



SOUTHERN AFRICAN
DEVELOPMENT COMMUNITY

ROAD TRAFFIC SIGNS MANUAL

3rd Edition

VOLUME 4 TRAFFIC SIGN DESIGN

DIGITISED VERSION – May 2012



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PREFACE

Southern African Development Community (SADC) member states decided, at their meeting in Lusaka in June 1995, to enter into a Protocol Agreement to expand and deepen their co-operation in the areas of infrastructure and services. An important component of this Protocol Agreement is the intention to harmonize road traffic signs and their supporting regulations throughout member states.

South Africa offered to undertake the work required for this harmonization process. The first phase of the work involved an assessment of any differences existing between the current systems, as documented in the Southern Africa Transport and Communications Commission (SATCC) Road Traffic Signs Manual, published in November 1990, and the South African Road Traffic Signs Manual, published in January 1993. This assessment showed that the two systems are very similar, both being based on the European road traffic sign system. The South African system, having recently been developed to conform to European signing principles, but also to satisfy African requirements, contained a significantly greater number of road traffic sign types. These findings were considered by SATCC in September 1995. The Commission appointed a sub-committee comprising members from Lesotho, Malawi, Namibia and South Africa to monitor the work of the South African team in the preparation of the new harmonized Manual and model road traffic sign regulations.

This Third Edition of the SADC Road Traffic Signs Manual is structured to ultimately appear in four volumes. However at present, at the request of the sub-committee, only Volumes 1 and 4 have been prepared. A decision will be taken in the future on the need to adapt Volumes 2 and 3 of the South African Manual to SADC requirements.

Volume 1 of the Manual contains detailed signing policy and design principles. The text covering each sign, marking and signal starts with a statement regarding the meaning, or

significance, of the device. These statements are essentially the same as those given in the harmonized model road traffic sign regulations, prepared at the same time as Volume 1. The content of Volume 1 provides an in depth description of the road traffic sign system and working detail on the use of each individual component of the system.

Volume 2, if required, will deal with the collective application of signs, markings, and signals for specific subject areas such as traffic accommodation at roadworks, tourism signing, public transport signing and signing for the control of heavy vehicles.

Volume 3, if required, will provide in depth detail on the selection, installation, operation and control methods for traffic signals.

Volume 4 gives complete dimensional details, together with accurate scalable drawings, of all signs, markings and signals, including details of all letter types used on direction signs.

Absolute harmonization of all aspects of the previous road traffic signs systems is not possible for a number of reasons. In order to accommodate specific needs of member states several chapters in Volume 1 have a final section dealing with what have been termed "national variants". Typical examples of "national variants" are:

- (i) "mirror" image signs for use in states where vehicles are required to travel on the right hand side of the road;
- (ii) examples of standard text signs in Portuguese - this type of sign has been kept to an absolute minimum by a strong reliance on the use of pictographs or symbols, inherited from the South African system;
- (iii) provision for specific member state symbols for such facilities as police services, national monuments etc.

In addition, several significant differences have been noted between the two traffic signal systems as documented in the manuals existing prior to harmonization. The cost implications of total harmonization of the traffic signal systems have been considered unaffordable. Volume 1, Chapter 6: Traffic Signals, therefore covers the differences between the two systems in parallel. One system, considered to be used by a majority of member states, is recommended, and the other system is recorded as an alternative system.

Typical of these differences are:

- (i) in the recommended system the primary traffic signals are positioned on the far side of junctions, whilst in the alternative system the primary traffic signals are positioned on the near side of the junction;
- (ii) in the recommended system the basic traffic signal sequence is red, green, yellow, red, whereas in the alternative system the basic traffic signal sequence is red, red plus yellow, green, yellow, red.

Due to the size of the Manual, the cost of printing all pages in full colour would have been considerable. To minimise this cost all colour pages have been concentrated at the beginning of each relevant chapter in Volume 1. In this way the whole sign system and each individual sign, marking and signal is illustrated in colour. A reference is also given in these sections to where each individual sign, marking and signal is dealt with in detail in Volume 1, and to where they are dimensioned in Volume 4. Throughout the rest of Volumes 1 and 4 a coded form of black and white shading is used to represent the sign colours.

Finally, acknowledgements are due to the members of the various committees whose work has led to the publication of this Manual, to South Africa for funding the work, and to the Chief Directorate: Roads in the South African Department of Transport for making this possible

IN WITNESS WHEREOF, WE, the Ministers of Transport and Road Traffic affairs have signed this Manual.

DONE AT, on this Day of, 1999.

For and on behalf of the Republic of Angola	
For and on behalf of the Republic of Botswana	
For and on behalf of the Democratic Republic of Congo	
For and on behalf of the Kingdom of Lesotho	
For and on behalf of the Republic of Malawi	
For and on behalf of the Republic of Mauritius	
For and on behalf of the Republic of Mozambique	
For and on behalf of the Republic of Namibia	
For and on behalf of the Republic of Seychelles	
For and on behalf of the Republic of South Africa	
For and on behalf of the Kingdom of Swaziland	
For and on behalf of the United Republic of Tanzania	
For and on behalf of the Republic of Zambia	
For and on behalf of the Republic of Zimbabwe	

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SOUTHERN
AFRICAN
DEVELOPMENT
COMMUNITY

INTRODUCTION

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CHAPTER

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CHAPTER 1 : INTRODUCTION

1.1 GENERAL

1.1.1 Manual Structure, Layout and Coverage

- 1 The Third Edition of the Southern African Development Community Road Traffic Signs Manual comprises four volumes:

Volume 1: *Uniform Traffic Control Devices:* Detailing signing policies and design principles together with specific information on the meaning and individual application of all traffic control devices.

Volume 2: *Traffic Control Device Applications:* This volume covers the use of sets of signs, markings and signals for specific applications.

Volume 3: *Traffic Signal Design:* Detailing in depth requirements for the selection and installation of traffic signals and their methods of control.

Volume 4: *Traffic Signs Design:* Dimensional detail for all road signs and their signface components.

- 2 This Third Edition has been developed from a harmonization of the earlier SATCC Road Traffic Signs Manual, and the Third Edition of the South African Road Traffic Signs Manual which contained a wider range of signs. Initially only Volumes 1 and 4 will be published. Volumes 2 and 3 may be published at a later stage. In a relatively small number of instances it has been necessary to deal with one or more signs specifically for one member country. Primarily this need arises from the fact that in Angola drivers travel on the right-hand side of the road, and from the occasional need to display Portuguese text for Angolan or Mozambican conditions. Any such signs are identified in the chapter contents section and are then described at the end of the chapter in a section called "National Variants".
- 3 For convenience of binding on a loose leaf basis Volumes 1 and 4 have been subdivided into separate Parts.
- 4 This Volume gives sufficient dimensional information for every numbered road traffic sign to be specified for manufacture and to be subsequently manufactured accurately, or marked on the road surface in the case of road markings.
- 5 Road traffic signs, by legal definition, include all prescribed road signs, road markings and traffic signals and are to be used solely for the purpose of traffic control and are not an advertising medium.
- 6 The text is subdivided into the following numbered components (the examples indicate Chapter 3):
- Chapters - 3;
 - Sections - 3.1;
 - Subsections - 3.1.1;
 - Paragraphs - 3.1.1.1;
 - Figures - 3.1;
 - Details (within Figures) - 3.1.1;
 - Tables - 3.1.

