

ROAD SIGNS – KENYA

TABLE OF CONTENTS

CHAPTER 1	2
1. GENERAL INFORMATION ON ROAD SIGNS.....	2
1.1 INTRODUCTION	2
1.2 RESPONSIBILITIES.....	3
1.2.1 Legal Framework	3
1.2.2 General Responsibilities	3
1.3 THE FUNCTIONS AND CLASSIFICATIONS OF SIGNS	3
1.3.1 Information Signs	4
1.3.2 Regulatory Signs.....	4
1.3.3 Warning Signs	5
1.3.4 Road Works Signs	5
1.4 THE DESIGN AND USE OF SIGNS.....	5
1.5 THE POSITIONING OF SIGNS	6
1.5.1 Siting	7
1.5.2 Placement	7
1.5.3 Mounting Heights	7
1.5.4 Orientation.....	7
1.6 SIGN MOUNTING.....	7
1.7 SIGN BACKGROUNDS	8
1.8 MAINTENANCE OF SIGNS	8
1.9 USE OF WORDING ON ROAD SIGNS.....	9
1.9.1 Place-Names on Information Signs	9
1.9.2 Information Signs not Depicting Place-Names	9
1.9.3 Forms and Spelling of Place-Names	9
1.9.4 Abbreviation of Place-Names	9
1.9.5 Road-Works Signs	9
CHAPTER 2	11
2. DIRECTIONAL AND INFORMATION SIGNS ACCORDING TO ROAD	
CLASSIFICATION.....	11
2.1 INTRODUCTION	11
2.2 GENERAL PRINCIPLES OF DESIGN	12
2.2.1 The Road Hierarchy and Colour Coding.....	12
2.2.2 Provision of Directional Signs	14
2.2.3 The Selection of Destinations	14
2.2.4 Terminal Destinations	15
2.2.5 Other Destinations	15
2.2.6 Alphabets	15
2.2.7 Common Dimensions.....	15
2.2.8 Letter and Block Spacing	17
2.2.9 Patches and Legend Panels	18

2.3 SIGN FACE DESIGN.....	19
2.3.1 ADVANCE DIRECTION SIGNS.....	19
2.3.2 STACK TYPE SIGNS.....	19
2.3.3 Route Direction Signs	22
2.3.4 Map Type Signs For Roundabouts	25
2.3.5 Lane Destination Signs	29
2.3.6 Direction Signs	31
2.3.7 Direction Signs for Arterial or Trunk Roads	32
2.3.8 Direction Signs for Collector and Local roads.....	34
2.3.9 Route Confirmatory Signs	36
CHAPTER 3	48
3. MOTORWAY SIGNS.....	48
3.1 INTRODUCTION	48
3.2 GENERAL PRINCIPLES OF DESIGN	49
3.2.1 Colour Coding	49
3.2.2 The Selection of Destinations	50
3.2.3 Alphabets	50
3.3 Sign Face Design	50
3.3.1 Signs on Trunk or Collector Roads Indicating Motorways.....	50
3.3.2 Patches	50
3.3.3 Legend Panels	52
3.3.4 Direction Signs	55
3.3.5 Signs on Motorways.....	55
3.3.6 Gantry Signs on Motorways	61
3.3.7 Non Lane-Drop Signs.....	62
3.3.8 Lane-Drop Signs	62
CHAPTER 4	67
4. OTHER INFORMATION SIGNS.....	67
4.1 INTRODUCTION	67
4.2 GEOGRAPHIC INFORMATION SIGNS	68
4.2.1 Town or Village Signs	68
4.2.2 County Boundary Signs	68
4.3 Advisory Information Signs	69
4.3.1 Advance Sign for Low Clearances at Bridges	69
4.3.3 Slow Lanes.....	70
4.3.4 No Through Way	70
4.4 Signs Indicating Facilities Ahead.....	71
4.4.1 Parking Signs	71
4.4.2 Lay-Bys	71
4.4.3 Car Parks	72
4.4.4 Hospital Signs	72
4.4.5 Airport Signs.....	73
4.4.6 Ferry Terminal Signs	74
4.4.7 Industrial Estate Signs	75
4.4.8 Disabled Drivers Parking Bay	76

4.5 Signs to Tourist Attractions.....	76
4.5.1 Sign Design and Siting	76
CHAPTER 5	80
5. REGULATORY SIGNS	80
5.1 INTRODUCTION	80
5.2 THE STOP SIGN	82
5.2.1 Siting the STOP Sign	85
5.2.2 Associated Road Markings	85
5.3 THE GIVE WAY SIGN.....	85
5.3.1 Siting the GIVE WAY Sign	86
5.3.2 Associated Road Markings	86
5.4 REGULATORY MANDATORY & PROHIBITORY SIGNS.....	87
5.4.1 Regulatory, Mandatory Signs.....	87
5.4.2 Regulatory, Prohibitory Signs	88
5.5 SPEED LIMIT SIGNS	89
5.5.1 Maximum Speed limit.....	89
5.6 PARKING RESTRICTION SIGNS.....	91
5.7 SIGNS FOR CYCLE FACILITIES	93
5.7.1 Cycle Tracks.....	93
5.7.2 Cycle Ways	93
5.7.3 Shared Pedestrian/Cycle Facilities	93
5.8 SCHOOL WARDEN'S STOP SIGN.....	94
5.9 PEDESTRIANIZED STREETS	94
5.9.1 Prohibition on Entry to or Parking in Certain Streets	94
5.10 WEIGHT AND HEIGHT RESTRICTIONS	95
5.11 THE NO OVERTAKING SIGN.....	97
5.12 BUS LANE SIGNAGE	97
5.12.1 With-Flow Bus Lanes	98
5.12.2 Contra-Flow Bus Lanes.....	99
5.12.3 Other Signs for Bus Lanes	101
5.12.4 Sizes of Bus Lane Signs	102
CHAPTER 6	105
6. WARNING SIGNS	105
6.1 INTRODUCTION	105
6.2 JUNCTION AHEAD	106
6.2.1 Junctions with Roads of Lesser Importance	107
6.2.2 Junctions with Roads of Equal Importance.....	108
6.3.3 Junctions with Roads of Greater Importance.....	109

6.3	MERGING TRAFFIC	110
6.4	ROUNDABOUTS.....	111
6.5	BENDS AND CORNERS.....	112
6.6	SHARP CHANGE OF DIRECTION.....	114
6.7	ROAD NARROWS	115
6.8	DUAL CARRIAGEWAY	116
6.9	STEEP HILL	118
6.10	RESTRICTED HEADROOM.....	119
6.11	OVERHEAD ELECTRIC CABLES.....	120
6.12	LEVEL CROSSINGS.....	121
6.13	RISES OR DEPRESSIONS.....	124
6.14	SLIPPERY ROAD.....	125
6.15	RIVER, CANAL OR QUAYSIDE	125
6.16	TRAFFIC SIGNALS.....	126
6.17	SCHOOLS AND CHILDREN.....	127
6.18	ANIMALS CROSSING	129
6.19.	CROSSWINDS	130
6.20	PEDESTRIANS	131
6.21	TUNNEL	131
6.22	RISK OF FALLING OR FALLEN ROCKS	132
6.23	LOW-FLYING AIRCRAFT	132
6.24	DRIVE ON LEFT.....	133
6.25	ROADSIDE DELINEATORS	133
6.26	MOUNTING OF WARNING SIGNS.....	135
6.26.1	Mounting More Than One Sign on a Post	135
CHAPTER 7		137
7.	SIGN LOCATION	137
7.1	INTRODUCTION	137
7.2	SITING	138
7.2.1	Safety Fencing	139
7.3	PLACEMENT.....	140
7.4	MOUNTING HEIGHTS	140
7.5	ORIENTATION	141
7.6	PROVISION FOR THE VISUALLY AND MOBILITY IMPAIRED	144
7.7	ANTI-ROTATION.....	145

CHAPTER 8	149
8 SIGNS FOR ROADWORKS.....	149
8.1 INTRODUCTION	149
8.2 Recommended Sign for Road works	150
8.3 Roadworks Ahead.....	150
8.4 Uneven Surface.....	151
8.5 Slippery Road Ahead.....	151
8.6 Road Narrows.....	151
8.7 Manual Traffic Control Ahead.....	152
8.8 Traffic Signals Ahead	152
8.9 Two-way Traffic Ahead.....	152
8.10 Signs for Lane Closures Ahead.....	153
8.11 Major Road Works Ahead	154
8.12 No Through Road (Figure 8.17)	154
8.13 Road Closed (Figure 8.18).....	154
8.14 Delineation of Roadworks.....	155
8.15 Drums:	156
8.16 Cones:.....	157
8.17 Lamps	157
8.18 Keep Left / Keep Right / Pass Either Side:	157
8.19 Chevron:	157
8.20 PROTECTION OF PEDESTRIANS AT ROADWORKS.....	158
8.21 SIGNS FOR PEDESTRIANS.....	159
8.22 TRAFFIC CONTROL AT ROADWORKS.....	159
8.23 TEMPORARY TRAFFIC SIGNALS.....	160
8.24 DIVERSION	160
8.25 DEPLOYMENT OF ROADWORKS SIGNS	162
8.26 PROCEDURES FOR SETTING OUT SIGNS:	163
8.27 URBAN ROADWORKS.....	164
8.28 RURAL ROADWORKS	165
8.29 FIXED WORKS.....	165
8.30 CHOOSING A LAYOUT	165
8.31 MARGIN FOR SAFETY.....	166
8.32 LIGHTING.....	166
8.33 REFLECTORIZATION.....	167
8.34 COLOURS	167
8.35 ONE-WAY OPERATIONS.....	167

8.36	IMPLEMENTING LAYOUT GUIDELINES.....	168
8.37	MOBILE WORKS	170
8.38	FOUR LEVELS OF WARNING	170
8.39	DETOURS	171

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CHAPTER 1

GENERAL INFORMATION ON ROAD SIGNS

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CHAPTER 1

1. GENERAL INFORMATION ON ROAD SIGNS

1.1 INTRODUCTION

Clear and effective signing is essential for the efficient operation of the road network, for the enforcement of traffic regulations, and for road safety purposes.

Signing includes signs on posts, carriageway markings, and traffic signals. All of these must give road users their message clearly and at the correct time and must be uniform throughout the country.

This manual provides a comprehensive guide to the types of signs and markings used in this country. A selection of prescribed typical signs is shown in Figures 1.1 to 1.4.

This manual also sets out the technical standards to be followed in the provision of the various types of signs and road markings, including temporary signs for use in connection with road works, and those used in emergencies by the Police.

The manual is divided into a further eight chapters which are devoted to the technical details of different types of signs. The manual also sets out guidelines for the use of studs, delineators, etc.



Figure 1.1
End of Minimum Speed Limit



Figure 1.2
Junction Ahead with Road of Less
Importance



Figure 1.3
Sharp Deviation of Route to Left



Figure 1.4
Stack Type Advance Direction
Sign

1.2 RESPONSIBILITIES

1.2.1 Legal Framework

The legal framework for traffic signage (including signs, devices, notices, and markings) is contained in the Road Traffic Acts. This manual, defines the signs and road markings to be used and the significance attached to them.

1.2.2 General Responsibilities

The Ministry of Roads (MoR) has overall responsibility for the planning and supervision of road-works and signage, under which various authorities (e.g. KeNHA, KeERRA or KURA) are responsible for different classes of roads.

1.3 THE FUNCTIONS AND CLASSIFICATIONS OF SIGNS

Traffic signs (and road markings) are divided into three broad categories - information, regulatory and warning.

