



**THE HIGHWAYS AGENCY**



**THE SCOTTISH OFFICE INDUSTRY DEPARTMENT**



**THE WELSH OFFICE  
CYNULLIAD CENEDLAETHOL CYMRU**



**THE DEPARTMENT OF THE ENVIRONMENT FOR  
NORTHERN IRELAND**

# Identification Marking of Highway Structures

**Summary:** This Departmental Standard sets out the requirements for the siting and details of the numbering to be used for the identification marking of bridges and structures on motorways and other trunk roads.

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**REGISTRATION OF AMENDMENTS**

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<b>VOLUME 3</b>	<b>HIGHWAY STRUCTURES INSPECTION &amp; MAINTENANCE</b>
<b>SECTION 1</b>	<b>INSPECTION</b>

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**PART 1**

**BD 45/93**

**IDENTIFICATION MARKING OF  
HIGHWAY STRUCTURES**

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# 1. INTRODUCTION

## General

1.1 The Bridge Inspection Guide draws attention to the need for inspectors to check carefully the identity of a structure, because of the ease with which mistakes can occur. The Maunsell report "The Performance of Concrete in Bridges" states that it would be very helpful if all structures were labelled with a reference number to avoid errors in identification.

1.2 A programme of marking all bridges and structures on motorways and other trunk roads is therefore to be undertaken. This will provide positive identification for Maintenance Agents and contractors, and will also help members of the public to identify a particular structure if necessary.

1.3 This Standard updates and replaces BD 45/91 and sets out the details of, and the siting requirements for the identification numbering of structures. Every structure shall be marked with a unique number derived from the road kilometrage. The requirements for England are described in Appendix A and for those for Wales are described in Appendix B.

1.6 This Standard does not apply in Scotland and Northern Ireland.

## Scope

1.4 All structures on motorways and other trunk roads are to be marked, both overbridges and underbridges are to be included. In the case of structures not owned by the Overseeing Department, agreement to the siting of numbers shall be obtained from owners beforehand.

## Implementation

1.5 Maintenance Agents in England and Wales shall implement this Standard for existing structures in the most economical way, for example in conjunction with General or Principal Inspections. This shall be completed by the end of 1993. Existing structures already marked in accordance with BD 45/91 are unaffected. Identification marking of new structures shall be carried out in conjunction with the first Principal Inspection.

## 2. PAINTING AND MAINTENANCE

### Materials

2.1 Suitable paint should be selected with the expectation of providing a 10 year minimum life in the environment to which it will be subjected. At the end of this period the number should still be legible.

2.2 Paint should be suitable for use on the proposed surfaces, and in the case of steel, be compatible with the existing paint system.

### Surface Preparation of Concrete or Masonry

2.3 Surfaces shall be dry cleaned by brushing to remove any dirt, moss, algae or other loose or deleterious matter.

### Surface Preparation of Painted Steel

2.4 Detrimental contamination shall be removed by wet or dry scrubbing with a stiff bristle brush, and any cleaning agents used shall be removed by thoroughly rinsing with clean cold water.

2.5 Sound finishing paint with the exception of chlorinated rubber and acrylated rubber finishes, shall be freed of all visible gloss by hand abrading to provide a satisfactory key.

2.6 Unsound paint shall be removed by a non-impact method.

### Application of Paint

2.7 Paints shall be applied by brush or roller in single coats to dry surfaces in accordance with the manufacturer's recommendation.

2.8 Paints shall not be applied during rain, fog, or mist, in a dust laden atmosphere, when the ambient temperature is less than 5°C or, when the relative humidity exceeds 90%.

### Maintenance of Numbering

2.9 Numbers shall be checked and cleaned, if necessary, under routine maintenance operations.

2.10 Re-stencilling shall be carried out as necessary and at least once every 10 years.

### 3. REFERENCES

The following Departmental documents are referred to in this Standard:

1. Bridge Inspection Guide. HMSO, 1983.
2. TRMM 2/88 Trunk Road and Motorway Structures - Records and Inspection DOT, 1988.  
*[for use in England]*
3. WOTRMM 2/88 Welsh Office Trunk road and Motorway Structures - Records and Inspections.  
*[for use in Wales]*
4. WO/TRBDB - Welsh Office Trunk Road Bridge Data Base Manual  
*[for use in Wales]*
5. The Performance of Concrete in Bridges. HMSO, 1989.

## 4. ENQUIRIES

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

Chief Highway Engineer  
The Department of Transport  
St Christopher House  
Southwark Street  
LONDON SE1 0TE

T A ROCHESTER  
Chief Highway Engineer

The Deputy Chief Engineer  
The Scottish Office Industry Department  
Roads Directorate  
New St. Andrew's House  
Edinburgh  
EH1 3TG

J INNES  
Deputy Chief Engineer

The Director of Highways  
Welsh Office  
Y Swyddfa Gymreig  
Government Buildings  
Ty Glas Road  
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Cardiff CF4 5PL

K J THOMAS  
Director of Highways

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Northern Ireland  
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Belfast BT1 1GU

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# DETAILS AND SITING OF NUMBERING ON STRUCTURES IN ENGLAND

## Numbering System

1. The structure number shall be the value of the road kilometrage indicated by the preceding 100m value. In the case of motorways the number of the structure shall be that of the preceding distance marker post.

2. Although there are no marker posts on all purpose trunk roads the numbering shall be undertaken as if the marker posts were present at the same 100m interval.

## Number Type and Layout

3. The numberings shall be stencilled either vertically or horizontally directly on a white background on the structure using black "Transport Heavy Alphabet" numerals 105mm high for dual carriageway, or 52.5mm high for urban and single carriageway roads. The fixing of number plates to the structure will not be permitted.