These numbers should be used for reference purposes. They are used as such throughout the text.

- 7 In this volume, in the majority of cases, the information on specific road traffic signs is contained on a single page. A cross reference is given on every such page to the corresponding page in Volume 1 where details of the meanings and applications of individual signs are covered.
- 8 The page layout includes a "header" at the top in which the section name and page number are indicated. Page numbers are restarted each section e.g. 3.1.1, 3.2.1, 3.3.1 etc. A "footer" is located at the bottom of the page and this indicates the date of publication (or republication in the case of future amendments), the name of the manual and the volume number, and the chapter name. Figures 1.1 and 1.2 illustrate the above elements.
- 9 At the front of each part a basic list of contents for the volume is included. At the front of those chapters which deal with numbered road traffic signs a chapter index is included for convenience. Each such index lists the included road traffic signs in numerical order together with references to subsection and page numbers.
- 10 A range of text conventions are used to place emphasis where this has been deemed necessary. The conventions used and their functions are as follows:

- bold italic*** - to indicate the meaning of a specific road traffic sign;
- bold** - to place particular emphasis on a word or section of text, including titles and section headings;
- italic* - to indicate the name of a chapter or other document referred to in the text AND to indicate foreign terms used in the text;
- UPPERCASE (or CAPITAL) letters - as a lower level of emphasis, but particularly to indicate the specific names given to road traffic signs.

The use of CAPITAL letters may be superimposed in the ***BOLD ITALIC*** or **BOLD** conventions (see Figures 1.2 and 1.3).

- 11 The dimensional detail given on specific types of signs in subsequent chapters is provided in one of three ways:
- in the form of a pictogram of the sign or a symbol, on a background grid of squares which will allow the sign or symbol to be enlarged to the required standard size (see Figure 1.6);
 - as a generally dimensioned drawing capable of being reproduced in a range of sizes on which all dimensions are given in terms of a factor "d" (see Figure 1.8);
 - as a single sized fully dimensioned drawing (see Chapter 4).

During the period in which this Edition of the Manual has been prepared there have been considerable advances in the availability and power of personal computers. It is therefore probable that all symbolic signs may become available in a digital storage form in the not too distant future. This will facilitate the reproduction of such symbols for the preparation of drawings, specifications and for sign manufacture by

those with appropriate equipment.

- 12 This Edition introduces a wide range of new symbols for use on regulatory, warning, guidance and information signs, markings and signals. The provision of these symbols is based on expected future requirements.
- 13 A number of rules apply to the design of symbols to make them effective at high traffic approach speeds. These rules differ for different sign types.
- 14 In terms of Section 82 of the Act the Minister may authorise the use of an experimental sign for a limited period of time so that the suitability and effectiveness may be determined. No new sign or symbol shall be used without prior approval. A draft sign or symbol design may be submitted, but should not be used until it has been refined and approved in terms of the standard design rules.
- 15 It is desirable, in the interests of uniformity, that the need for a new symbol or sign be submitted, with motivation to:

The Secretary
Route Numbering and Road Traffic Signs Sub-Committee
c/o Department of Transport
Private Bag X193
Pretoria
0001

1.1.2 Terminology

- 1 There are three words used throughout the Manual dealing with the function, design and application of road traffic signs, the interpretation of which is fundamental to the use of the Manual. These words are the very common words "SHALL", "SHOULD" and "MAY". These words are used in two ways, namely:
 - (a) to refer to actions required of road users as a result of the presence of a road traffic sign, and
 - (b) to refer to the actions required of designers, manufacturers and authorities with regard to the manufacture and use of road traffic signs.

The meanings of these words, as it applies to their use in the Manual are given in Volume 1, Chapter 1, and their relevance is perhaps greatest in the context of Volumes 1 and 3. However, they are used in Volume 4, and their significance in this volume remains as important as in the other volumes.

1.1.3 Road Traffic Sign Classification

- 1 Full details of the manner in which road traffic signs are classified and sub-classified, together with their numbering structure are given in Volume 1, Chapter 1.
- 2 The great majority of road signs may be used in a PERMANENT or TEMPORARY form, although there are a few road signs which shall only be used in one or other form. This is made obvious on the individual sign pages in later chapters and at the time of order temporary sign numbers should always include the first letter "T". Manufacturers in particular, however, should ensure that their orders are sufficiently clear in this regard prior to manufacture.
- 3 To assist users of Volume 4, the basic road traffic sign classification is illustrated in Figure 1.4.

1.1.4 Road Traffic Sign Colour Indication

- 1 This volume of the Manual is not printed in colour. It is important however, that designers and manufacturers are aware of the correct colours for signs, signals and markings. All road traffic sign examples used to illustrate the various types of sign, signal and marking have therefore been shaded in a black and white coding of the required colours. This colour coding is illustrated in Figure 1.1.
- 2 The basic principles of the road traffic sign colour coding system are shown in colour in Volume 1, Chapter 1, Section 1.4, where a limited number of colour pages are included, and in the Contents sections of several Volume 1 chapters.