Different types of signs are used on motorways and a special series of warning signs are used for roadworks. Chapters 2 to 8 discuss types of signs (and markings) based on these broad divisions. These are:

- (i) **Information Signs**
Directional Motorway
Directional Other Information
- (ii) **Regulatory Signs**
- (iii) **Warning Signs**
- (iv) **Road Markings***
- (v) **Road-works Signs**

Note: Road Markings are treated separately in the Kenya Road Markings Manual; However, road markings are referred to throughout, in support of various sections on road sign engineering.

1.3.1 Information Signs

Information signs normally give road users information about routes and places and facilities of particular value and interest. Most information signs are rectangular but direction signs have one end pointed. Examples of information signs are presented in figures, 1.5, 1.6 and 1.7 below



Figure 1.5
Direction Sign (Information)



Figure 1.6
Stack Type Advance Direction Sign
(Information)

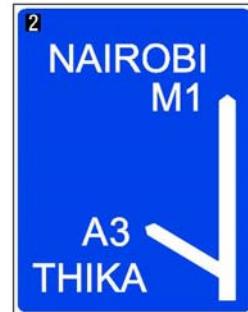


Figure 1.7
Motorway Advance direction
Sign(Information)

The colours used on information signs depend on the classification of the route that is indicated:

- (i) Signs for motorways have white lettering, symbols and borders on a blue background
- (ii) Signs indicating International and National trunk Roads have white lettering, symbols and borders on a green background
- (iii) Signs indicating other routes have black lettering, symbols and borders on a white background

In addition, facilities of interest to tourists are shown with white lettering, symbols and borders on a brown background.

1.3.2 Regulatory Signs

Regulatory traffic signs indicate the existence of road regulations or implement such regulations, or both. They may also indicate the existence of a provision in an enactment relating to road traffic. Regulatory signs may be either mandatory or prohibitory.

The mandatory signs give instructions to drivers about what they must do; for example KEEP LEFT (Figure 1.8), STOP (Figure 1.9), GIVE WAY (Figure 1.10). Most mandatory signs such as the KEEP LEFT sign are circular with white symbols and border on a blue background. Others, such as the GIVE WAY sign have black lettering or symbols on a white background, with a red border.

The prohibitory signs give instructions to drivers about what they must not do; for example NO ENTRY (Figure 1.11). Speed restriction signs are further examples.



Figure 1.8
KEEP LEFT Sign
(Regulatory)



Figure 1.9
STOP Sign
(Regulatory)

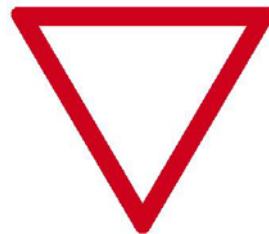


Figure 1.10
Give Way Sign
(Regulatory)



Figure 1.11
NO ENTRY Sign
(Regulatory)



Figure 1.12
Cross Roads With Minor
Road Ahead
(Warning)



Figure 1.13
Diverted Traffic
(Roadworks Warning)

1.3.3 Warning Signs

These signs give warning of a hazard ahead and are red/white/black in colour and triangular in shape. The white triangle is surrounded by a red border and contains a black symbol in order to indicate the nature of the hazard such as the example of warning sign shown in Figure 1.12.

1.3.4 Road Works Signs

A special group of signs are designated in order to indicate to road users that road works are in progress. These signs are either rectangular or triangular in shape and are coloured yellow with a black border and symbols as demonstrated by the sign in Figure 1.13. The signs indicate to road users that extra care is necessary in this vicinity.

1.4 THE DESIGN AND USE OF SIGNS

A sign must be capable of transmitting its message clearly and timely to road users travelling at the normal speed for the road during the day and night. In order to achieve this, a sign must have correct legibility distance, appropriate target value, simple contents and layout and effective reflectorization or illumination. Signs must incorporate all of these requirements, be adequate in design and construction, but avoid being extravagantly expensive.

The legibility of traffic signs is of prime importance. The achievement of this criterion is determined by the size of lettering or symbols used. Contributory factors include the use of adequate colour contrast between lettering/symbols and background and the type of alphabet used.

Target value is an assessment of how well a road user can identify that there is a road sign ahead. It depends on both the colour and size of the sign; a large sign will have adequate target value whatever its colour, but difficulties may occur with smaller signs in urban areas, where it is desirable to select sites with backgrounds that do not reduce the target value of the sign.

The use of symbols alone, in order to represent a message, may be the most effective sign layout. Where lettering has to be used it is important to condense the message into as few immediately comprehensible words as possible.

As size is by far the most important factor determining sign cost, then signs should be designed to meet the required legibility without wasting space.

A number of factors determine the distance over which a sign message is legible including:

- (i) The size of lettering or logo
- (ii) The number of messages to be scanned
- (iii) The lateral distance of the sign from the edge of the road
- (iv) The speed of the approaching vehicle

As a result of these considerations, different sizes of signs are used to suit different speed values. On signs where legibility of words is important, different sizes of alphabet are used. For ideographic and symbolic signs, the size of the sign is proportional to the speed of approaching traffic. Details of the different sizes used are given in subsequent chapters.

All script shall appear in upright letters and versions of place names shall be entirely in upper case letters but worded statements can appear in upper case or lower case with initial capitals. Further details are given in subsequent chapters.

Different classes of signs have different colour combinations. The number of colours that can be used on signs is limited by both aesthetic and technical requirements and is discussed in more detail in subsequent chapters.

1.5 THE POSITIONING OF SIGNS

There are four considerations in the positioning of a traffic sign:

- (i) Siting along the road in relation to the appropriate junction, hazard or other feature
- (ii) Placement in relation to the edge of the carriageway and other features of the road cross section
- (iii) Height above the road
- (iv) Orientation

1.5.1 Siting

In order to allow a driver adequate time to comply safely with its message, a sign needs to be sited carefully. Generally, the distance from its related feature will depend on the speed of approaching traffic, although local conditions such as possible obstructions are important considerations.

1.5.2 Placement

The placement of a sign is dictated by the local conditions and includes the degree of camber or crossfall, the type of edge of carriageway and the type of road.

1.5.3 Mounting Heights

The mounting height of a sign is important to ensure visibility, especially at night.

Relatively high mountings should be used where excessive spray is likely to soil the signs.

In built-up areas, signs may have to be higher for various reasons, especially where they are erected on footways to allow clearance for pedestrians. Where illumination is necessary and vandalism likely, lamps should be out of easy reach.

1.5.4 Orientation

Orientation is important if speculum reflection from traffic signs is to be avoided. In order to eliminate or minimise this effect, signs should be angled away from the direct beam of the headlights of approaching vehicles.

The considerations required when siting traffic signs are discussed more fully in Chapter 7: Sign Location.

1.6 SIGN MOUNTING

Signs should be mounted using the fewest number of posts possible, especially in urban areas. A proliferation of posts can present unnecessary hazards for the visually impaired and create obstructions for people with perambulators or wheelchairs.

It is advantageous to attach signs to adjacent walls where these are located close enough to the carriageway or, alternatively, to group signs together on posts. When posts must be erected in narrow footways they should be positioned to cause the least possible obstruction and reserve the greatest width of clear walkway.

Sign posts should be designed to accommodate the total area of signs to be attached to them. If attaching larger or additional signs to existing posts, care should be taken to check that the strength of the posts is adequate, giving particular attention to any reduction in strength as a result of corrosion. When existent posts are shown to be inadequate for the total loading, it is preferable to replace them rather than use additional posts.

Specifically designed concrete or steel posts will be required for the very large signs used on high speed roads such as motorways.

1.7 SIGN BACKGROUNDS

The effectiveness of signs is often dictated by their setting and surroundings. A colourful background can cause small signs to fail to stand out. Even the larger signs can be overpowered by a strong background colour.

The attention of road users can be distracted by the location of conspicuous advertisements behind or near signs. Indeed signs can be missed if flashing or brilliantly illuminated advertisements are present.

These points should be considered when siting new traffic signs and in the exercise of the control of advertisements under general planning regulations. If a poor or distracting background cannot be avoided, it may be partially screened by a backing board to a sign.

The size of such boards should be varied to suit local conditions.

All sign-face material (other than black) should normally be reflectorized with material complying with Class II (UK) material as specified in B.S. 873.

The use of higher grade reflective material (Class I) may be justified in a number of circumstances as outlined below:

- (i) Where the sign location is such that high angularity of retro-reflection is necessary, e.g. overhead bridges or chevron signing at roundabouts or sharp bends.
- (ii) On the last advance direction sign before the off slip of a motorway.
- (iii) On important safety related signs, e.g. 'STOP' or 'GIVE WAY' in lit areas.
- (iv) At high accident locations where the use of such material is considered beneficial.

1.8 MAINTENANCE OF SIGNS

Signs must at all times be maintained in order to preserve their effectiveness and general condition. Signs become less effective when characters discolour or deteriorate and when damaged or displaced as a result of accidents or vandalism.

It is essential that periodic inspections of signs be carried out in order to ensure their prompt repair or replacement. Illuminated or reflectorized signs should be regularly inspected after dark.

Similarly, night time inspections of delineators and studs are essential, particularly in wet weather.

All signs require regular cleaning. Materials used on the sign-face should be cleaned in accordance with guidelines issued by the manufacturer of the material concerned.

1.9 USE OF WORDING ON ROAD SIGNS

1.9.1 Place-Names on Information Signs

All text should be in Upper Case Roman letters.

1.9.2 Information Signs not Depicting Place-Names

The requirements relating to the use of wording on information signs depicting place-names should also be applied to all other information signs including information plates which may accompany signs.

1.9.3 Forms and Spelling of Place-Names

It should be ensured that the correct forms and spelling of place-names are used on traffic signs. If the place-name is not included in the Place-Names Order, the Gazetteer of Kenya should be consulted.

1.9.4 Abbreviation of Place-Names

In some cases, where place-names may be disproportionately lengthy for the purpose of clear signposting, the place-names may be abbreviated. Standard abbreviations of some component terms may be used where these terms occur at the beginning of place-names.

1.9.5 Road-Works Signs

These signs do not, generally, have text, but incorporate symbols to convey messages. Where text is used, it should be in Upper Case Roman Letters.

CHAPTER 2

DIRECTIONAL AND INFORMATION SIGNS NATIONAL REGIONAL AND LOCAL ROADS

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CHAPTER 2

2. DIRECTIONAL AND INFORMATION SIGNS ACCORDING TO ROAD CLASSIFICATION

2.1 INTRODUCTION

This chapter describes the **Directional Information Signs** for use on **Arterial/Trunk roads, Collector roads and Local roads**.

Directional Signs for Motorways (Classified under Rural Arterial/Trunk roads as Super Highway (Class S)) and Other Information signs are outlined in following Chapters 3 and 4, respectively.

Directional information signs belong to one of three major groups:

- (i) Advance directional signs giving road users information about destinations available from a junction ahead (see Figure 2.1)
- (ii) Direction signs giving route information at a junction (see Figure 2.2)
- (iii) Route confirmatory signs giving confirmation of present route selection and information about the destinations ahead after a road junction (see Figure 2.3)

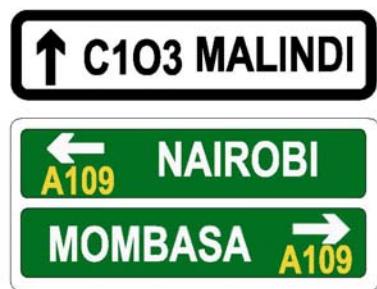


Figure 2.1
Advance Direction Sign



Figure 2.3
Route Confirmatory Sign



Figure 2.2
Direction Sign

On Arterial or Trunk roads, directional signing will encompass advance direction, direction and route confirmatory signs. On other routes it is not necessary to use all three types. Details are given in section 2.2 of this chapter on the principles of directional signing and the circumstances in which each type of directional information sign should be provided.