4. For layout of numbers see Figures A/1 and A/2. Where the structure number contains identifiers after the kilometrage eg 'R' for retaining wall, 'S' for gantry, 'A' for widened structure etc, these are also to be included.

## Common Kilometrage

5. Where two or more structures share a common kilometrage value, the structure identification number/suffixes shall be included with the number eg.

165 3/S5

where S = sign gantry, 5 = the sixth structure numbered 165 3 (the first being 0).

## Intersections

6. At intersections of motorways and/or trunk roads the number of the structure shall be derived from the kilometrage of the road carrying traffic over. In

addition the bridge number shall include the road over as a prefix to assist identification from the road under eg.

A35/165 3

## Interchanges

7. Where several structures are grouped within an interchange they will share the intersection kilometrage and shall have the road identifier and structure suffix included eg.

A35/165 3/S5

## Siting of Numbers

8. The numbers shall be sited on structures as shown in Appendix C so that they are in a convenient position for the maintaining inspectors and agents and also as far as possible readily visible to members of the travelling public. The numbers shall not be obtrusive and they shall where possible be sited to minimise the likelihood of vandalism.

9. Maintenance Agents are to consult the Regional Office to agree the siting of numbers.

10. The Landscape Architect and/or the Architect/Planner will agree the siting of the numbers on a route by route basis.

## Structures Not Owned by the Department of Transport

11. Owners are to be consulted in advance about the siting of numbers on their structures.

## Existing Numbers

12. With the exception of structures owned by other parties, any existing identification mark which is not in accordance with this Standard shall be removed or made illegible, to avoid confusion.

**Record of Numbering**

13. The full identification number and its position on the structure shall be recorded in the structure file (TRMM 2/88) by the Maintenance Agent for ease of reference by maintenance personnel.

**NOTES TO FIGURE A/1**

1. The numbering shall be in accordance with Drawings DR1, 5, 6 and 7 - Alphabet Design Details (Appendix D).

**Relative Placing of Numbers and Letters**

2. The spacing of numbers and letters is to be derived from the standard 'tiling' system defined/referred to on Drawings DR1, 5, 6, & 7 (the 'tiling' size being that shown on the above drawings), the spacing being derived by placing tiling contiguously. The outlines of the tiles do not form part of the signs. The 105mm letter/number height is obtained by multiplying the 'X height' of 75mm by the factor of 1.4. All dimensions are in mm.