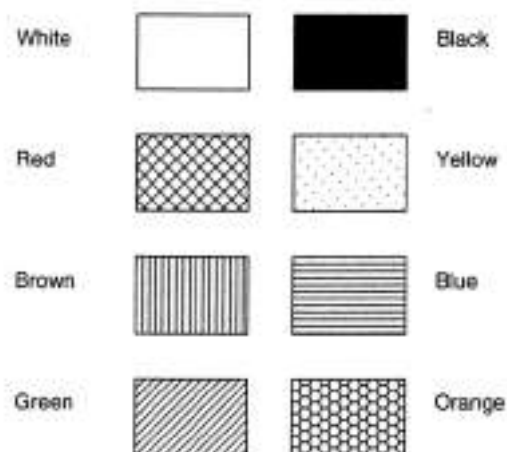


Fig 1.1

Key to Colour Coding

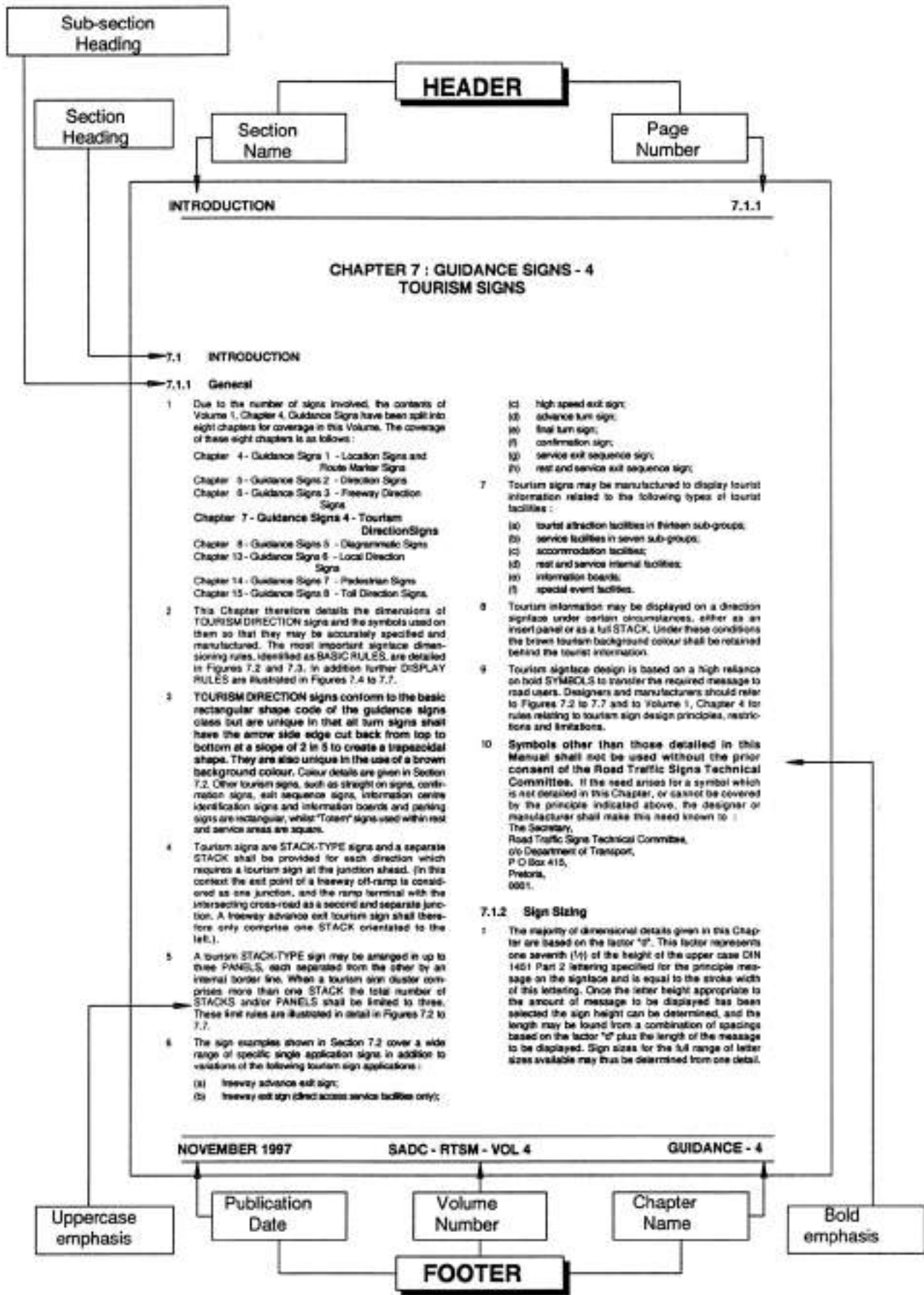


Fig 1.2

Typical Page Layout and Text Conventions

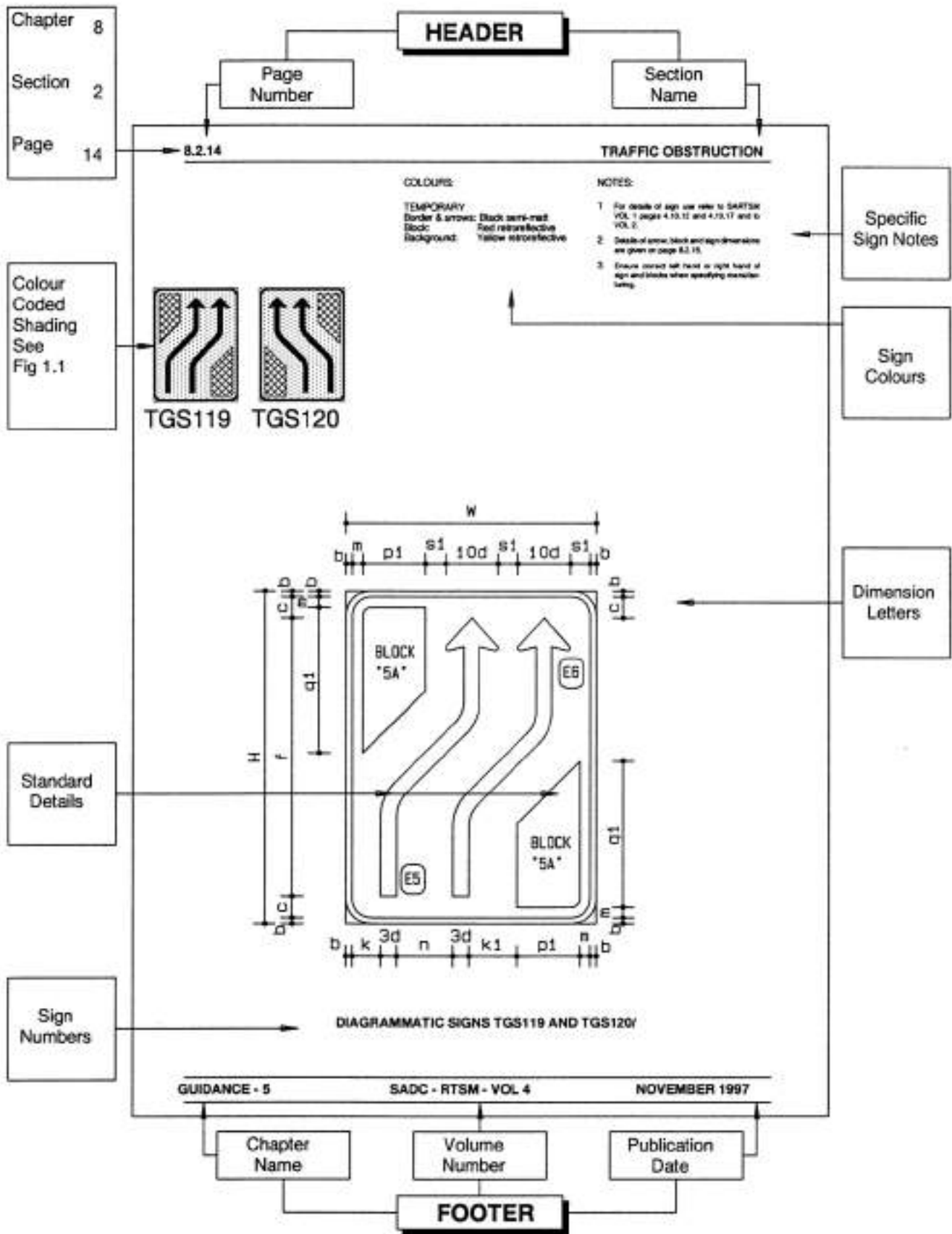


Fig 1.3 Typical Sign Dimension Page Layout

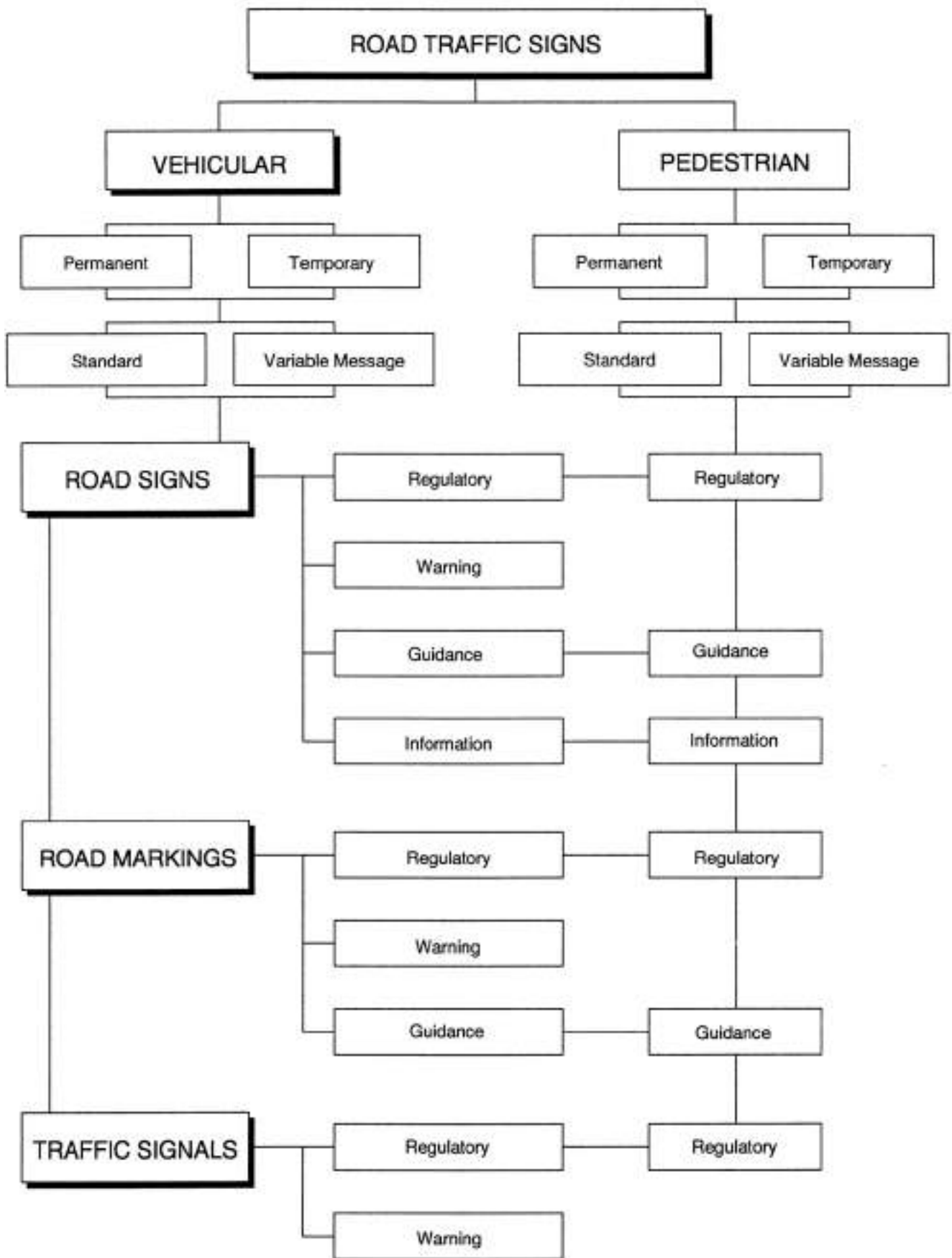


Fig 1.4

Road Traffic Sign Classification

1.2 ROAD TRAFFIC SIGN SIZES

1.2.1 Minimum Sizes

- 1 Minimum sizes for various road traffic sign types are prescribed in Legislation. In the case of regulatory and warning road signs the minimum sizes are linked to increments in speed limit.
- 2 The minimum size prescribed in Legislation normally refers to the overall size of the road traffic sign in the form of a height, length or diameter. In some cases the minimum dimension applies to one component (a traffic signal aspect), or to only one of the dimensions (the width of a road marking line).
- 3 Authorities shall not use signs of sizes less than those prescribed. To facilitate awareness of these sizes the minimum dimensions are listed in Table 1.1.

1.2.2 Dimensional Tolerances

- 1 Legislation specifies certain dimensional tolerances applicable to road traffic sign manufacture, while others are given in South African SANS 1519-1:2006 and 1519-2:2004: *Road Signs and SANS 1459:2004 Traffic Lights*.
- 2 SANS 1519 refers to this Manual stating that "the layout of the message on the signface shall conform to the layout, given in the applicable drawings of the Manual,

so that no deviation exceeds 5% of the layout of the applicable drawings." Legislation also permits a tolerance of 5% below the minimum dimensions for certain signs. The effect of these requirements, from a manufacturing and checking point of view, is that the following elements of a regulatory, warning, guidance or information sign shall not be more than 5% under the stated dimensions nor more than 5% over the stated dimensions :

- (a) the overall height, length or diameter of a sign;
- (b) any border;
- (c) any internal space;
- (d) the height, length or diameter of any arrow, symbol, numeral or letter;
- (e) any internal part of any arrow, symbol, numeral or letter.

- 3 In terms of the provisions of paragraph 1.2.22 the internal part of any arrow, symbol, numeral, or letter shall, in addition, not deviate BOTH over AND under the stated dimensions so that the total deviation exceeds 5% (for example - one part shall not be more than 2,5% under dimension if another part is 2,5% over dimension). (See Volume 1, Chapter 1, Section 1.5.)