The guidelines contained in this chapter describe the technical standards which should be adopted in the majority of situations. Some relaxation of the standards may be accepted for specific junctions because of geometry or for other reasons. A layout of signs for a particular junction should satisfy these basic requirements:

- a) The colour of directional signs shall be appropriate to the route indicated. The relationship between the road hierarchy and colour coding of signs is defined in section 2.2.
- b) A destination, once shown on a sign, should appear on all subsequent signs along the route until either the destination itself is reached or a turning off to it is passed.
- c) When routes have numbers they should always be indicated. The consistency of route number signing is particularly important to enable through traffic on main routes to negotiate the dense urban areas of the larger cities and towns.

2.2 GENERAL PRINCIPLES OF DESIGN

This section defines the general principles of design for directional information signs.

The design rules will ensure that a clearly legible message is conveyed and that drivers will be in no doubt as to the route they need to follow in order to reach their destination.

2.2.1 The Road Hierarchy and Colour Coding

The foreground and background colours of directional information signs depend on the classification of the road along which a destination is reached.

The present road classifications are:

Rural Roads

(i) Major Arterial or International Roads - Class A Roads

These are roads forming strategic routes and corridors, connecting international boundaries and international terminals such as international ports. (They are designated by an **A** prefix.)

(ii) Minor Arterial or National Trunk Roads - Class B Roads

These are roads forming important national routes, linking Province headquarters or other important centres to the capital, to each other or to Class A roads.

These roads usually cross province boundaries, but may link several district towns within the same province. (They are designated with a **B** prefix.)

(iii) Major Collectors or Inter-District Roads – Class C Roads

These are roads linking district headquarters and other major designated towns (usually with more than 10-25,000 population) to the higher level network or to each other. (They are designated with a **C** prefix.)

(iv) Minor Collectors or Divisional Roads – Class D Roads

Roads forming routes of moderate length, linking divisional headquarters and other minor towns (usually with between 2,000 and 10,000 population) to the District towns or higher level network (They are designated with a **D** prefix.)

(V) Major Local or Minor Feeder Roads – Class E Roads

Roads linking one or more markets, location centres or sub-location centres to divisional centres or the higher level network. (They are designated with an **E** prefix.)

(Vi) Minor Local or Minor Feeder Roads – Class F Roads

Roads serving groups of rural population in the range of less than 4,500 in average density areas, without a market or at most one minor market

(Vii) Local Access or Farm to Market Roads – Class G Roads

Roads providing direct access between farming areas and the nearest market or the higher level road network.

Urban Roads

Urban roads are classified according to services they provide into seven classes, namely class **H, J, K, L, M, N** and **P**.

The table below shows a summary of road classification in Kenya:

Functional Class	Rural Roads			Urban Roads	
	Road Class	Administrative level Indicator	Functional Class	Road Class	Functional Class
Arterial or Trunk	A	International	Major Arterial	H	Major Arterial
	B	Inter-Provincial	Minor Arterial	J	Minor Arterial
Collector	C	Inter-District	Major Collector	K	Major Collector
	D	Inter- Divisional	Minor Collector	L	Minor Collector
Local	E	Inter-Location	Major Local	M	Major Local
	F	Inter-Sub- location	Minor Local	N	Minor Local
	G	Intra-Sub- location	Local Access	P	Local Access

Note: In addition to above classification, a new future class of road, Named Rural Class S (Super highway) has been introduced. Traffic signs associated with this class are discussed in detail in chapter 3 of this manual (Motorway).

Table 2.1 indicates the colour schemes to be used for these different classifications.

Table 2.1 - Colour Schemes for Directional Signs

Route Indicated (Functional Class)	Background Colour	Colour of Text, Borders, Arrows and Chevrons	Colour of Route Number
Arterial or Trunk	GREEN	WHITE	YELLOW
Collector	WHITE	BLACK	BLACK
Local	WHITE	BLACK	BLACK

2.2.2 Provision of Directional Signs

It is not necessary to provide all three types of sign for every junction on the road network. The provision of signs depends upon the type of junction.

Table 2.2 below gives guidance as to the signs which should be provided at the different types of junctions. The guidance given in the table is not definitive and judgement should be exercised in particular circumstances.

2.2.3 The Selection of Destinations

Directional information signs direct road users around the road network by informing drivers of the destinations which are available on the routes leaving a junction.

Consistency of destinations displayed is important. A destination mentioned on one sign should be repeated on all subsequent signs until that destination is reached.

Table 2.2 - When to Provide Directional Signs

Type of Junction	Type of Sign											
	Advance direction signs on			Direction signs pointing along			Confirmatory signs on exit on			Route Marker signs on exit on		
Road Class	T	C	L	T	C	L	T	C	L	T	C	L
T/T	YES	-	-	YES	-	-	YES	-	-	NO	-	-
T/C	YES	YES	-	YES	YES	-	NO	NO	-	YES	YES	-
T/L	NO	-	NO	NO	-	YES	NO	-	NO	NO	No	-
C/C	-	NO *	-	-	YES	YES	-	NO	-	-	NO	-
C/L	-	NO	NO	-	YES	YES	-	NO	NO	-	NO	NO
L/L	-	-	NO	-	YES	YES	-	-	NO	-	-	NO

* Except important junctions leading to major centres of population or Classes A and B Roads.

Notes: T-Arterial or Trunk
C-Collector
L - Local

The selection of the destinations to be displayed is determined by the classification of the route to be signed. Table 2.3 below indicates the type of destinations to be displayed on all directional signs according to the classification of the route. Specific rules exist for route confirmatory signs which can show more than two destinations and details of these are given in the next section.

When the destinations have been selected they should be arranged in distance order with the furthest at the top of the list of place names for each direction.

Table 2.3 - Destinations to be shown

Classification of Route to be Signed	Advance Direction Signs	Direction Signs
Class A	Terminal destination	As for ADS plus nearest town
Class B	Terminal destination or major intermediate town	As for ADS plus nearest town.
Class C	Nearest significant town or village	As for ADS plus other local destination where warranted
Minor Roads		Nearest town or village

2.2.4 Terminal Destinations

They are towns, cities or ports at the terminals of International and National Trunk roads or at the terminals of the extended route in the case of cross border routes.

2.2.5 Other Destinations

These destinations will usually be a regional town or town of sizeable population. Such locations need not be on the actual route if they have been by-passed. In the case of Class B roads, where no significant location exists between the junction to be signed and the end of the route, the nearest significant location on the route to which it joins should be displayed. The incorporation of tourist resorts or places of scenic or historic interest as "significant destinations" on directional signs is demonstrated in Chapter 4.

2.2.6 Alphabets

The alphabet prescribed for use on directional informative signs is that known as "Transport Heavy". Two sizes of the English upper case 'A' are used to signify international Trunk roads where these are indicated on signs located on such routes.

2.2.7 Common Dimensions

The 'x'-height and stroke width (s/w) are the common dimensions used when designing sign faces. The "x" height is the height of the lower case 'x' in the English alphabet. The stroke width is the dimension used when specifying clearances between the different elements of the sign face. It is equal to one quarter of the 'x'-height.

All upper and lower case, letters, numerals and associated characters are placed on individual "tiles" to assist in the correct spacing of text. The tile height is twice the 'x' - height.

The ratio, therefore, of stroke width to 'x'-height to tile height is 1:4:8. This relationship is illustrated in Figure 2.4 below.

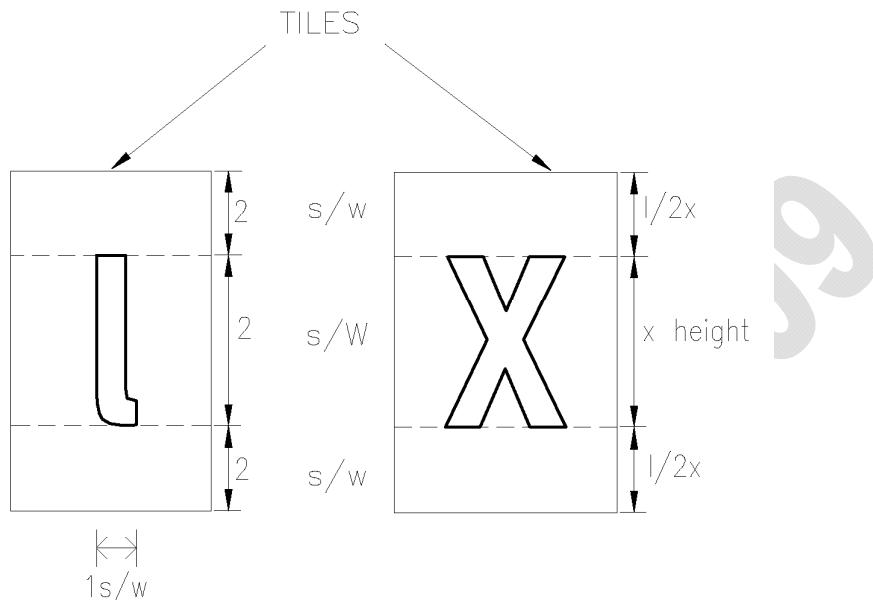


Figure 2.4
'x' Height And Stroke Width (s/w)

The tile embodies the recommended horizontal clearances in the total space occupied by each character of the "Transport Heavy" type face. Consequently each character has its own tile width and this is expressed as a percentage of the 'x'-height.

Figures A2.2 to A2.5 in the Annex A.2 show how the characters are placed on tiles. They also indicate the special tiles of lesser width for the letters T, V or Y when they are followed by a, e, g, o, r, and u. A specially increased tile width for the upper case 'W' to be used when it is followed by any other upper case letter is also defined.

The size of a sign is determined by its 'x'-height. The recommended 'x'-heights appropriate for different speed categories of road are also given in Annex A.2 in Table A2.1. The sign face is designed by arranging the different elements of the sign according to dimensions of borders, tiles and symbols and the recommended clearances stipulated later in this section.

The overall sign size can be calculated by applying the selected 'x' -height.

2.2.8 Letter and Block Spacing

Each character available in script is illustrated mounted on a tile in the Annex. The English script is mounted on square or rectangular tiles that stand upright. As the Local Language script is inclined at 15 degrees, letters in the Local Language stand on slanted tiles.

Words in either language are formed by butting tile edges together. The tile width for each character has been designed to ensure that when the edges of tiles for adjacent characters are butted together the correct spacing between the characters will result. The assembly of a number of tiles to form a word or of a number of words, place-names or route numbers which are associated is called a block. See Table 2.4 below. Note that spacing is measured between tiles.

Table 2.4 - Spacing Between Words, Route Numbers and Distances

Description of Horizontal Clearance	Dimension S/W
Between related words	3
Between letters and directly associated numerals (A104, C99, 500m)	1
Between Place-names and associated Route Numbers	3
Between Place-names and associated distances	3
Between different Route Numbers on same line	3

For bilingual signs, Local Language script should always be positioned above its English equivalent. A clearance between the top of the English tiles and the bottom of the Local Language tiles should be maintained. This clearance is normally 0.5 s/w, but varies according to the type of sign and the destination displayed and is defined later in this chapter. Bilingual blocks will usually be formed by justifying both sets of tiles to the left. The Local Language tiles should be offset so that the mid-point of the slanted side of the Local Language tile is in line with the left side of the English tile.