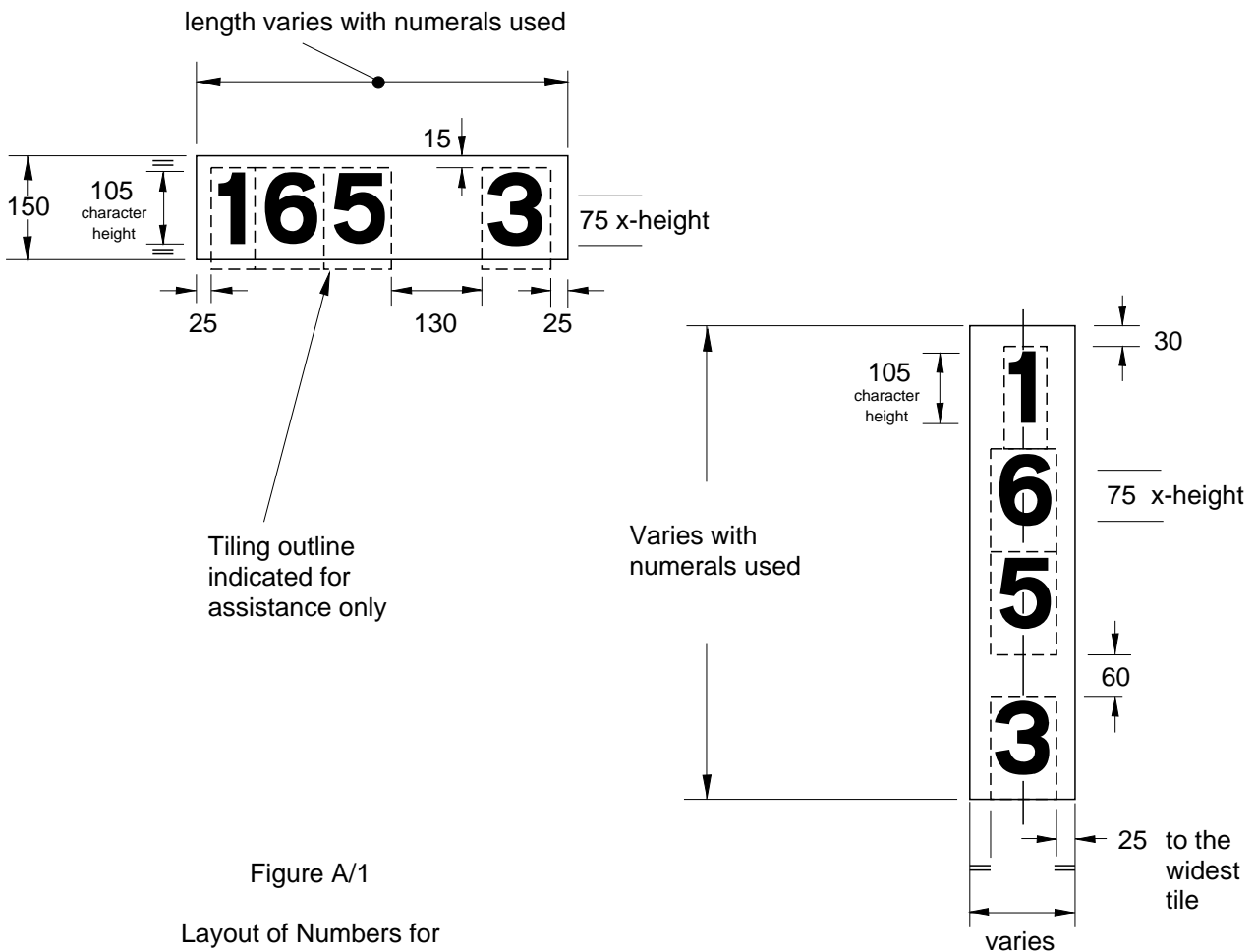


Figure A/1

Layout of Numbers for  
Motorways and Dual All  
Purpose Trunk Roads

VARIANT

**NOTES TO FIGURE A/2**

1. The numbering shall be in accordance with Drawings DR1, 5, 6 & 7 - Alphabet Design Details (Appendix D).

**Relative Placing of Numbers and Letters**

2. The spacing of numbers and letters is to be derived from the standard 'tiling' system defined/referred to on Drawings DR1, 5, 6 & 7 (the 'tiling' size being that shown on the above drawings), the spacing being derived by placing tiling contiguously. The outlines of the tiles do not form part of the signs. The 52.5mm letter/number height is obtained by multiplying the 'X height' of 37.5mm by the factor of 1.4. All dimensions are in mm.

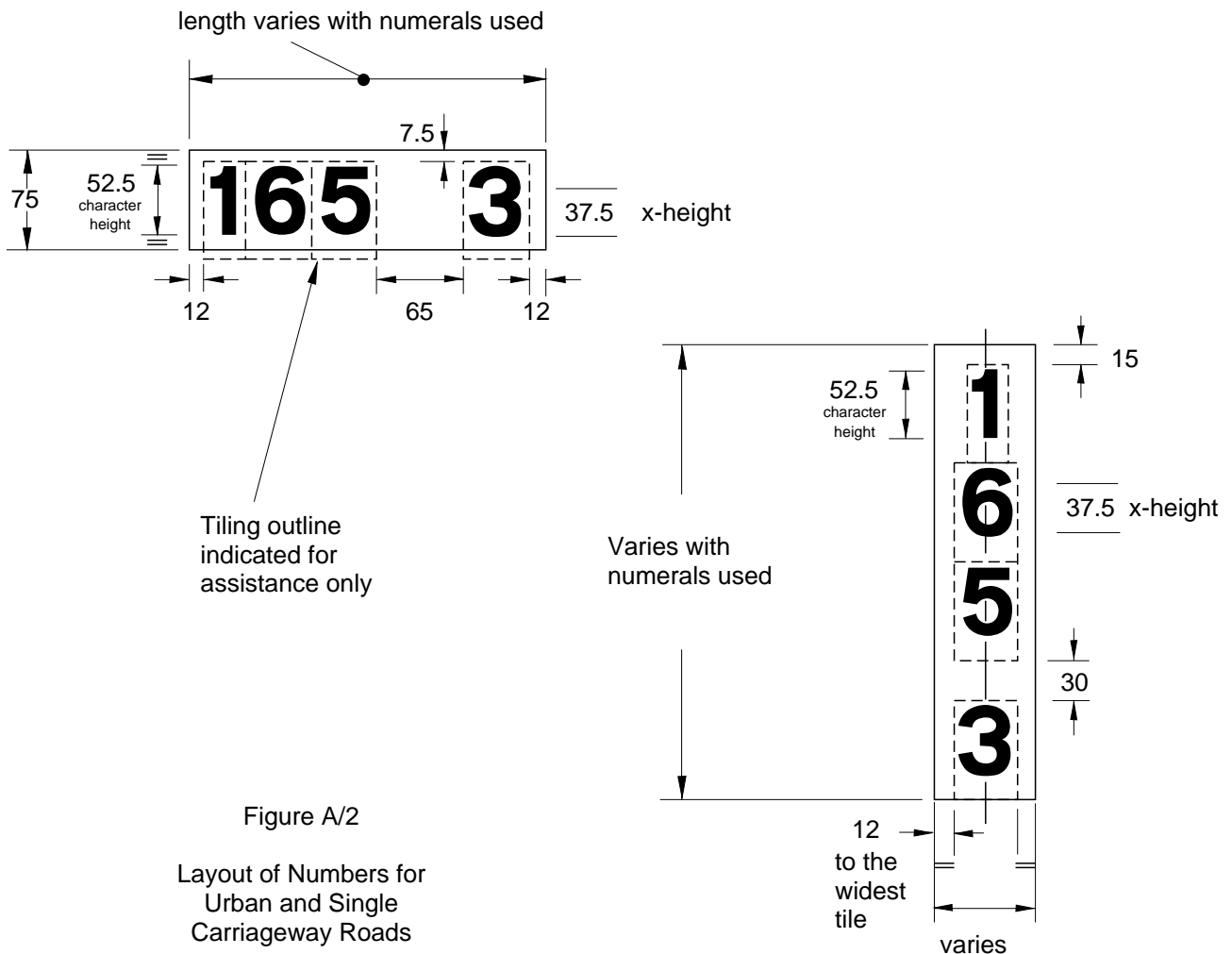


Figure A/2  
Layout of Numbers for  
Urban and Single  
Carriageway Roads

VARIANT

# DETAILS AND SITING OF NUMBERING ON STRUCTURES IN WALES

## Numbering System

1. The numbering system is explained in the WO/TRBDB (Welsh Office Trunk Road Bridge Data Base) Manual and will result in a number having between 6 and 12 digits.