TABLE 1.1 MINIMUM ROAD TRAFFIC SIGN SIZES TABLE 1.1

Road Traffic Sign (mm) Type	Function	Min. External Dimensions			
		60	Speed Limit (km/h)		120
			80	100	
Road Signs					
Circular Regulatory (Diameter)	General	600	900	1200	1200
	Overhead	900	1200	1200	1600
	Parking/ Stopping	450	900	1200	1200
Rectangular Regulatory (Height x Width)	General	600 x 450	900 x 675	1200 x 900	1200 x 900
	Overhead	900 x 675	1200 x 900	1200 x 900	1600 x 1200
	Parking	445 x	900 x	1200 x	1200 x
	Stopping	338	675	900	900
	Bus & Minibus Stop	450 x 225	600 x 300	800 x 400	900 x 450
Triangular Regulatory and Warning (Side Length)		900	1200	1200	1500
Sign R2.1 - plate (Height x Width)	Yield to Pedestrians	300 x 225	450 x 338	600 x 450	750 x 563
Signs W401 and W402 (Height x Width)	Hazard Marker/ Delineator	600x 150	600 x 150	800x 200	800 x 200
Signs W403 and W404 (Diagonal)	Railway Crossing	800	1200	1200	1200
Signs W405 to W410 (Height)	Hazard Marker	450	450	600	600
Sign TW 411 (Height x Width)	Barricade	200 x 1200	300 x 1800	400 x 2400	400 x 2400
Traffic Signals					
Circular Disc Aspect	Signal Indications (including symbols)	210	210	210	210
Road Markings					
Longitudinal (Width)	Regulatory, Warning and Guidance	100	100	100	100
Longitudinal (Length)	Regulatory			Urban	9000
				Rural	12000

NOTES:-

- (1) A tolerance of 5% below all minimum external road sign dimensions is permitted.
- (2) A tolerance of 10% below the minimum width of a longitudinal road marking is permitted.
- (3) A tolerance of 10% below the minimum diameter of a traffic signal disc is permitted.
- (4) A STOP sign R1 or any of its derivatives shall conform to the minimum external dimensions given for the same size of circular regulatory sign, except that such a sign used for a scholar patrol may have a minimum diameter of 450 mm. Signs R1.3 and R1.4 shall be of the same size as one side of the STOP sign R1 with which they are used.
- (5) A sign for pedestrians and/or cyclists may have a minimum diameter of 300 mm.
- (6) A KEEP LEFT sign R103 used on the vertical face of a bollard may have a minimum diameter of 300 mm.
- (7) A ONE-WAY ROADWAY sign R4.1, R4.2 or R4.3 shall have a minimum height of 450 mm and a minimum length of 600 mm.
- (8) A PEDESTRIAN PRIORITY sign R5 shall have a minimum side length of 450 mm.
- (9) An exclusive secondary message sign shall have the same length as the diameter or width of the upper sign with which it is used.

1.3 DIMENSIONAL DETAILS

1.3.1 Regulatory and Warning Signs

- 1 The majority of REGULATORY and WARNING signs are detailed in the form of a pictogram of the sign on a grid background. In some instances only the symbol to be used on such a sign type is indicated. A limited number, mainly the hazard marker warning signs, are detailed as dimensioned line drawings on which the different dimensions are indicated by letters, the values of which are tabulated on the sign page for each standard sign size.
- 2 Signs or symbols detailed on a grid may be reproduced at the correct size by one of two methods (see Figures 1.5 and 1.6):
 - (a) by optical enlargement of the grid so that the size of each grid square is equal to that given in the dimension table for enlargement factor "a" for the required standard sign size;
 - (b) by drawing to the appropriate dimensions given in the table on the sign page (these dimensions are keyed to a figure in the first section of the relevant chapters) (see Figure 1.5 and Chapters 2 and 3).

1.3.2 Guidance Signs

- 1 This class of sign includes a wide range of sign types which in turn may vary widely in size from type to type, or within the range of sizes of a specific type, normally due to the amount of information given on the signface.
- 2 The smaller guidance signs such as ROUTE MARKER signs and TRAILBLAZER signs are single sized signs. The dimensional details for such signs are given in the form of a fully dimensioned scale drawing for each sign.
- 3 The majority of other guidance signs, including LOCATION, DIRECTION, FREEWAY DIRECTION, TOURISM DIRECTION and LOCAL DIRECTION signs are detailed in the form of a drawing in which all fixed dimensions are given in terms of a factor "d" (this factor is equal to the stroke width of the size of DIN 1451 Part 2 lettering to be used on the sign). This detailing method normally results in the height of the sign being fixed for a given size of lettering. The width or length of the sign is, however, dependent on the text message

appearing on the sign (see Figures 1.7 and 1.8).

- 4 A number of symbols are available for use on guidance signs, particularly TOURISM DIRECTION and LOCAL DIRECTION signs. These symbols are detailed on a grid background in a similar manner to the symbolic regulatory and warning signs. The enlargement factor, however, remains the same value of "d" used on the rest of the sign (see Chapters 4 to 7, Chapter 9 and Chapter 13).
- 5 DIAGRAMMATIC signs are detailed somewhat differently. These signs should only be specified in one of three standard pairs of height and width (an additional two standard widths are available for certain examples). The internal dimensions are indicated by letters which are keyed to values given in tables for the standard range of overall sizes. To reduce the number of pages in the relevant chapter, and to minimise the level of repetition of detail, several signs of similar layout may be keyed to one table (see Chapter 8).