Figure 2.5

2.2.9 Patches and Legend Panels

Patches and legend panels are used on signs to indicate the status of routes reached directly or indirectly from a junction ahead.

A legend panel should be used on advance direction signs where a route leaving the junction ahead has a different status to the road on which a sign is placed. The legend panel should contain both place name(s) and route number and will have a colour scheme in accordance with Table 2.1.

Legend panels should be designed so that the space between tile edges and the edge of the panel is 2 s/w. The legend panel corners should be set at radius to 1 s/w. A white border of 0.5 s/w is added to the darkly coloured Legend panels if placed on dark backgrounds. The design of legend panels is illustrated in Figure 2.6 below.

A patch is used to indicate a road of a different status which can be reached at some distance along a route. The patch should contain a route number only, enclosed by brackets, and should be in the colour scheme appropriate to the class of road indicated.

Class A and B roads numbers shown on a patch should be 6 s/w high. Patches should be drawn 1 s/w from the edge of the letters themselves (not the tiles) and corners set to radius 1 s/w.

A white border of 1 s/w should be added when a dark patch is placed on a dark background. Patch design is illustrated in Figure 2.7 below.

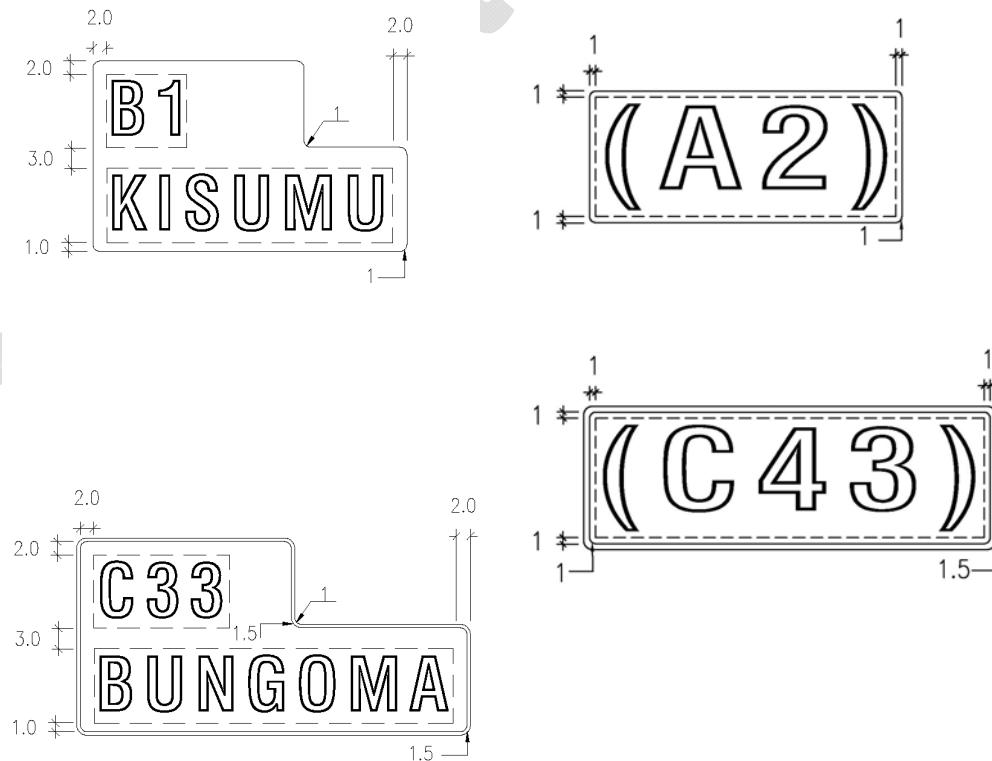


Figure 2.6
Legend Panel Design

Figure 2.7
Patch Design

2.3 SIGN FACE DESIGN

2.3.1 ADVANCE DIRECTION SIGNS

There are four basic types of advance direction signs:

- (i) Stack type..... (I. 1)
- (ii) Route Direction..... (I. 2)
- (iii) Map type..... (I. 3)
- (iv) Lane Destination..... (I. 4)

2.3.2 STACK TYPE SIGNS

Stack type signs (I. 1) have directional panels indicating the route number and destinations for each direction (Directional panels should not be confused with legend panels described in the previous section). Each directional panel is coloured in accordance with the route indicated. The direction is indicated by an appropriately orientated arrow. The standard design and orientation of the arrows are shown in Figure 2.8 below.

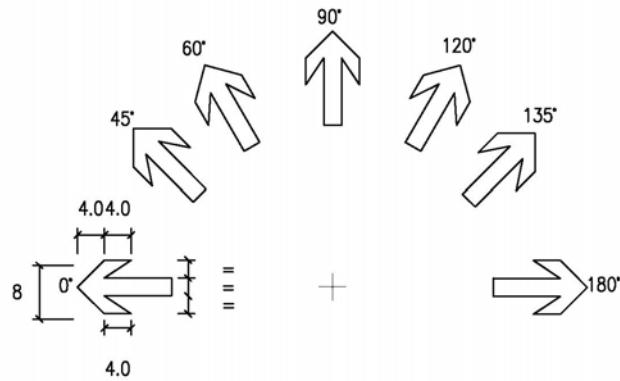


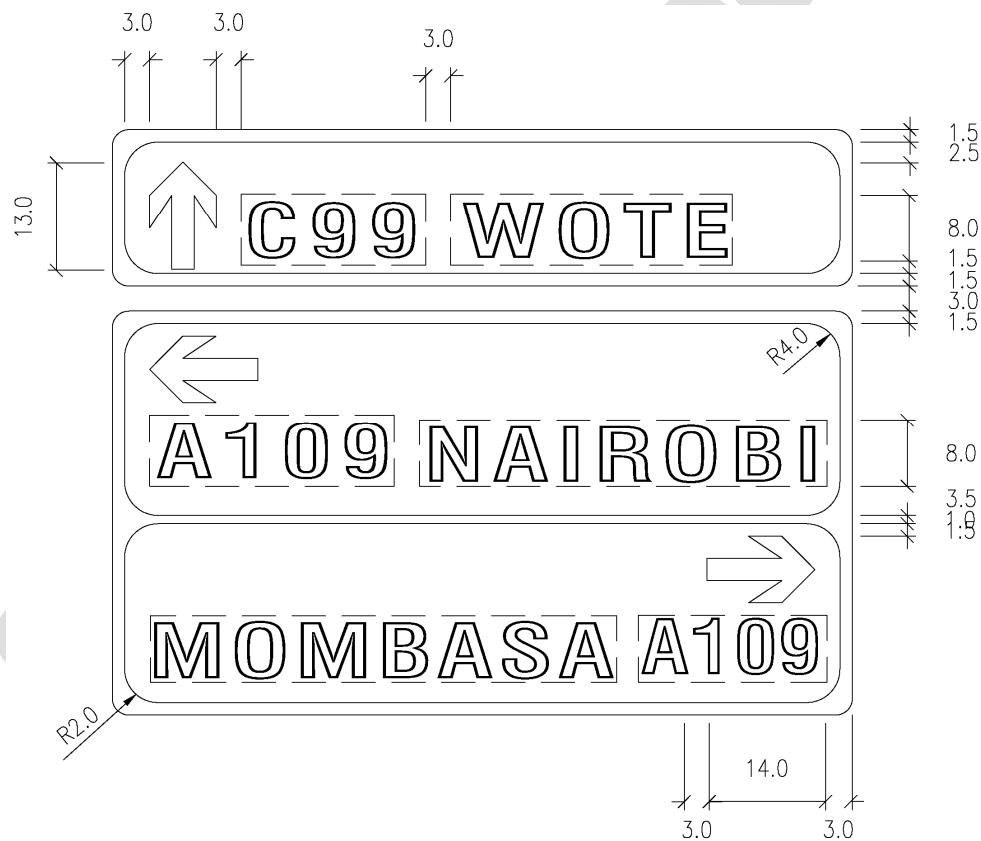
Figure 2.8
Design And Orientation Of Arrows

The straight ahead directional panel is always on the top, irrespective of route classification. When there are more than two directional panels on a sign, panels of the same colour should be grouped together. Where there are directional panels of different colours, a grey strip should be provided between them. Alternatively, separate signs may be constructed for each group of panels having the same background colour.

Stack type signs should be designed in accordance with the rules defined in Table 2.5 and demonstrated in Figures 2.9 to 2.11. When it is necessary to show more than one destination for each direction, the second destination will appear underneath the first. Where this destination is reached by another route after the junction, the route number should be shown in brackets underneath the arrow and route number for the first destination. If both destinations are reached via the same route then the route number and arrow should be centred vertically alongside the two place-names.

Table 2.5 - Dimensions for Stack Type Signs

Dimension	Multiples of SIW
Border Width	1.5
Inner Radius of Border	4.0
Outer Radius of Border	2.0
Internal Border	1.0
Horizontal Gap to Side Border	3.0
Vertical Gaps to Bottom Border	1.5
Vertical Gap to Top Border (from text tiles)	2.5
Vertical Gap to Top Border (from Arrow)	1.5
Vertical Gap between English and Local Language Place-Name	0.5
Vertical Gap between Separate Destinations	3.0
Horizontal Gap between Arrow and Route Number	3.0
Vertical Gap between Arrow and Route Number	1.5
Gap between Panels of Different Colours	3.0

Figure 2.9
Design Of Standard Stack Type Sign (I. 1a)

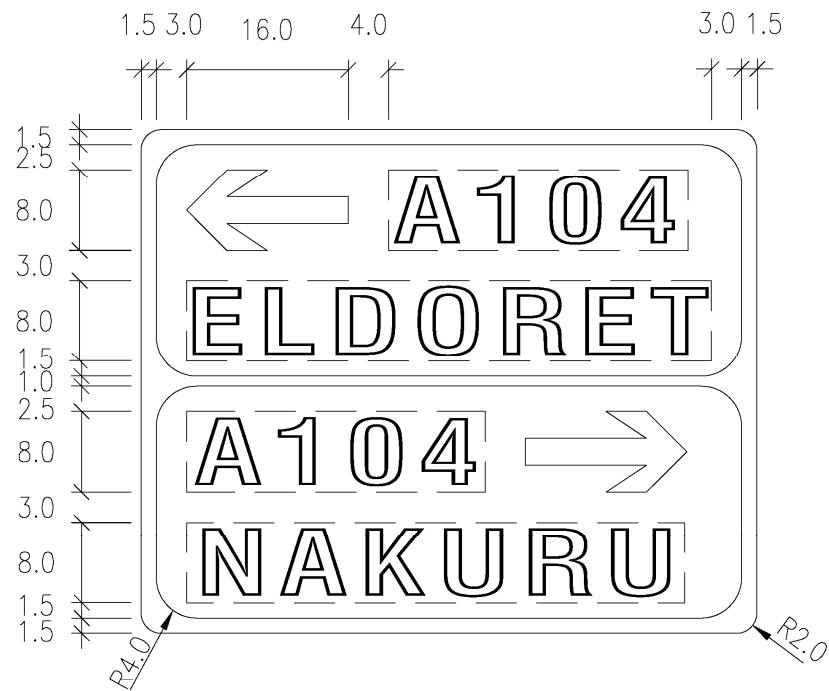


Figure 2.10
Alternative Design Of Stack Type Sign (I. 1b)



Figure 2.11
Design Of Stack Type Sign (More Than One Destination Per Direction (I. 1c)

2.3.3 Route Direction Signs

In some urban areas it may not be feasible to accommodate stack type signs. In these cases route direction signs (I. 2) can be used instead. These signs are similar to stack type signs. They have directional panels which are coloured according to the route indicated and use the same arrows as stack type signs.