## Number Type and Layout

2. The numberings shall be stencilled either vertically or horizontally directly on a white background on the structure, using black "Transport Heavy Alphabet" 105mm high for dual carriageway, or 52.5mm high for urban and single carriageway roads. The fixing of number plates to the structure will not be permitted.

3. For layout of numbers see Figures B/1 and B/2.

## Sittings of Numbers

4. The numbers shall be sited on structures as shown in Appendix C, so that they are in a convenient position for maintaining inspectors and agents and also as far as possible, readily visible to members of the travelling public. The numbers shall not be obtrusive and they shall, wherever possible, be sited to minimise the likelihood of vandalism.

5. Maintenance Agents are to consult the Welsh Office to agree the siting of numbers.

## Structures Not Owned by the Welsh Office

6. Owners are to be consulted in advance about the siting of numbers on their structures.

## Existing Numbers

7. With the exception of structures owned by other parties, any existing identification mark which is not in accordance with this Standard shall be removed or made illegible, to avoid confusion.

## Record of Numbering

8. The full identification number and its position on the structure shall be recorded in the Structure File (WOTRMM 2/88) by the Maintenance Agent for ease of reference by maintenance personnel.

## NOTES TO FIGURES B/1 AND B/2

1. The numbering shall be in accordance with Drawings DR1, 5, 6 & 7 - Alphabet Design Details (Appendix D).

## Relative Placing of Numbers and Letters

2. The spacing of numbers and letters is to be derived from the standard "tiling system" defined/referred to on Drawings DR1, 5, 6 and 7; the "tiling" size being that shown on the above drawings and the spacing being derived by placing tiling contiguously. The outlines of the tiles do not form part of the signs. In Figure B/1 the 105mm letter/number height is obtained by multiplying the "x height" of 75mm by the factor of 1.4. In Figure B/2 the 52.5mm letter/number height is obtained by multiplying the "x height" of 37.5mm by the factor of 1.4.

All dimensions are in millimetres.

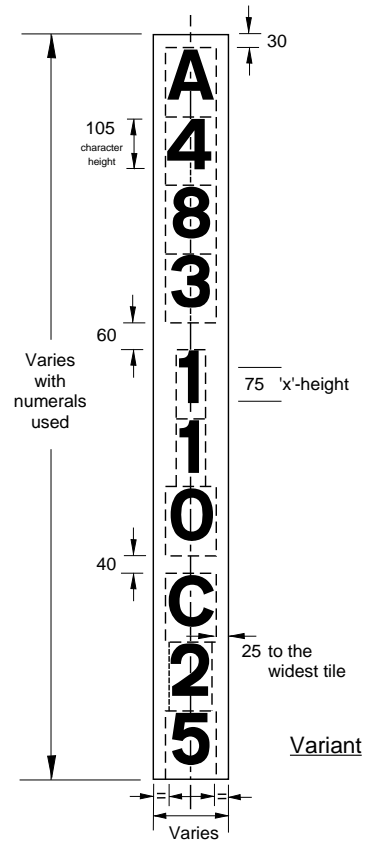
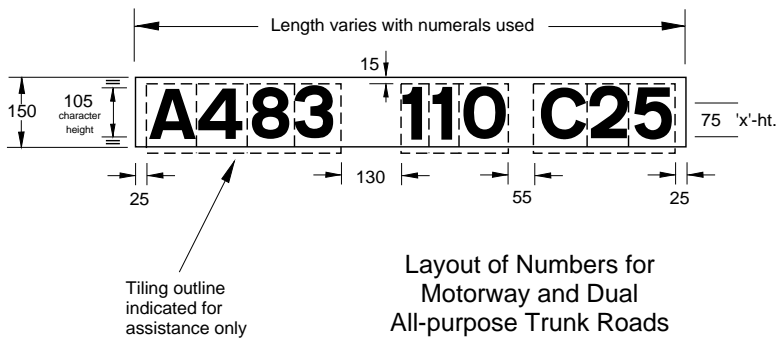


Figure B/1

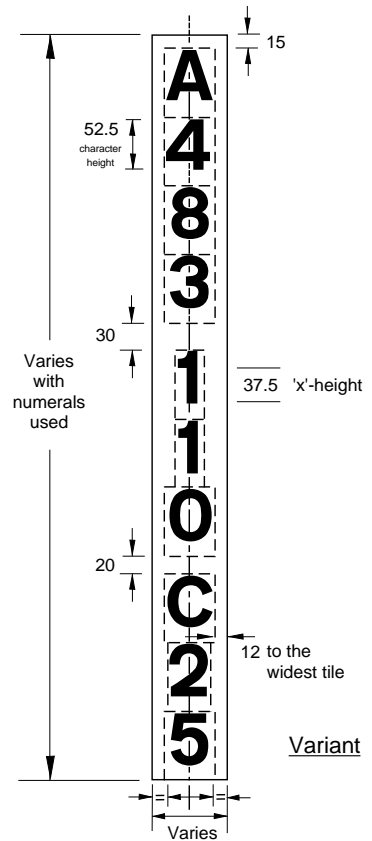
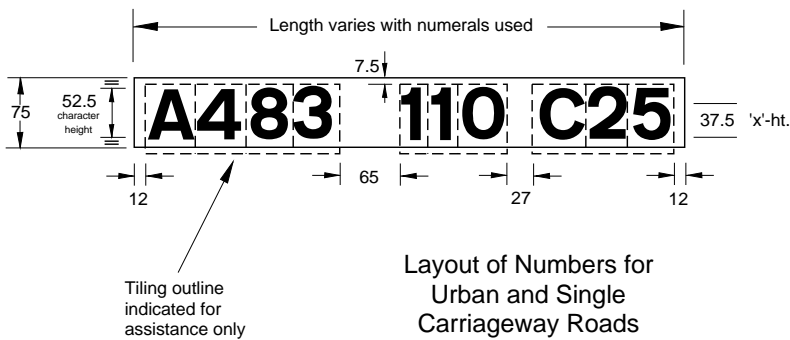


