve a separation of at least 300 metres.



## 12. OPERATIONAL REQUIREMENTS

12.1 Access for operating control of VMSs shall be restricted to authorised personnel such as the Police. In the case of Matrix type signs such as signs of Classes 1, 2, 3, 16 and 19 that can display any message, authorised users shall have access to a 'menu' of authorised programmed messages only. Access for re-programming new messages on a sign shall be restricted to ensure that unauthorised messages are not used. Changes to computer software shall be discussed in advance with the Overseeing Organisation to obtain their approval as required by direction 56(5) of the Traffic Signs Regulations and General Directions (Ref 5).

12.2 Signs that display messages relating to traffic conditions eg those that indicate an alternative route when a queue forms on the main route, shall, wherever practicable, be controlled automatically.

## 13. REFERENCES

1. TA 60 (DMRB 8.2) - The Use of Variable Message Signs on All-Purpose and Motorway Trunk Roads.
2. TR 2517 - Performance Specification for Electromechanical Variable Message Signs.
3. TRG 0600 - Self-Certification Approval of Traffic Signal Control Equipment.
4. International Commission of Illumination Publication No. 74 - Roadsigns.
5. The Traffic Signs Regulations and General Directions 2002 - (SI 2002 No 3113).
6. BS 873 - Road traffic signs and internally illuminated bollards.  
  
Part 5: 1983 - Specification for internally illuminated signs and external lighting luminaires.  
  
Part 6: 1983 - Specification for retroreflective and non-retroreflective signs.  
  
BS EN 12899-1:2001 replaces BS 873-5:1983 and BS 873-6:1983 which remain current.
7. BS 381C:1996 - Specification for colours for identification, coding and special purposes.
8. TA 19 (DMRB 8.2) - Reflectorisation of Traffic Signs.
9. The Traffic Signs Manual:  
  
Chapter 1: Introduction  
  
Chapter 3: Regulatory Signs  
  
Chapter 4: Warning Signs  
  
Chapter 7: The Design of Traffic Signs
10. TD 46 (DMRB 9.1.1) - Motorway Signalling.
11. The Joint ACPO and HA Policy and Procedures for the use of Variable Message Signs by the Police and Regional Control Centres.
12. TR 2516 - Performance specification for discontinuous variable message signs.
13. The Traffic Signs Regulations (Northern Ireland) 1997 - (SR 1997 No 386).

References 1, 5, 8, 9, 10 and 13 are available from The Stationery Office at [www.tso.co.uk](http://www.tso.co.uk)

References 2, 3 and 12 are available from [www.tssplansregistry.org](http://www.tssplansregistry.org)

Reference 4 is available from the International Commission of Illumination at [www.cie.co.at](http://www.cie.co.at)

References 6 and 7 are available from The British Standards Institution at [www.bsi-global.com](http://www.bsi-global.com)

Reference 11 is available from the Highways Agency VMS Policy Secretariat.

## 14. ENQUIRIES

All technical enquiries or comments on this Standard should be sent in writing as appropriate to:

Chief Highway Engineer  
The Highways Agency  
123 Buckingham Palace Road  
London  
SW1W 9HA

G CLARKE  
Chief Highway Engineer

Chief Road Engineer  
Scottish Executive  
Victoria Quay  
Edinburgh  
EH6 6QQ

J HOWISON  
Chief Road Engineer

Chief Highway Engineer  
Transport Wales  
Welsh Assembly Government  
Cathays Parks  
Cardiff  
CF10 3NQ

M J A PARKER  
Chief Highway Engineer  
Transport Wales

Director of Engineering  
The Department for Regional Development  
Roads Service  
Clarence Court  
10-18 Adelaide Street  
Belfast BT2 8GB

G W ALLISTER  
Director of Engineering

# APPENDIX A TABLES

85 percentile approach speeds of private cars mph	Number of words in longest message to be displayed	x-height of transport alphabets (millimetres)								
		Verge mounted signs						Signs mounted on the central reserves of motorways and all purpose dual carriageways		
		Motorways and all purpose dual carriageway roads with hard shoulders			All purpose roads without hard shoulders D = dual carriageway roads S = single carriageway roads					
		2 lane	3 lane	4 lane	1 lane D 2 lane S	2 lane D 4 lane S	3 lane D	2 lane	3 lane	4 lane
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
Up to and including 30	2				75	100	150	75	100	150
	4				100	150	150	100	150	150
	6				100	150	200	100	150	200
	8				150	150	200	150	150	200
	10				150	200	200	150	200	200
Over 30 Up to and including 40	2	150	200	250	100	150	150	100	150	150
	4	200	250	250	150	150	200	150	150	200
	6	200	250	300	150	200	200	150	200	200
	8	250	250	300	150	200	250	150	200	250
	10	250	300	300	200	200	250	200	200	250
Over 40 Up to and including 50	2	200	250	250	150	150	200	150	150	200
	4	200	250	300	150	200	200	150	200	200
	6	250	300	300	200	200	250	200	200	250
	8	250	300	350	200	250	250	200	250	250
	10	300	350	350	250	250	300	250	250	300
Over 50 Up to and including 60	2	200	250	300	150	200	200	150	200	200
	4	250	300	300	200	200	250	200	200	250
	6	250	300	350	200	250	250	200	250	250
	8	300	350	350	250	250	300	250	250	300
	10	350	350	400	250	300	350	250	300	350
Over 60	2	250	250	300	150	200	250	150	200	250
	4	250	300	350	200	250	250	200	250	250
	6	300	350	350	250	250	300	250	250	300
	8	350	350	400	250	300	350	250	300	350
	10	350	400	450	300	350	350	300	350	350