Route direction signs do not show any destinations but they display route numbers of routes which may be reached directly or indirectly from the junction ahead. All the route numbers are un-bracketed.

Table 2.6 indicates the design rules normally used for route direction signs. Where more than one route is available in any direction the route numbers are enclosed by boxes and are 6 s/w high. Where a single route number is shown for a direction the gaps to borders are increased from 3 s/w to 4 s/w and the numbers are 8 s/w high.

Table 2.6 - Dimensions for Route Direction Signs

Dimension	S/W
Border Width	1.0
Inner Radius of Border	4.0
Outer Radius of Border	2.0
Internal Border Width	0.25
Horizontal Gap to Side Border	4.0/3.0
Horizontal Gap to Internal Border	4.0/3.0
Vertical Gap to Top Border	4.0/3.0
Vertical Gap to Bottom Border	4.0/3.0
Vertical Gap to Internal Border	4.0/3.0
Horizontal/Vertical Gap Between Arrow and Route Number	4.0

Note: 1.

Gaps to Borders are 3 s/w where more than one route number is indicated for a direction, otherwise 4 s/w is used

Example route direction signs are shown in Figures 2.12 and 2.13 below.

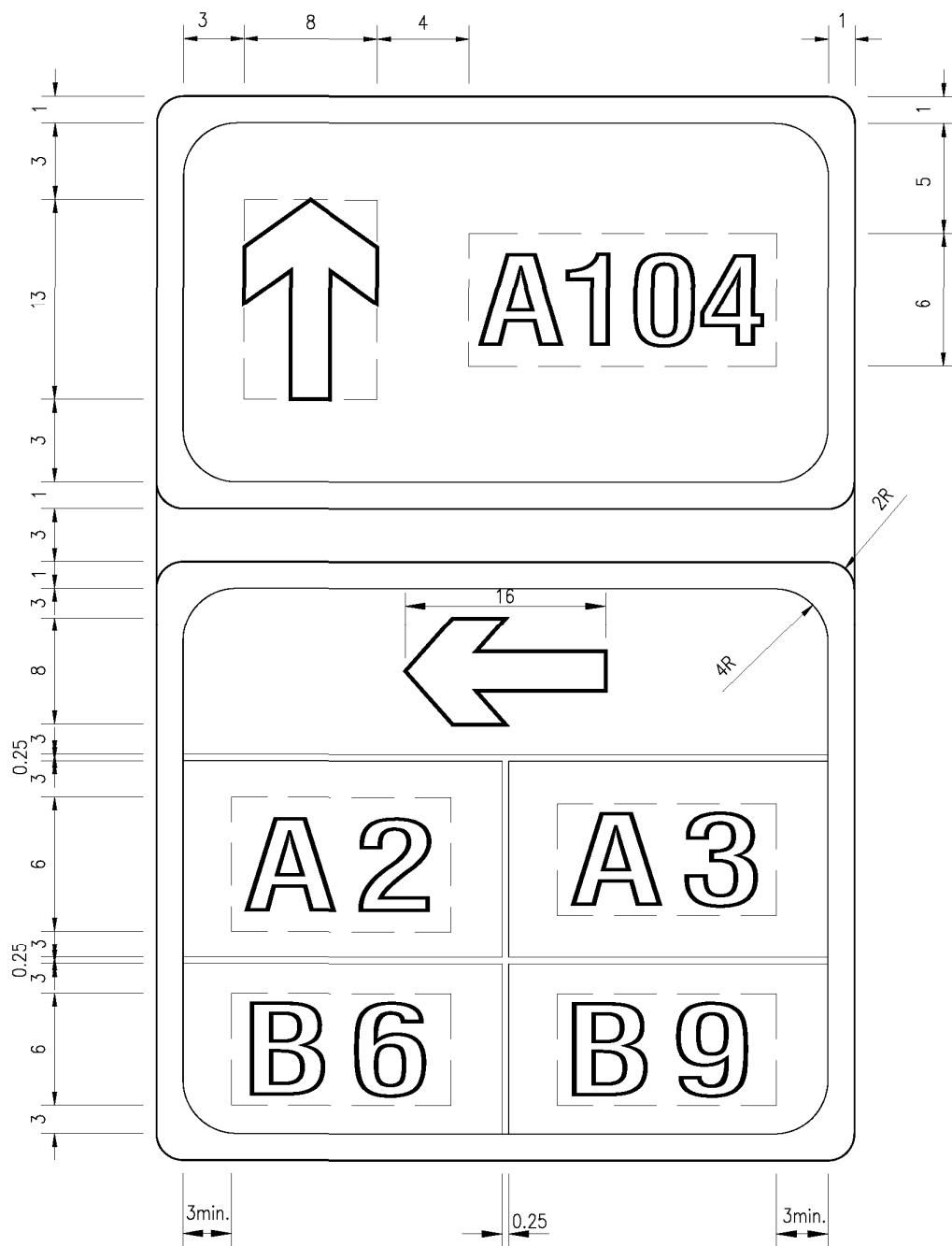
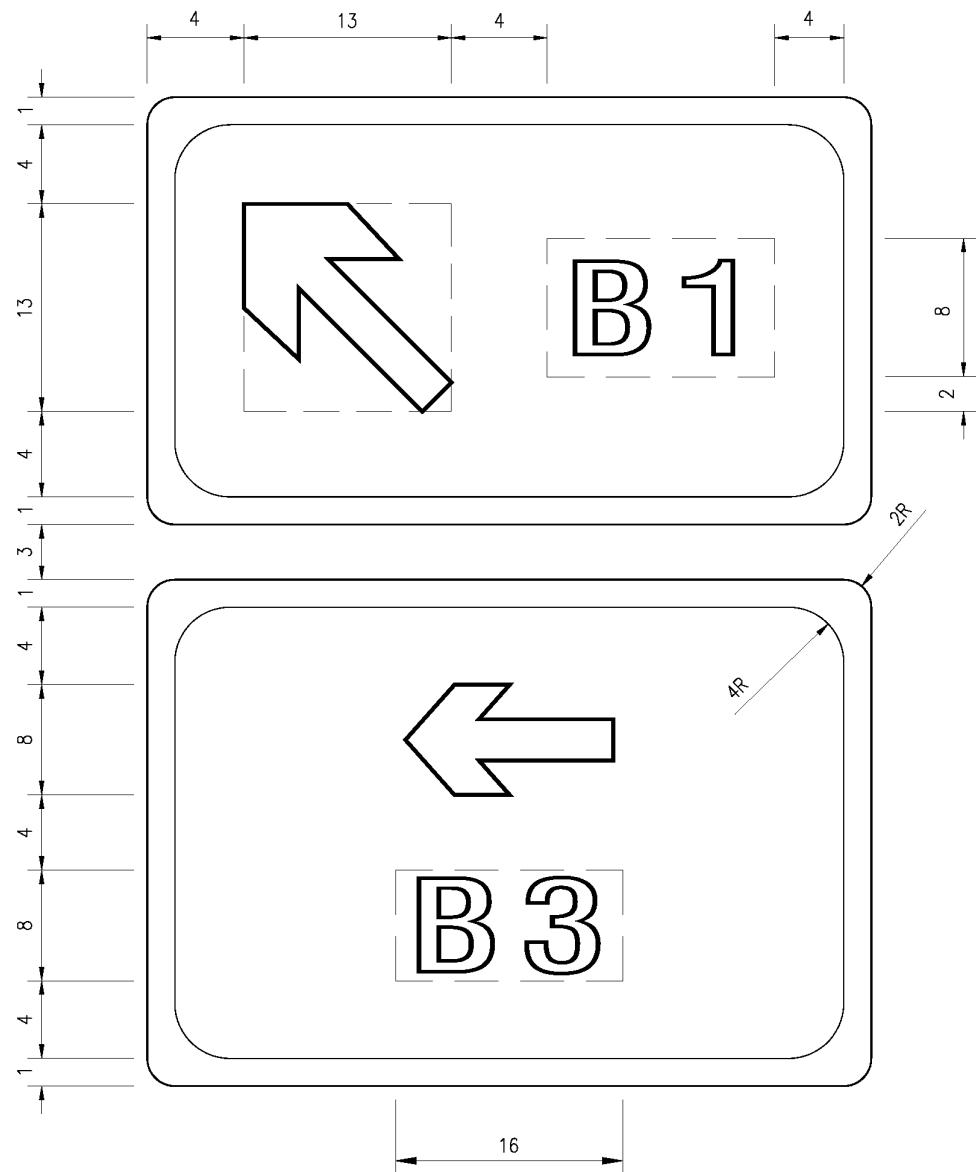


Figure 2.12
Design Of Route Direction Sign (I. 2a)



Map Type Signs For Roundabouts

Figure 2.13
Design Of Route Direction Sign (I. 2b)

2.3.4 Map Type Signs For Roundabouts

Map type signs (I. 3) should only be used where it is important to provide the driver with a representation of the road layout at more complex junctions. Map type signs should be used in advance of grade separated junctions and roundabouts. The signs may incorporate colour legend panels to reflect the classification of the route indicated.

The sign background retains the colour scheme for the classification of route on which it is located.

The roundabout symbol is used to represent the junction layout. The dimensions to be used when designing the symbols are given in Table 2.7. Roundabout symbols incorporate an arrow head on the ends of each of the exit arms unless no information is displayed for an exit in which case a stub end may be used.

Table 2.7 - Dimensions for Roundabout Route Symbols

Dimension	S/W
Width of Route Symbol	4.0
Inner Diameter of Roundabout	14.0
Outer Diameter of Roundabout	22.0
Exit Arm Length	5.0
Entry Arm Length (Minimum)	8.0
Exit Stub Arm Length	3.0
Width of Arrow Head	3.0
Distance of Entry Route Symbol from Bottom Border	2.0
Distance of Arrow (Inner Angle) from Centre of Exit arm	2.5

There should always be a break in any roundabout symbol to the right hand side of the entry arm. This is illustrated in Figure 2.14 and is formed by:

- (i) Measuring angles of 30° and 60° anti-clockwise from the centre of the circular symbol
- (ii) Forming the ends of the break using the lines formed by these angles when drawn across the lower portion of the circular symbol

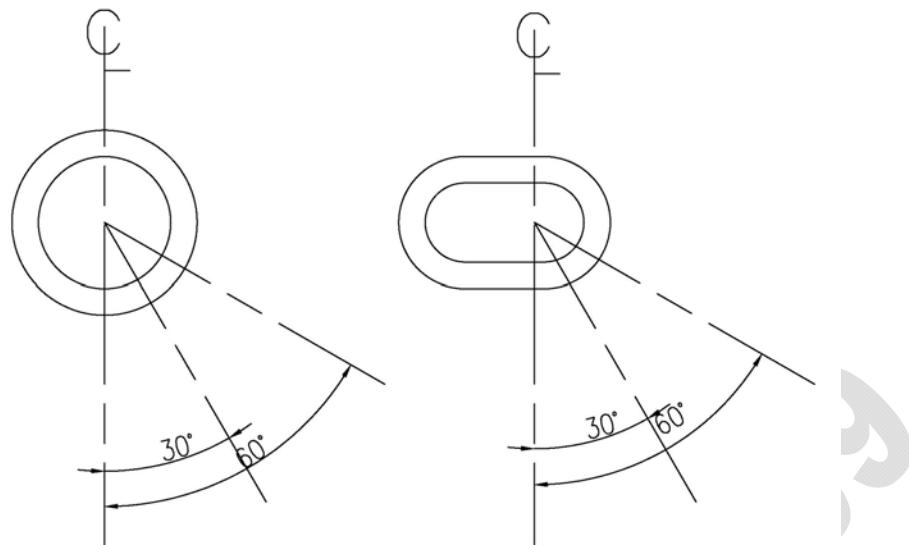


Figure 2.14
Forming Break In Roundabout Symbol

Once the route symbols have been designed the rest of the information can be added to the sign. Table 2.8 indicates the design rules to be used when designing roundabout signs. For the straight ahead arms the route number may be placed on either side of the arrow for optimum layout (Fig 2.15). Then the destination(s) may be positioned above and Justified with the route number. Another arrangement such as positioning the route number directly above the arrow head may sometimes produce a more effective design (Fig 2.16).