Figure B/2

# SITING OF NUMBERS

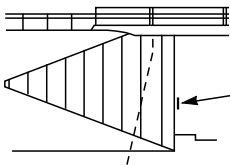

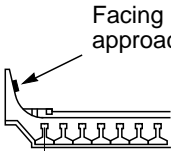
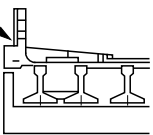
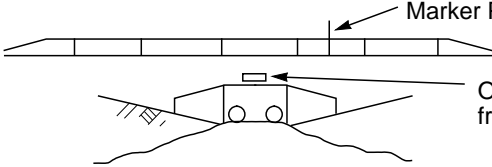
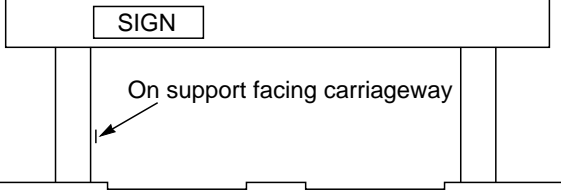
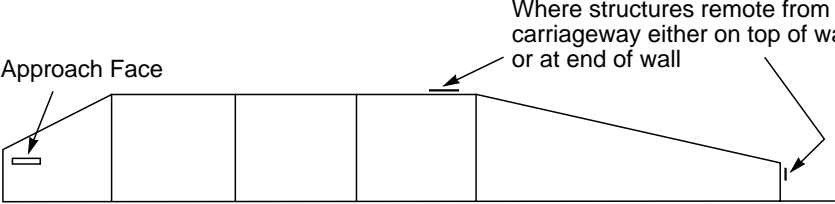
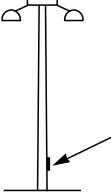
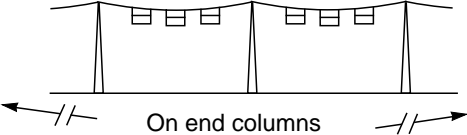
## Structures Adjacent to the Carriageway

1. On single carriageways, one number only, adjacent to the lane carrying traffic in the direction of increasing road kilometrage.
2. On dual carriageways, one number adjacent to each carriageway.
3. For overbridges, on piers or abutments 1m above either top of safety fence or carriageway level, whichever is the higher, facing the carriageway. Where vandalism is likely to be a problem, at 3m minimum height above carriageway level.
4. For underbridges with concrete or brick parapets, on the parapet, at the approach end, facing the carriageway.
5. On underbridges with metal parapets on the concrete plinths between first and second posts, at the approach end.
6. On retaining walls, adjacent to the carriageway, at the approach end, facing the road.
7. At intersections of motorways and/or trunk roads, marked on the structure in positions relative to both roads.
8. On long viaducts, such as Midland Links, reference markings on both superstructure and individual substructures.

## Structures Remote From the Carriageway

9. Structures are to be marked discreetly for the convenience of inspection and maintenance staff only.
10. Where structures are remote from the carriageway, (eg retaining walls at the bottom of embankments, or culverts) marked on top of wall, or coping.
11. In the case of bridges over or under a secondary road, marked on the structure adjacent to the secondary road, on wing wall tops for underbridges, and on parapet plinths or top of copings for overbridges.

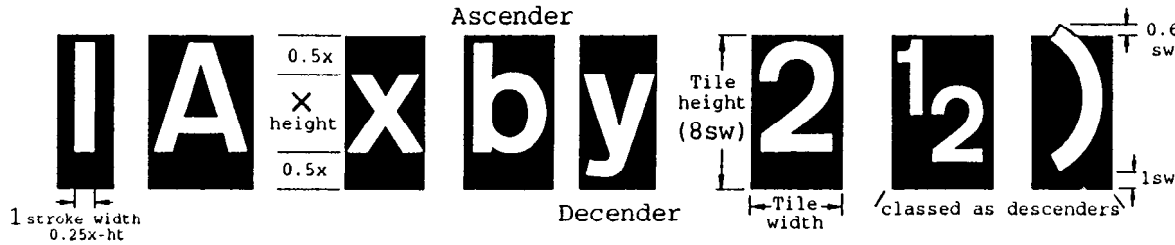
FIGURE C1  
Siting of Numbers

STRUCTURE TYPE	SITING OF IDENTIFICATION NUMBERS	
OVERBRIDGES	 <p>On abutment (higher of) 1m above Safety Fence or carriageway</p>	 <p>On column (higher of) 1m above Safety Fence or carriageway</p>
UNDERBRIDGES	 <p>Facing Road approach end</p>	 <p>Flat on the concrete plinth between first and second posts - approach end</p>
CULVERT/UNDERPASS	 <p>Marker Posts</p> <p>On top of Wall for structures remote from carriageway</p>	
SIGN/SIGNAL GANTRY	 <p>SIGN</p> <p>On support facing carriageway</p>	
RETAINING WALL	 <p>Approach Face</p> <p>Where structures remote from carriageway either on top of wall or at end of wall</p>	
LIGHTING	 <p>HIGH MAST</p> <p>On mast</p>	 <p>CATENARY</p> <p>On end columns</p>