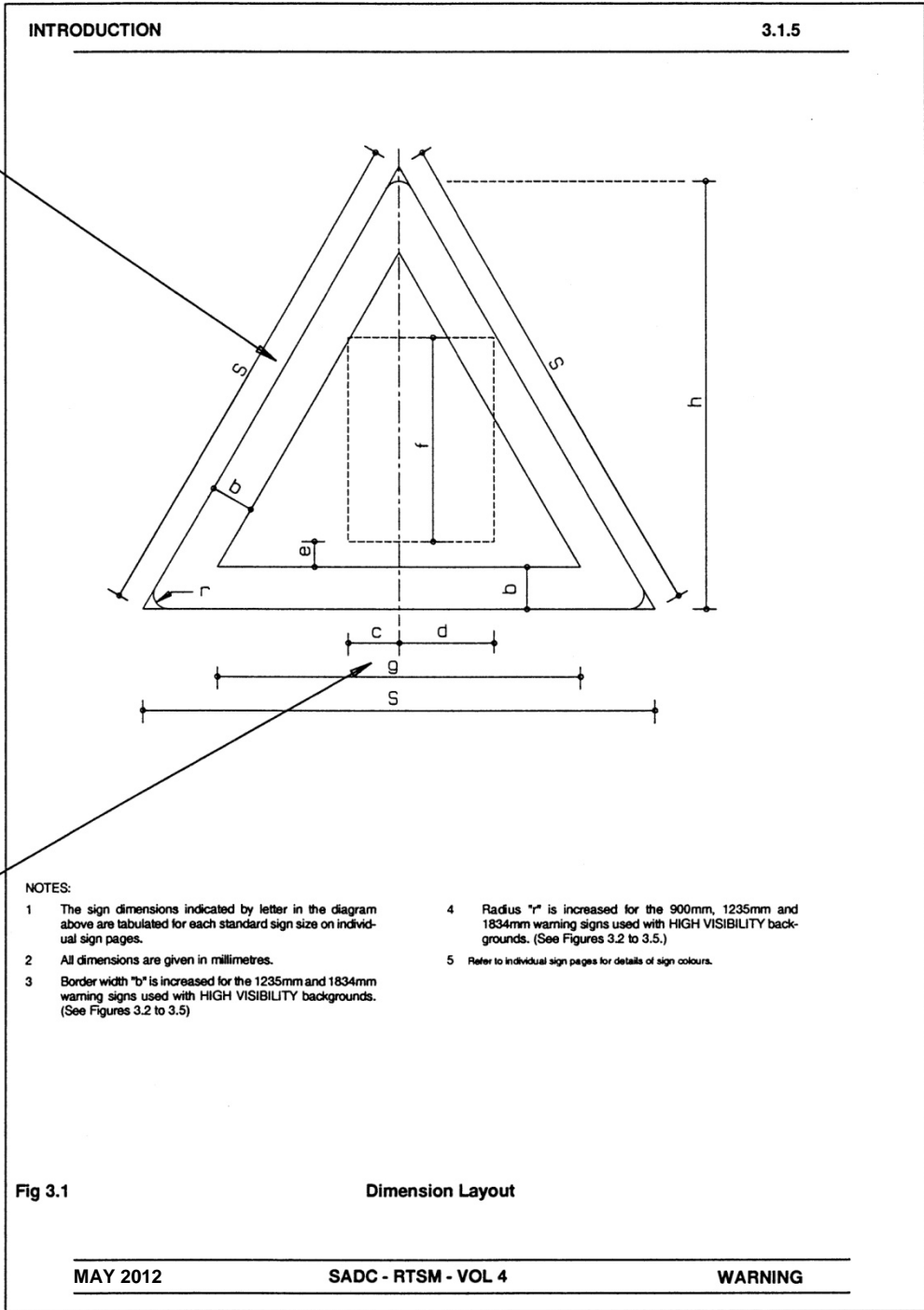
1.3.3 Traffic Signals

- 1 The details given in Chapter 10 include all the dimensions necessary to manufacture standard traffic signal face types in accordance with the requirements of the Legislation. These details include the arrows and symbols approved for use as traffic signal displays.

1.3.4 Road Markings

- 1 The detailing of road markings is somewhat different to other traffic control devices in that the dimensions of all line markings are given in Volume 1, Chapter 7. Certain minimum lengths are required for longitudinal regulatory road markings. These are given in Table 1.1. The basic dimensions of line markings are covered in Chapter 12.