Table 2.8 - Dimensions for Map Type Signs of Roundabouts

Dimensions	S/W
Border Width	1.5
Inner Radius of Border	4.0
Outer Radius of Border	2.0
Horizontal Gaps to Side Border	3.0
Vertical Gaps to Bottom Border	2.0
Vertical Gap to Top Border	3.0
Vertical Gap Between English and Local Version Place-Name	0.5
Vertical Gap Between Different Place-Names	3.0
Horizontal Gap Between Arrow and Route Number (or legend panel)	3.0
Vertical Gaps Between Route Number and Place-Name	3.0
Horizontal Gap Between Side Destination Place-Names and the Furthest Horizontal extent of Roundabout Symbol	2.0

For side destinations the route number should normally be centred alongside the arrow head. In the interests of economic and balanced sign design the destination(s) may appear above or below the route number. The number of arms will normally dictate the type of design that is suitable. In all cases information for different exits should not be closer than 12 s/w to each other.

Exits from the roundabout that cannot be represented accurately by horizontal or vertical arms should be shown by arms at angles of 45°, 135°, 225°, or 315° from the vertical. In the latter case the break in the roundabout symbol should then occur between 330° and 350° from the vertical.

Figures 2.15 to 2.17 below show examples of map type signs for roundabouts.

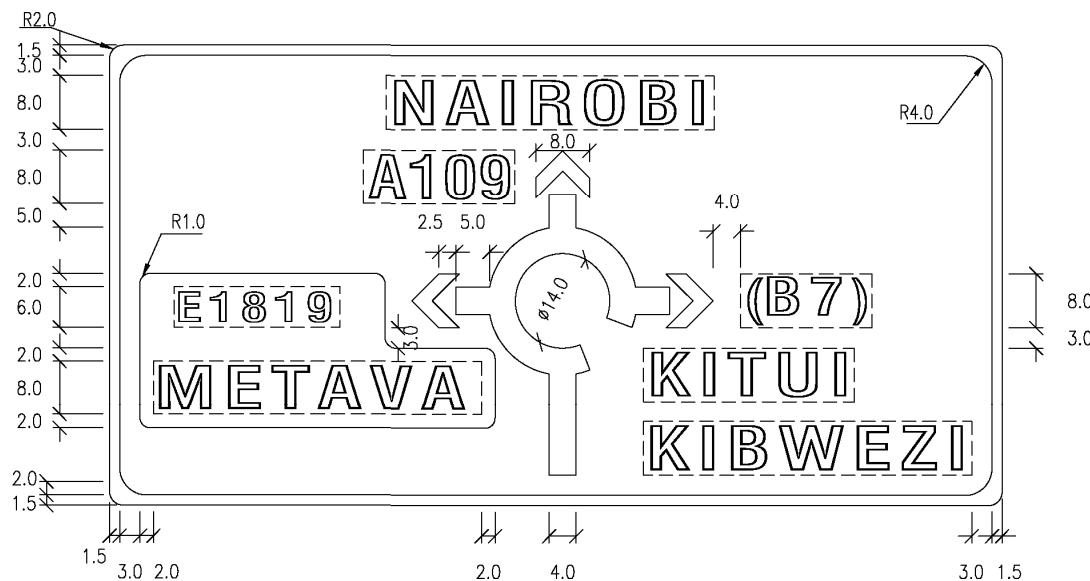


Figure 2.15
Design Of Roundabout Map Type Sign (I. 3a)

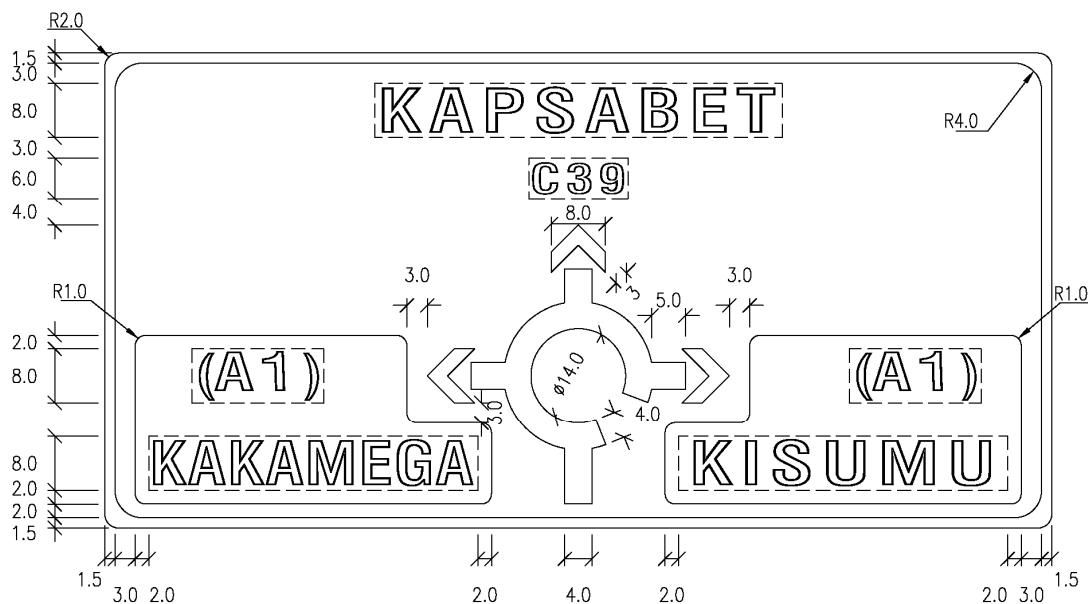


Figure 2.16
Design Of Roundabout Map Type Sign (I. 3b)

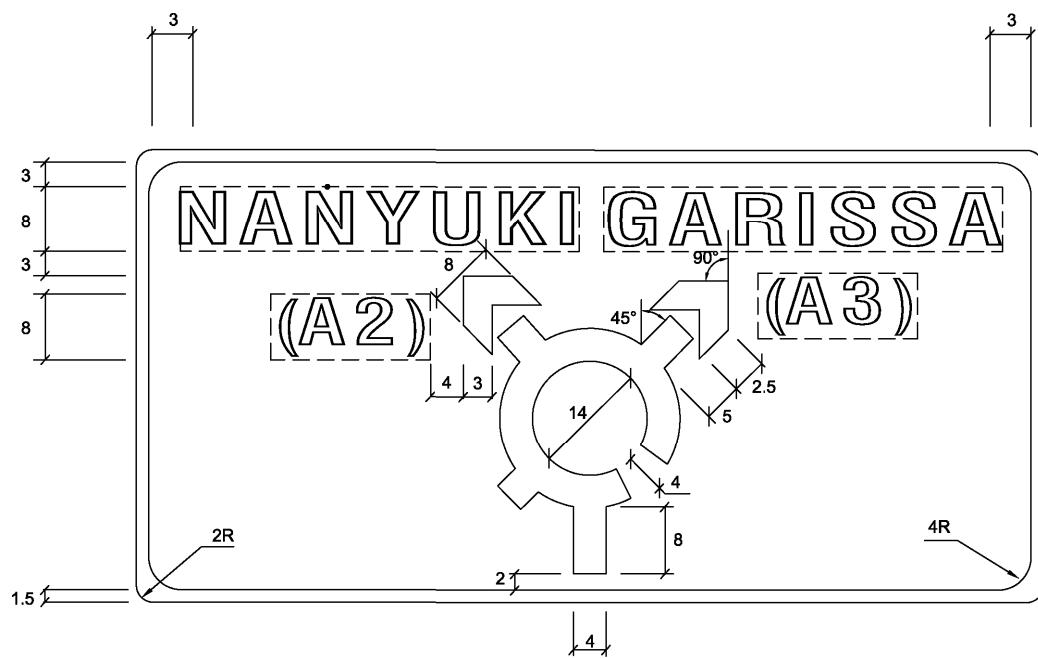


Figure 2.17
Design Of Roundabout Map Type Sign (I. 3c)

The distances to the junction may be indicated in tiles of 75% normal size at the bottom of the sign adjacent to the entry arm.

2.3.5 Lane Destination Signs

Lane destination signs (I. 4) should only be used before junctions where movements can only be made from specific lanes. In urban areas, lane destination signs will be of substantial assistance in guiding vehicles into the most appropriate lane at junction approaches. Lane destination signs reflect the colour schemes for different classifications of road on legend panels.

Lane destination signs use arrows and lane markings to guide motorists into the correct lane for their destination on approaching junctions. The dimensions to be used when designing lane destination signs are given in Table 2.10. The arrows are the same as those used on stack type signs although their standard length is 18 s/w. Arrows at 690, 900 and 1200 from the vertical can be used in addition to curved versions for left or right turns. These are shown in the example layouts in Figures 2.18 and 2.19.