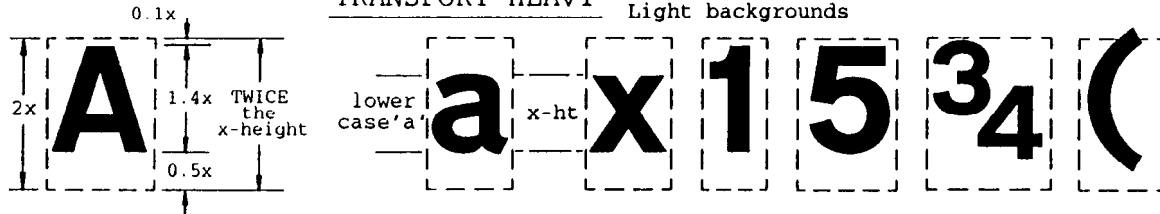
Drwg.No. DR 1

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**TRANSPORT MEDIUM** Light letters on Dark backgrounds



**TRANSPORT HEAVY** Dark letters on Light backgrounds

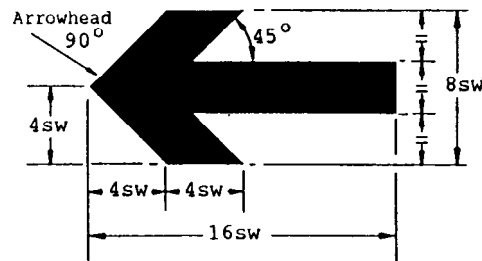


1. Stroke width (sw) throughout sign design is 0.25 of the x-height, (it is also the thickness of the upper case 'I' in the Transport Medium alphabet)
2. The letters are used on tiles for spacing, shown also by the broken lines around the Transport Heavy alphabet, these are not shown on signs.
3. Correct spacing is achieved by butting the tile edges together to form words.
4. x-heights normally used are: 20, 25, 37.5, 50, 62.5, 75, 100, 125, 150, 200, 250 and 300mm.
5. The alphabets are given on DR2-DR11 with percentages of tile widths related to the x-height.
6. See further design rule drawings for application of these letters.
7. This information was originally given on drawing WBM 149 sheet 1.

**ROUTE NUMBERS USED ON MOTORWAY**

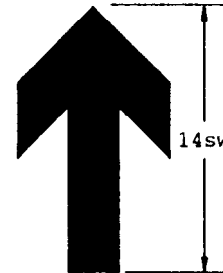


**STANDARD ARROW**



x-height = 4 stroke widths (sw)

**VERTICAL ARROW USED WITH ONE LINE LEGENDS**



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Drawn: S.P. Approved: R.M.

Design Rule drawing  
**ALPHABET DESIGN DETAILS**

DEPARTMENT OF TRANSPORT

Drwg.No.