- 2 Chapter 12 also covers dimensional details suitable for the manufacture of masks or stencils for arrow, letter and symbol road markings for a range of standard lengths.

Basic sign dimensions indicated by letters. Values for letters for each size tabulated on sign pages.



Symbol size and positions indicated in relation to vertical centre line. Symbols may be symmetrical or non-symmetrical.

Fig 1.5 Typical Dimensional Layout Diagram for Regulatory and Warning Signs

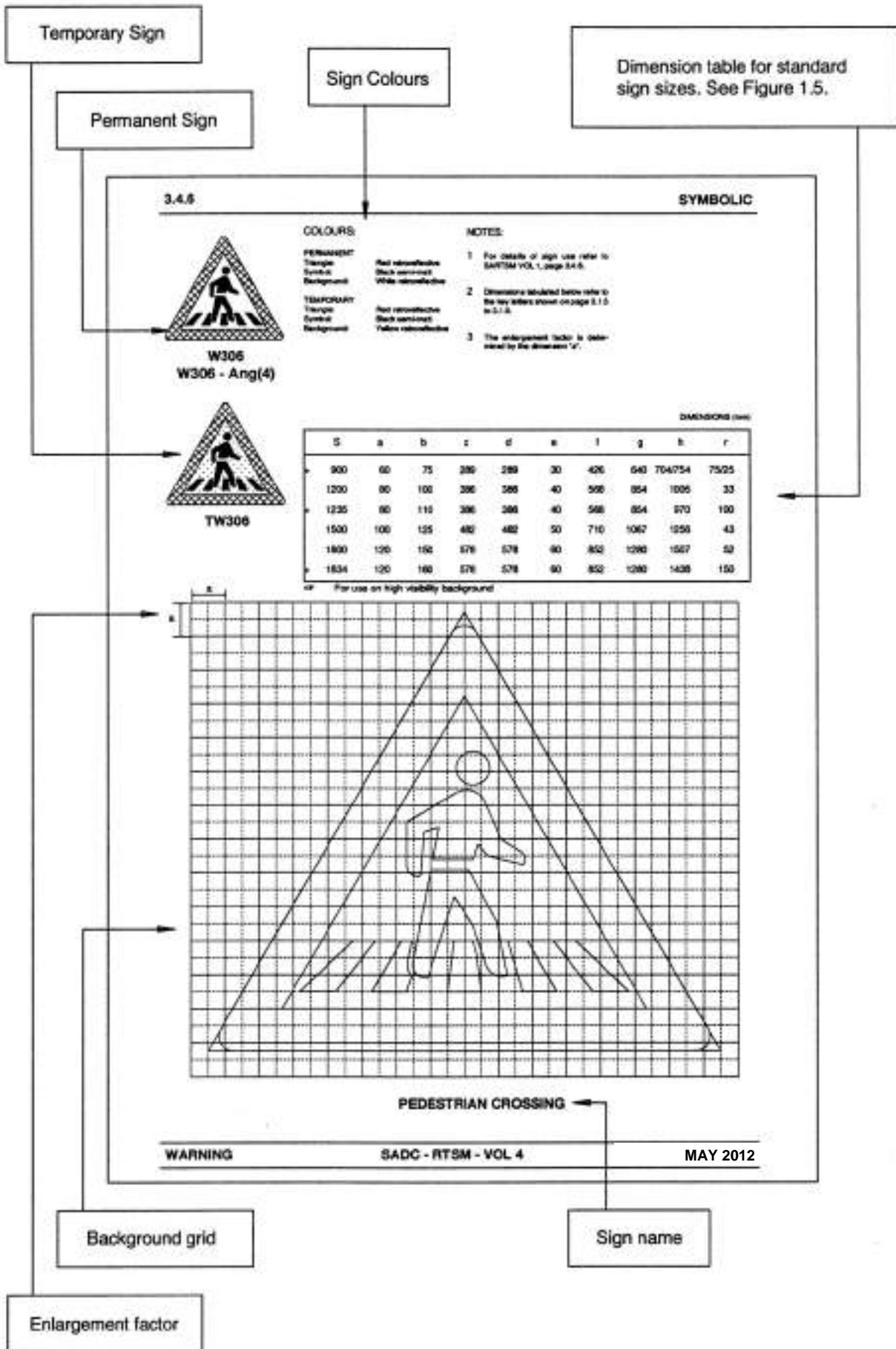
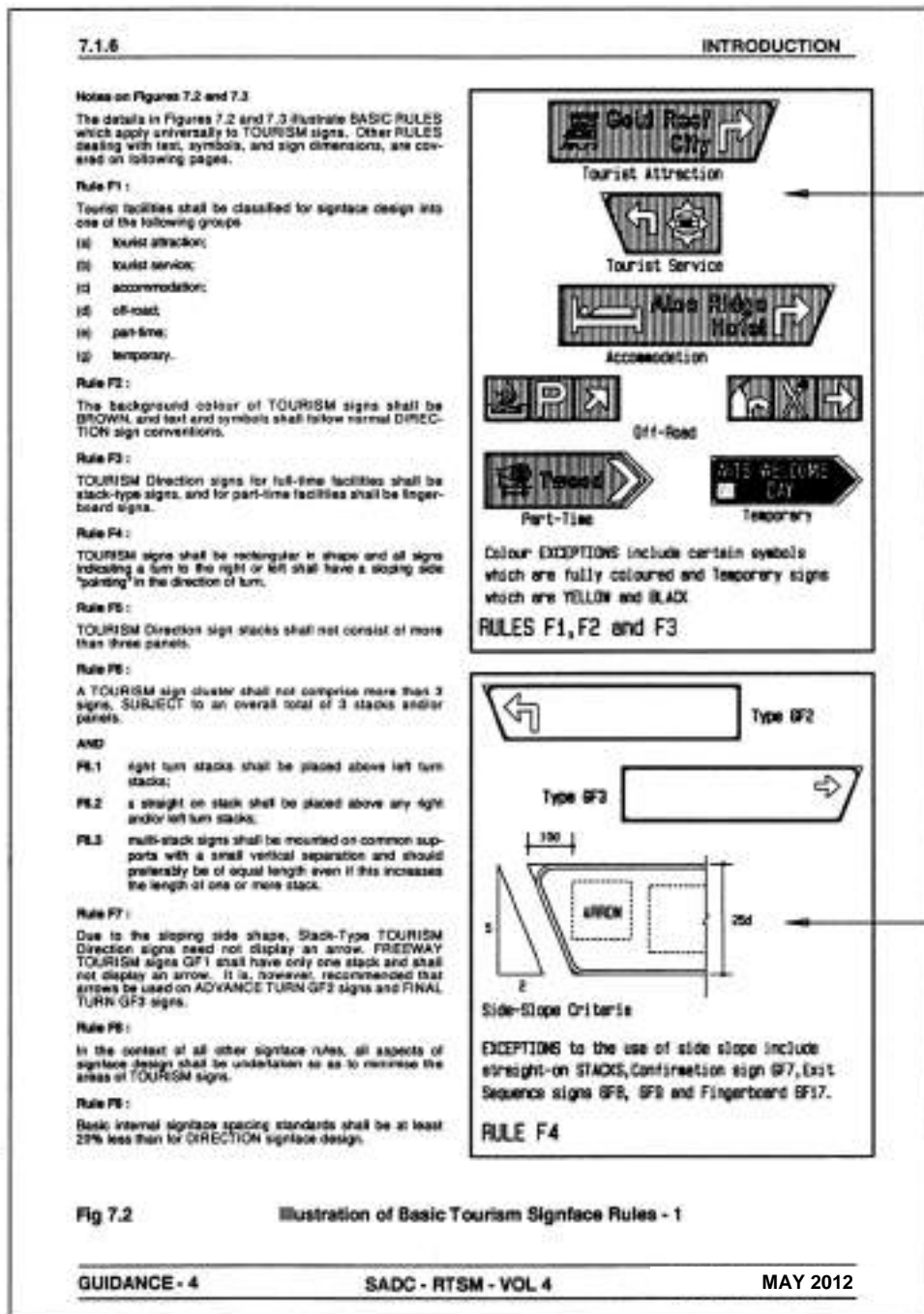