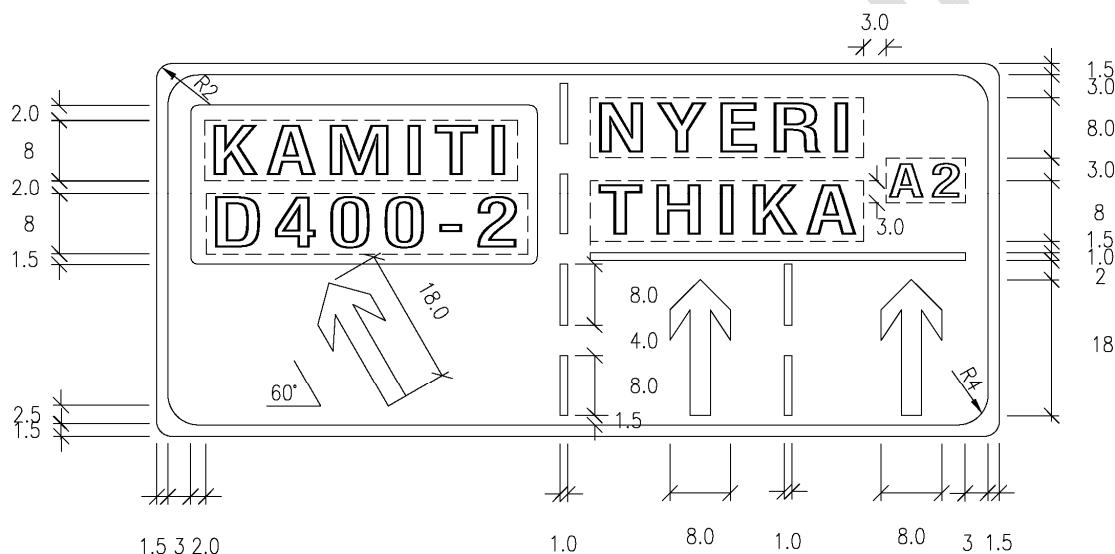


Figure 2.18
Design Of Lane Destination Sign (I. 4a)

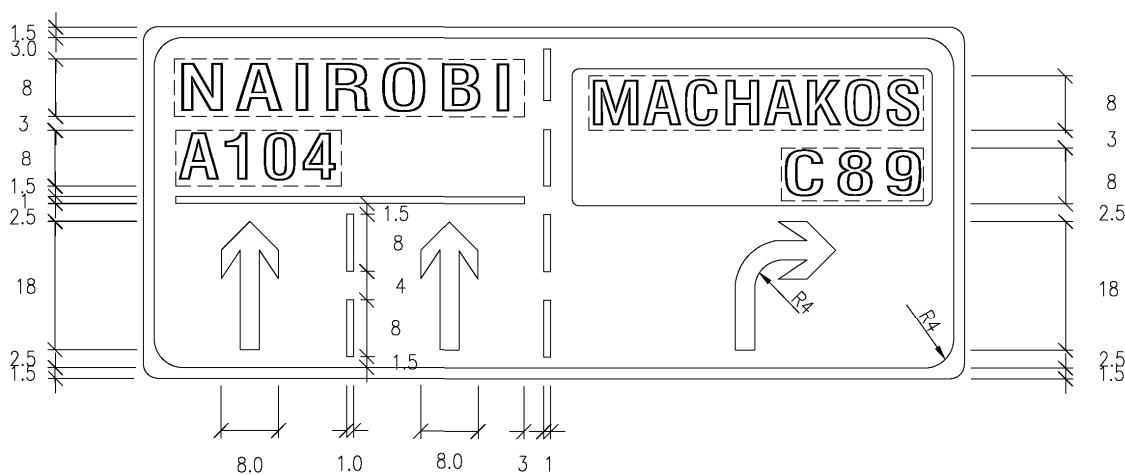


Figure 2.19
Design Of Lane Destination Sign (I. 4b)

Table 2.10 - Dimensions for Lane Destination Signs

Dimension	Multiple of S/W
Border Width	1.5
Inner Radius of Border	4.0
Outer Radius of Border	2.0
Vertical Gap to Top Border	3.0
Vertical Gap to Bottom Border	2.5
Horizontal Gap to Side Border	3.0
Lane Line Width	1.0
Length of Lane Line Segments	8.0
Length of Gap Between Lane Line Segments	4.0
Vertical Gap Above or Below Lane Lines	1.5
Link Line Width	1.0
Vertical Gap Above Link Line	1.5
Vertical Gap Below Link Line	2.5

A link line is a horizontal line separating destinations from the lane lines or arrows below. A link line should be used only if two or more lanes related to the same destination(s) can be reached via more than one lane.

Single arrows referring to a destination ahead should be centred on the legend to which they refer (In the case of curved arrows their full width should be centred). However, when two arrows relate to the same destination, each arrow should be centred between the adjacent lane lines or border.

Lanes leading to the same destination should be depicted as having equal width. No single lane width should be more than twice the width of the narrowest lane. Where the lengths of legend are so different that they exceed the above ratio the width of the narrowest lane must be increased. When this is done the horizontal spacing rules do not change except that the gaps to the side border are increased (the legend being centred horizontally on the sign). Alternatively, the largest destination in the widest lane may be condensed, indented or abbreviated.

Where a lane line is truncated at the top of the sign, the minimum length should be 3 s/w. Where this cannot be achieved, the line should be omitted.

Route numbers should normally appear underneath destinations and be justified left.

Route numbers may be justified right, if they are associated with right turn lanes. When two destinations are shown in the same direction, the route number may appear alongside the destinations.

2.3.6 Direction Signs

Direction signs (I. 5) are located at the road junction itself and point along exits from the junction. They perform two main functions:

- (i) They indicate the location of the junction;
- (ii) They show the destinations on the routes indicated.

Direction signs should be positioned at the junction so that they point as clearly as possible to the route to which they refer. Preferably they should be on the nearside of the carriageway. It is important that direction signs are correctly sized and are clearly visible to approaching drivers. Table A2.1 in Annex A2 indicates the recommendations for sizes and clear visibility distance for different speed categories of the road.

Direction signs are coloured in accordance with the route indicated. At the pointed end of the sign there is normally a chevron which emphasises the direction of travel.

The basic dimensions to be used when designing direction signs are shown in Table 2.11. Some dimensions vary according to the number of destinations.

Table 2.11 - Dimensions for Designing Direction Signs

Description	S/IW
Border Width	1.5
Inner Border Radius (1)	1.0
Outer Border Radius	2.5
Outer Border Radius of Top and Bottom Corners at Pointed End (1)	2.0
Outer Border Radius of Point (1)	1.5
Horizontal Gap Between Place-names and Side Border	2.5
Chevron Width (1)	4.0
Gap Between Chevron and Top Border	1.5
Gap Between Chevron and Side Border	2.5
Gap Between Chevron and Bottom Border	1.5
Horizontal Gap Between Place-Names and Route Numbers and Chevron	3.0
Vertical Gap Between Separate Destinations	1.5
Vertical Gap Between Place-Name and Top border: One Destination	5
Two Destinations	2.5
Vertical Gap Between Place-Name and Bottom border: One Destination	5
Two Destinations	1.5

Notes:

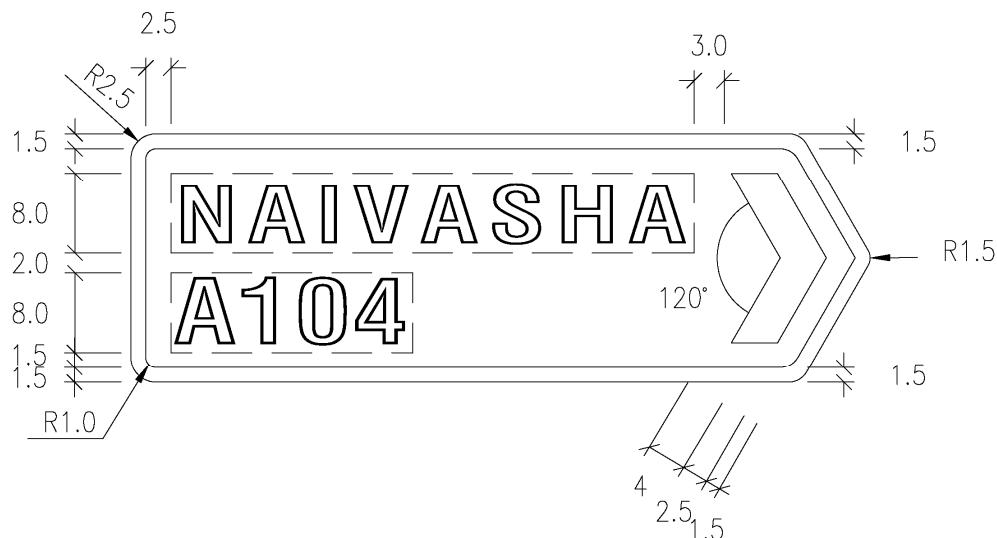
1. The inner border is not set at radius at the pointed end of the sign.
2. End radii greater than those above will with the approval of the engineer be accepted where extruded section framing dictates.

Refer to Annex 2 Table A2.2a and A2.2b- Terminal Destinations for Arterials or Trunk Roads.

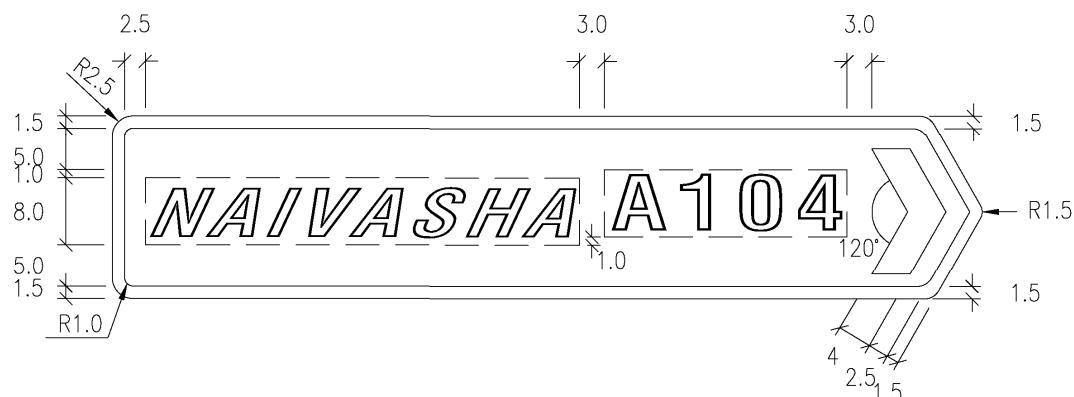
For example: A2 Nairobi – Isiolo – Marsabit - Moyale

2.3.7 Direction Signs for Arterial or Trunk Roads

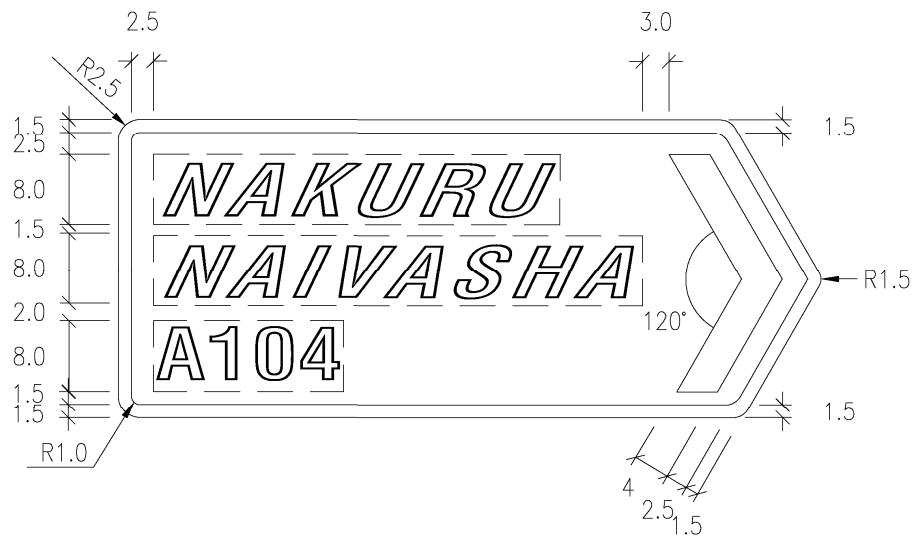
Direction signs pointing along Class A and B Roads should show the route number and terminal destination. Direction signs indicating the next town may show the distance in kilometres. Examples of these types of signs are shown in Figures 2.20 to 2.23 which illustrate the positioning of the route number in relation to the destinations shown.