DR 1

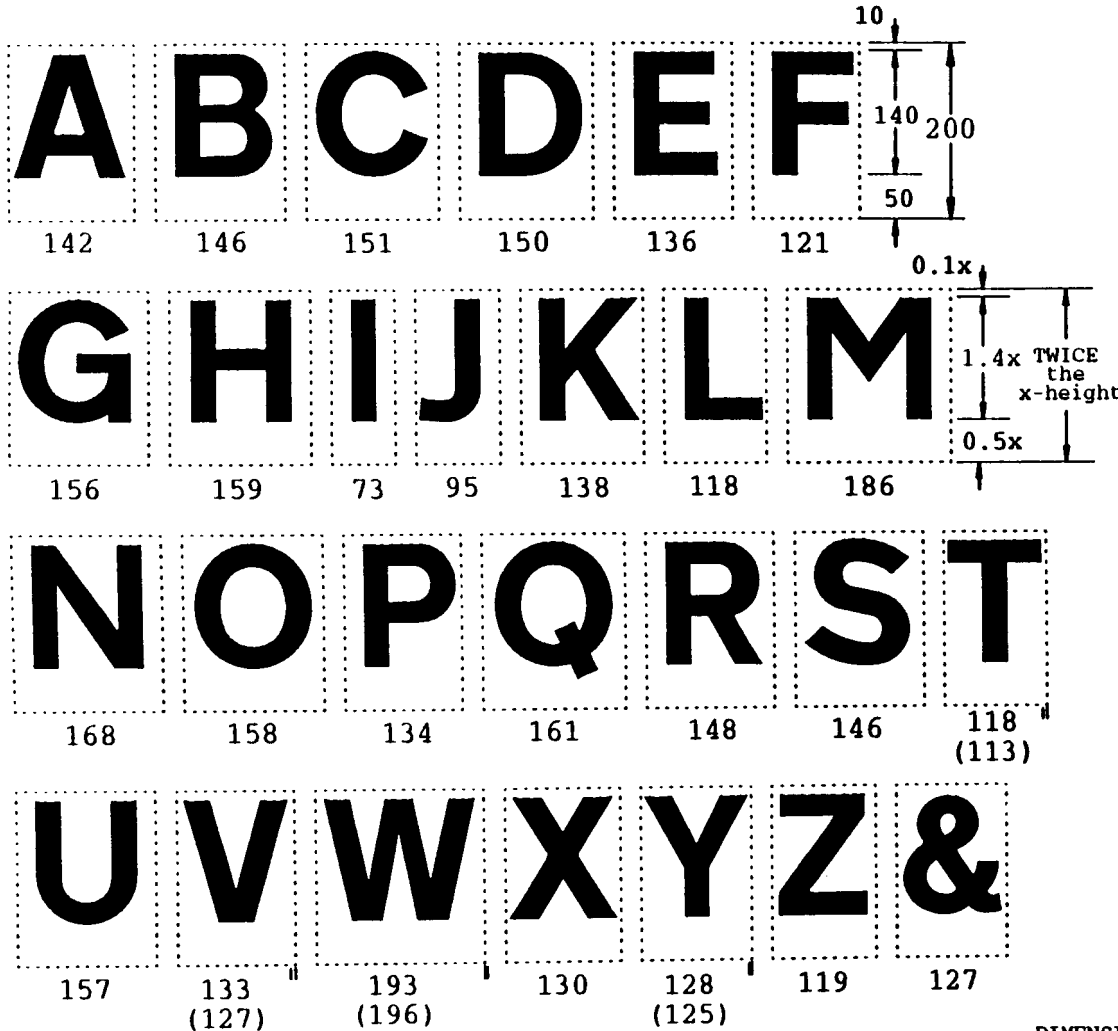
**ALPHABET DESIGN DETAILS**

DR1



Drwg.No.  
**DR 5**

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1. The letters shown are from the Transport HEAVY alphabet.
2. The letters are placed on tiles for the purpose of spacing, this is shown on other Design Rule drawings. The tile outlines do not form part of signs
3. Dimensions are based on the lower case x. Those shown are for 100mm x-ht in order to give a percentage which can be used for tile heights and widths on other sizes of x-height.
4. Colours: Black (BS.873:Part 6)
5. The shortened tile widths in brackets are used when T, V or Y is followed by a lower case a, e, g, o, r, s, u, w or y (widths in brackets for these letters also) When W is followed by another upper case letter it's increased width shown in brackets is used.
6. Alphabet design details on DR 1. See DR 6 for lower case letters and DR 7 for numerals and arrows.
7. This information was originally given on drawing WBM 150 sheet 1.

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Design Rule drawing <b>TRANSPORT HEAVY ALPHABET Upper Case Letters</b>
DEPARTMENT OF TRANSPORT
Drwg.No. <b>DR 5</b>

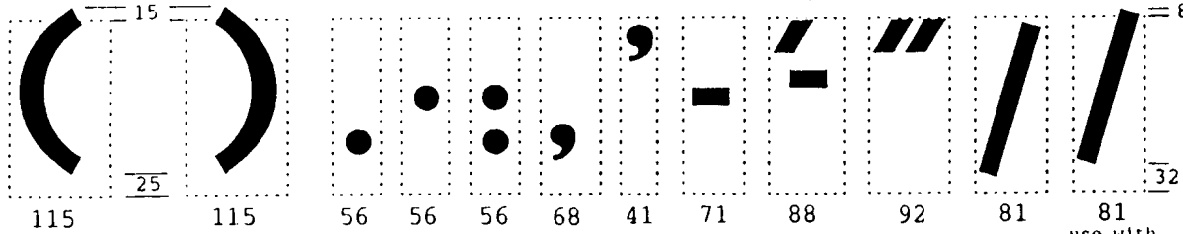
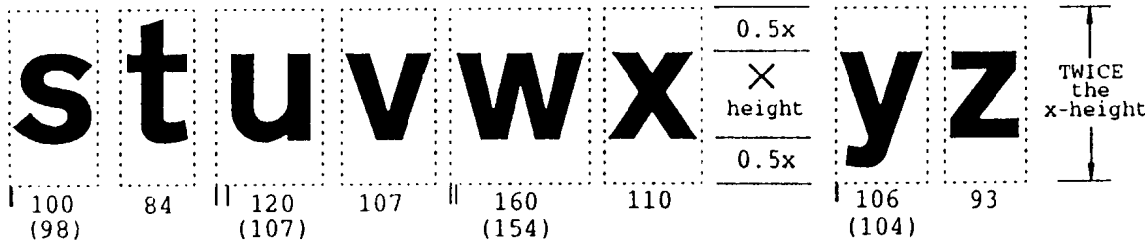
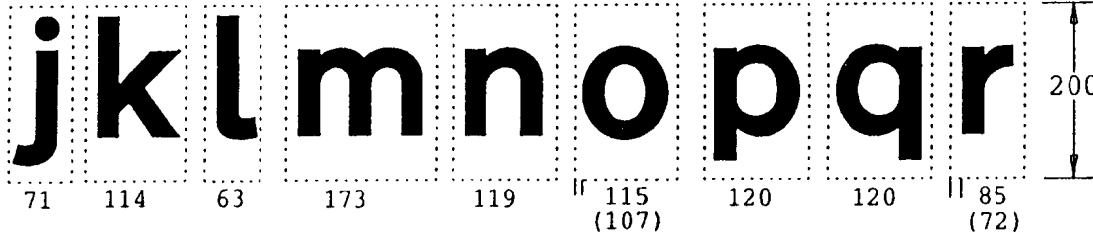
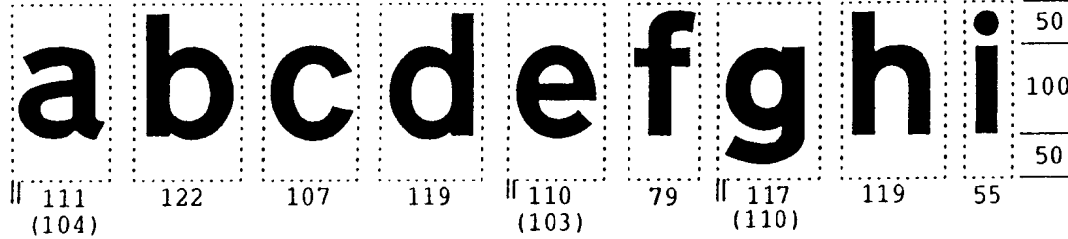
DIMENSIONS IN MILLIMETRES