Fig 1.6 Typical Warning (or Regulatory) Sign Page

Figure illustrating BASIC RULES F1, F2 and F3 for Tourism signface design (other rules on subsequent pages in Chapter 7).



Text explanation of BASIC RULES of Tourism signface design and layout.

Figure illustrating BASIC RULE F4 regarding Tourism sign side slope.

Fig 1.7

Typical Tourism Signface Layout Rules Including Dimensional Criteria

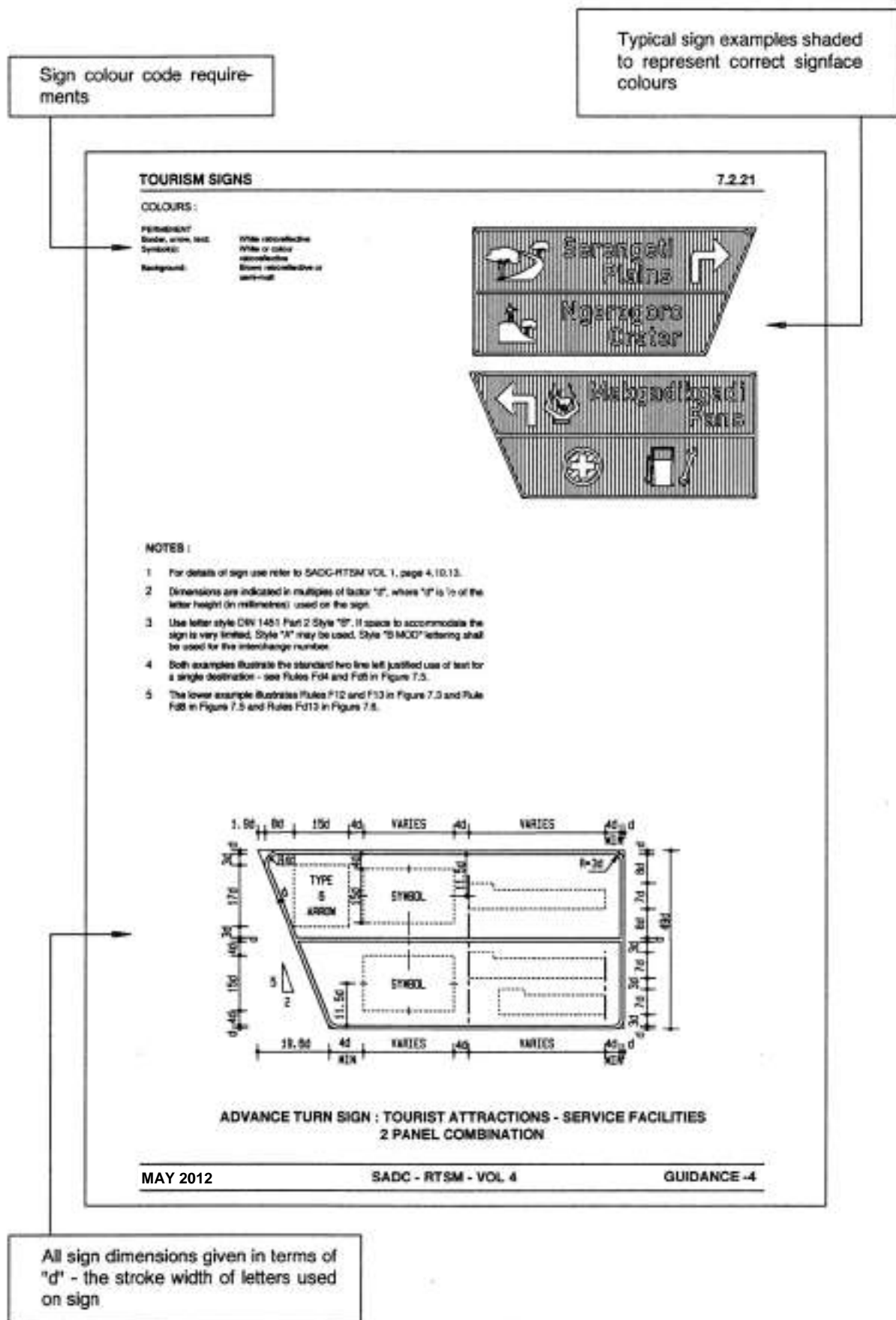


Fig 1.8

Typical Dimensional Details Given on a Guidance Sign Detail Page

1.4 ARROWS AND LETTERS ON ROAD SIGNS

1.4.1 General

- 1 Each main class of road sign utilizes arrows, either as part of a symbolic message (regulatory and warning signs) or to impart a sense of direction in respect of the text or symbolic message on the sign (guidance signs).
- 2 It should be noted that, although sometimes similar in appearance, the arrows used on regulatory and warning signs are different to those used on guidance signs. Regulatory and warning sign arrows are specified in Chapters 2 and 3, whereas the full range of those for guidance signs are detailed in Chapters 5, 6 and 8.
- 3 This Edition uses DIN (Standard) 1451 Part 2, Styles "A" and "B", lettering on all signs. All letter dimensions and spacings are fully proportional for all sizes. This simplifies sign design and results in a general reduction in the size of direction signs.
- 4 Details of all letters, numerals and punctuation marks are reproduced in Chapter 11 by permission of "DIN - Deutsches Institut für Normung e.V. The definitive version for the implementation of the standard is the edition of this standard bearing the most recent date of issue, obtainable from Beuth Verlag GmbH, Burggrafenstrasse 6, D-1000 Berlin 30".

1.5 SPECIFICATION AND MANUFACTURE

1.5.1 General

- 1 For full details relating to specification and manufacture of road traffic signs refer to Volume 1, Chapter 1, Section 1.5. A limited amount of the material given in that section is repeated here.

1.5.2 Colour Specification

- 1 In South Africa the Bureau of Standards has a number of "Specifications" (CKS) and "Standard Specifications" (SANS) which are relevant to the manufacture and appearance of road traffic signs. The most relevant of these are:

- (a) SANS 1519-1:2006 and 1519-2:2004: *Road Signs*;
- (b) SANS 731-1:2006 and 731-2:2006: *Road Marking Paint*;
- (c) CKS 192-1981: *Drop-on Type Reflectorised Road-Marking Paint*;
- (d) CKS 501-1981: *Road Marking Paint, High Build, Non-Skid*;
- (e) SANS 1442-2008: *Roadstuds*;
- (f) SANS 1459-2004: *Traffic Lights*.

Where these specifications do not include a colour specification, such as for paints, this is covered by:

- (a) SANS 1091-2004: *National Colour Standards for Paint*; or
- (b) CKS 279- 1971: *Colours for Paints*.

- 2 Designers, authorities and manufacturers must ensure that their specifications and manufacturing methods result in road traffic signs which comply with the SABS colour specifications, or similar specifications, and that they remain within accepted tolerance levels for the expected life of the sign. Authorities in particular should monitor performance in this regard since early colour failure could have serious cost implications.

1.5.3 Retroreflective Materials

- 1 Many road signs and road markings are specified with retroreflective materials. Certain parts of some road signs shall be retroreflective and for others the use of retroreflective materials is optional. These requirements are summarised in Table 1.2.

- 2 Retroreflective material is available in many grades of quality. Three of these grades are specified in SANS 1519 for use on road signs, namely Class I, Class II and Class III. Whilst there are obvious initial cost implications to the use of Class I, II or III materials in preference to materials with a shorter life and poorer retroreflective properties, it is strongly recommended that purchasers of road signs specify at least Class I materials, even for temporary signs. This will almost certainly result in a sign life which is cost effective over time.

- 3 When specifying the manufacture of a road sign which requires the superimposition of one colour of retroreflective material on another, care must be taken to ensure that adequate luminance and contrast rates are achieved from the sign for the message to be legible. As a general rule a contrast ratio of the coefficients of retroreflection of colours placed on each other is recommended as follows:

- (a) for small finely detailed areas (letters and symbols) - a minimum ratio for light-to dark of 7 to 1, with a preference for 10 to 1 or more;
- (b) for large areas (arrows or blocks) a minimum ratio of 3,5 to 1, with a preference for 5 to 1.

Recommended retroreflective material class combinations are given in Table 1.2.

TABLE 1.2 RETROREFLECTIVE MATERIALS FOR ROAD SIGNS TABLE 1.2

Permanent Road Signs ⁽¹⁾	Sign Segment				Recommended Class of Retroreflective Material		
	Type	Border	Symbols	Letters	Background	Border / Letters	Background
REGULATORY							
Control		4	4	4	4	I	I
Command		4	4	4	4	I	I
Prohibition		4	8	8	4	I	I
Reservation		4	4	4	84	I	8I
Comprehensive		4	4	4	4		I
De-restriction		4	4	4	4	I	I
WARNING							
Advance		4	8	8	4	I	I
Hazard		4	4		4	I	I
GUIDANCE							
Location		8	84	8	4	8	I
Route Marker		4	4	4	4	I	I
Trailblazer		4	4	4	4	I	I
Direction		4	4	4	84 ⁽³⁾	I	8I
Freeway Direction		4	4	4	4	III	I
Tourism		4	4	4	84 ⁽³⁾	I	8I
Local Direction		4	8	8	84	8	8I
Diagrammatic		4 +block	8	8	4	I ⁽²⁾	8I
Pedestrian		8	8	8	84	8	8I
INFORMATION							
		4	4	4	84	I	8I

KEY**4** Retroreflective**8** Semi-matt**84** Optional**NOTES:**

- (1) All temporary road signs shall have a retroreflective background, and semi-matt border, symbol, arrows or letters.
- (2) Check luminance factor before specifying higher than Class I.
- (3) Certain signs are specified as retroreflective (see Volume 4 Chapters 2, 3, 5, 6, 7 and 13).