Table 1 - Sizes of Transport Alphabets on Post Mounted Signs

85 percentile approach speeds of private cars mph	Number of words in longest message to be displayed	x-height of transport alphabet (millimetres)		Upper case letter height of matrix characters (millimetres)	
		Signs mounted at approx 6m above road surface*	Signs mounted at approx 7.5m above road surface*	Signs mounted at approx 6m above road surface*	Signs mounted at approx 7.5m above road surface*
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Up to and including 30	2	150	200	210	225
	4	200	200	230	245
	6	200	200	250	265
	8	200	200	270	285
	10	200	250	285	305
Over 30 Up to and including 40	2	200	200	235	255
	4	200	200	260	280
	6	200	250	285	305
	8	250	250	315	330
	10	250	250	340	355
Over 40 Up to and including 50	2	200	200	260	280
	4	250	250	295	310
	6	250	250	325	345
	8	250	300	360	375
	10	300	300	390	410
Over 50 Up to and including 60	2	200	250	285	305
	4	250	250	325	345
	6	300	300	365	380
	8	300	300	405	420
	10	350	350	440	460
Over 60	2	250	250	315	330
	4	250	300	360	375
	6	300	300	405	420
	8	350	350	450	465
	10	400	400	495	510

\* Measured to the lower edge of the sign. Any proposals for other mounting heights should be referred to the appropriate Overseeing Organisation

**Table 2 - Sizes of Characters on Signs Mounted Over the Carriageway**

85 percentile approach speeds of private cars mph	Number of words in longest message to be displayed	Upper case letter height of matrix characters (millimetres)								
		Verge mounted signs						Signs mounted on the central reserves of motorways and all purpose dual carriageways		
		Motorways and all purpose dual carriageway roads with hard shoulders			All purpose roads without hard shoulders D = dual carriageway roads S = single carriageway roads					
		2 lane	3 lane	4 lane	1 lane D 2 lane S	2 lane D 4 lane S	3 lane D	2 lane	3 lane	4 lane
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
Up to and including 30	2				110	155	200	110	155	200
	4				130	175	215	130	175	215
	6				150	195	235	150	195	235
	8				170	215	255	170	215	255
	10				190	230	275	190	230	275
Over 30 Up to and including 40	2	225	265	310	135	180	225	135	180	225
	4	250	290	335	165	205	250	165	205	250
	6	275	320	360	190	230	275	190	230	275
	8	300	345	385	215	260	300	215	260	300
	10	325	370	415	240	285	325	240	285	325
Over 40 Up to and including 50	2	250	290	335	165	205	250	165	205	250
	4	280	325	370	195	240	280	195	240	280
	6	315	355	400	225	270	315	225	270	315
	8	345	390	430	260	305	345	260	305	345
	10	380	420	465	290	335	380	290	335	380
Over 50 Up to and including 60	2	275	320	360	190	230	275	190	230	275
	4	315	355	400	225	270	315	225	270	315
	6	350	395	440	265	310	350	265	310	350
	8	390	435	480	305	350	390	305	350	390
	10	430	475	515	345	385	430	345	385	430
Over 60	2	300	345	385	215	260	300	215	260	300
	4	345	390	430	260	305	345	260	305	345
	6	390	435	480	305	350	390	305	350	390
	8	435	480	525	350	395	435	350	395	435
	10	480	525	570	395	440	480	395	440	480

Table 3 - Sizes of Characters on Matrix Signs

85 percentile approach speeds of private cars  mph	Height of top of sign (see NOTE 1)  m	Minimum lateral clearance (see NOTE 2) where carriageway or hard shoulder crossfall is:	
		away from sign or towards sign but not steeper than 4% m	towards sign and steeper than 4% m
Up to and including 30	Less than 3	0.5	0.6
	3 and above	0.6	0.8
Over 30 up to and including 50	All heights	1.0	
Over 50	All heights	1.5	

**Table 4 - Lateral Clearances**

**NOTES**

1. The height is measured from the level of the surface of the carriageway, hard shoulder or hardened verge in the immediate vicinity of the sign.
2. The lateral clearance is the horizontal distance between either: the edge of the carriageway or hard shoulder or, where there is a hardened verge on the left of the carriageway, the edge of the hardening and the nearest edge of the sign.