DR5

April 1993

Drwg.No.  
**DR 6**

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- The letters shown are from the Transport HEAVY alphabet.
- The letters are placed on tiles for the purpose of spacing, this is shown on other Design Rule drawings. The tile outlines do not form part of signs.
- Dimensions are based on the lower case x. Those shown are for 100mm x-ht in order to give a percentage which can be used for tile heights and widths on other sizes of x-height.
- Colours: Black (BS.873:Part 6)
- The shortened tile widths shown in brackets are to be used when these letters follow an upper case T, V or Y which also use their shortened width.
- Alphabet design details on DR 1. See DR 5 for upper case letters and DR 7 for numerals and arrows.
- This information was originally given on drawing WBM 150 sheet 2.

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Design Rule drawing TRANSPORT HEAVY ALPHABET Lower Case Letters
DEPARTMENT OF TRANSPORT
Drwg.No. <b>DR 6</b>

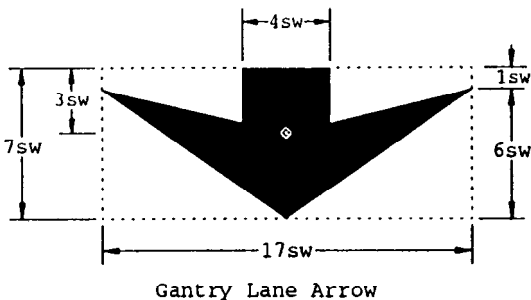
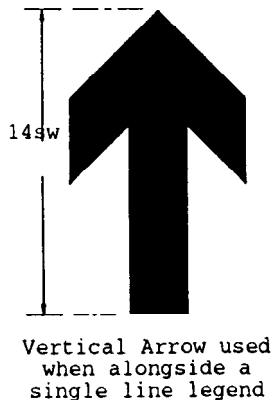
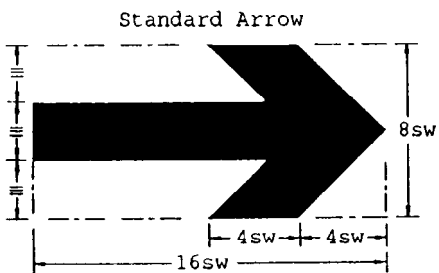
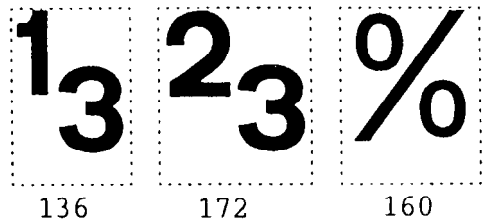
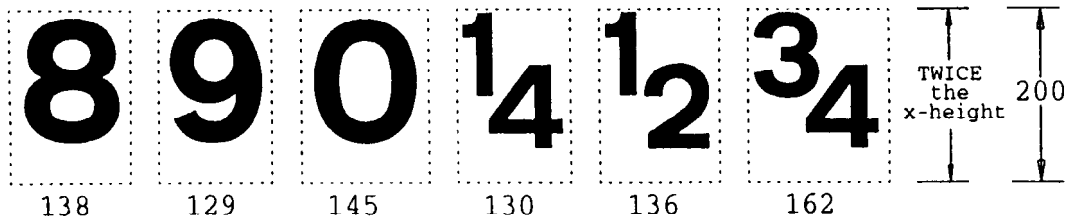
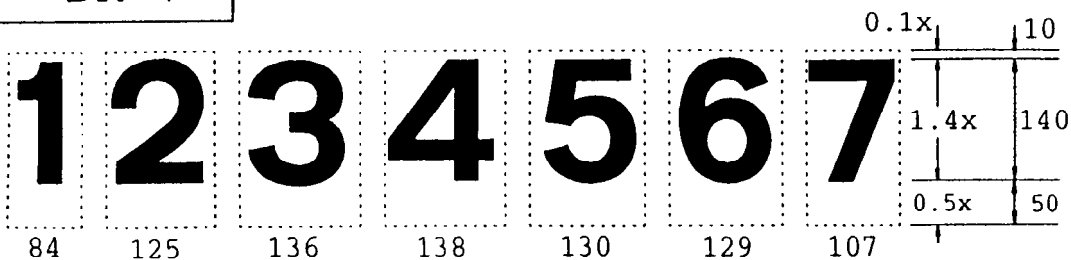
DR6

DIMENSIONS IN MILLIMETRES

use with  
Upper case  
& Numerals

Drwg.No. DR 7

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1. The letters shown are from the Transport HEAVY alphabet.
2. The letters are placed on tiles for the purpose of spacing, this is shown on other Design Rule drawings. The tile outlines do not form part of signs.
3. Dimensions are based on the lower case x. Those shown are for 100mm x-ht in order to give a percentage which can be used for tile heights and widths on other sizes of x-height.
4. Colours: Black (BS.873:Part 6)
5. Alphabet design details on DR 1. See DR 5 for upper case letters and DR 6 for lower case letters.
6. This information was originally given on drawing WBM 150 sheet 3.
7. Tile dimensions are in millimetres, Arrow dimensions are in stroke widths ( x-height = 4sw)

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Design Rule drawing TRANSPORT HEAVY ALPHABET Numerals and Arrows DEPARTMENT OF TRANSPORT
Drwg.No. DR 7

DR7