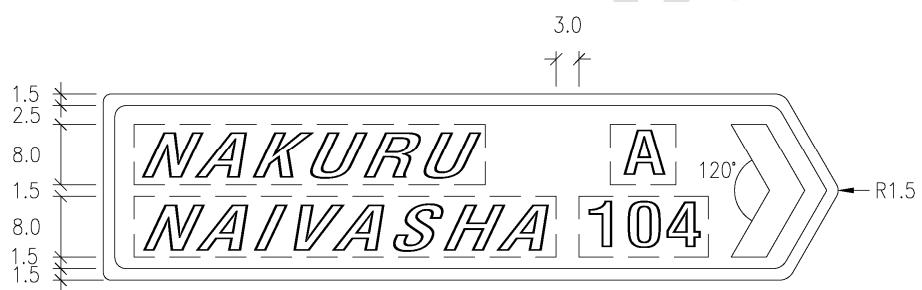
Figures 2.20
Design of Direction Sign For Class A (I. 5a)
(One Destination, With Route number)



Figures 2.21
Design of Direction Sign For Class A (I. 5b)
(One Destination, With Route number)



Figures 2.22
Design of Direction Sign For Class A (I. 5c)
(Two Destination, With Route Number)

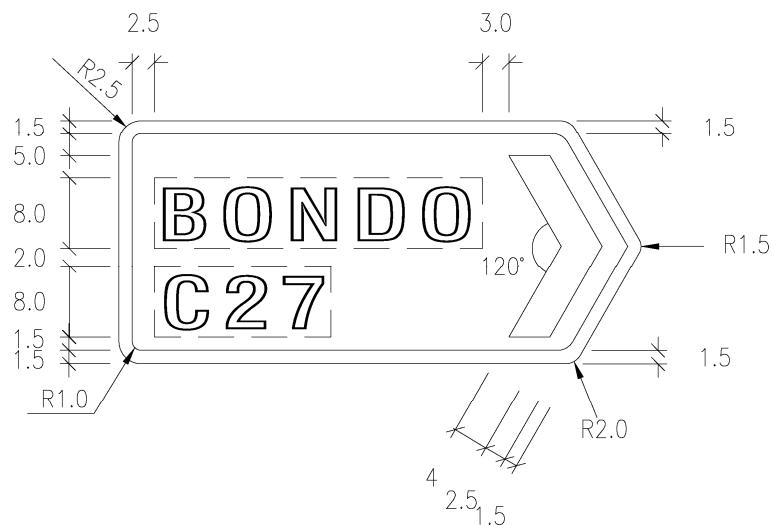


Figures 2.23
Design of Direction Sign For Class A (I. 5d)
(Two Destination, With Route Number)

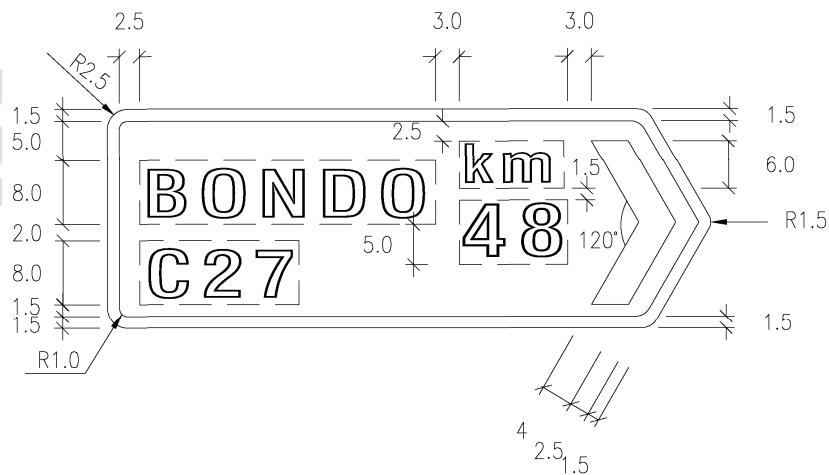
2.3.8 Direction Signs for Collector and Local roads

Direction signs pointing along class C, D and other minor routes may have to show distances as well as the route number and destinations. If a route confirmatory sign exists on these roads after the junction it is not necessary to indicate distances on the direction sign. See fig. 2.24. The use of more than one destination on bilingual signs on these routes is not recommended.

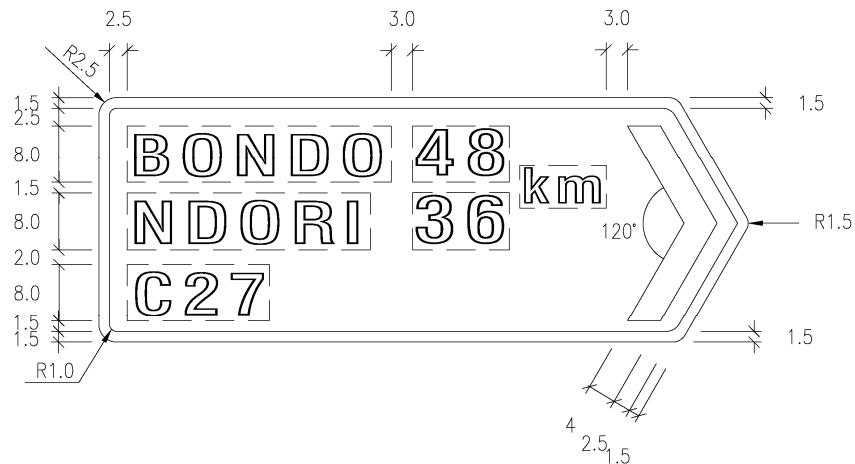
When distances have to be shown they are always accompanied by the abbreviation "km" which should be shown in lower case English tiles at 75% of the normal size. The position of the "km" and distances, vary according to the number and language of destinations shown and are demonstrated on the signs in Figures 2.25 to 2.26. The route number is always indicated at the bottom of the sign and aligned with the start of the text.



Figures 2.24
Design of Directional Sign for Class C (I. 5e)

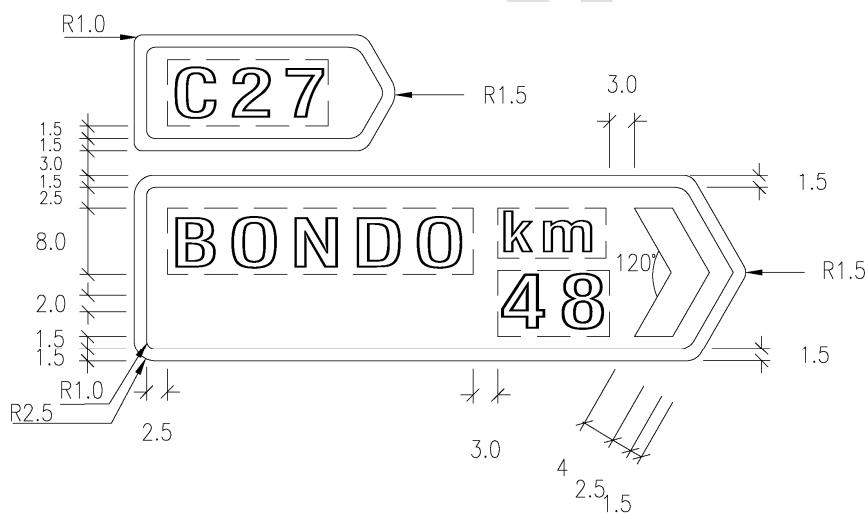


Figures 2.25
Design of Directional Sign for Class C Showing Distance (I. 5f)



Figures 2.26
Design of Direction Sign for Class C Road (I. 5g)
(Two Destination)

Where existing signs, which do not incorporate a route number, are to be left in place, a separate sign indicating the route number should be provided above the main sign as indicated in Figure 2.27. Alternatively, this route number sign may be mounted below the main sign.



Figures 2.27
Design of Direction Sign for Class C Road (I. 5h)
(Route number above main sign)

For high level direction signs, mounted on a single pole and where distances must be shown, the chevron can be omitted to reduce the length of the sign.

Where the route number has been increased to more than standard capital size e.g. 6 or 8 stroke widths, the width of the tiles shall be increased proportionally.

As shown on this sheet an additional separation of 1 Stroke width (at 'x' height of sign) is provided between the tile of the Capital letter and the tile of the first numeral.

Percentage values for tiles A, R are related to standard capital height.

2.3.9 Route Confirmatory Signs

Route Confirmatory signs (I. 6) may be located after road junctions. They serve two purposes;

- (i) To confirm to road users that they have taken their intended route
- (ii) To give additional information about the road ahead

Confirmatory signs can show more than two destinations ahead but they must duplicate the destinations indicated previously on advance direction signs and direction signs for the route. The additional destinations may be towns of lesser importance on the route and need not be included on subsequent direction signing until they become relevant.

Significant destinations that can be reached by turning off the route from a junction ahead can be displayed in brackets.

Route confirmatory signs are coloured over their entire area according to the status of the road on which they are located. This is regardless of whether destinations reached by turning off onto another classification of route are mentioned.

Route confirmatory signs must be correctly sized and be clearly visible to approaching' drivers if the information is to be read and understood. Recommendations on size and clear visibility distance of route confirmatory signs are provided in Table A2.1 in the annex to this chapter.

There are two types of route confirmatory signs:

- (i) Route number with place-names and respective distances;
- (ii) Route marker.

The first type has the route number placed centrally at the top of the sign followed by a list of destinations arranged in distance order with the furthest appearing at the top.

Distances in kilometres should be shown adjacent to each respective destination. Any destinations located off the main route, such as terminal destinations on spur routes should' be shown in brackets. The position of bracketed destinations on confirmatory signs is governed by the distance to the junction at which the road user must turn off the main route to reach that destination, irrespective of the overall distance to the destination itself.

Where only one destination is shown, the route number appears within the sign (See Fig. 2.28). When multiple destinations are shown, the route number is displayed separately on a route marker sign which is centred I s/w above the main sign. All the dimensions used are defined in Table 2.12.

On bilingual signs, the top of the letters "km" are aligned with the top of the letters of the Local Language version of the first place-name indicated.

The "km" tiles appear at the top of the sign centred over the top distance mentioned.

Table 2.12 - Dimensions for Route Confirmatory Signs

Dimensions	Multiples of S/W	
	Main Sign	Route Marker
Sign Border Width	1.5	1.0
Inner Radius of Border	4.0	3.0
Outer Radius of Border	2.0	2.0
Gap Between Route Number and Side Borders	-	2.0
Gap Between Route Number and Top or Bottom Borders	-	2.0
Gap to Top Border	3.0	-
Gap to Side Border	3.0	-
Horizontal Gap Between Place-Names and Distances	4.0	-

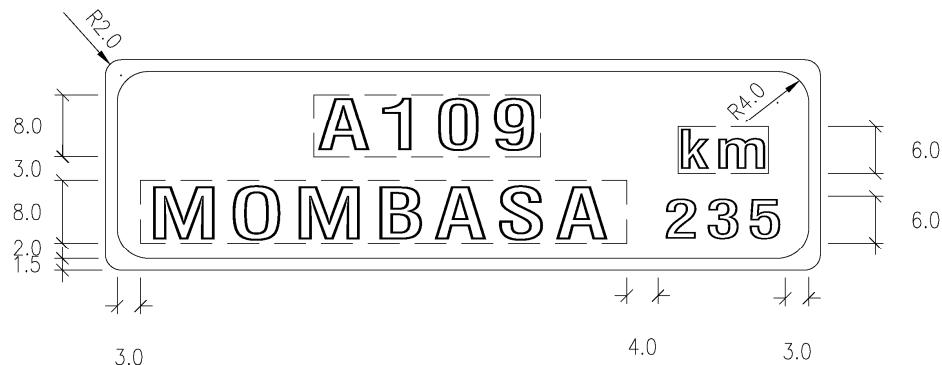


Figure 2.28
Design of Route Confirmatory Sign With One Destination (I. 6a)

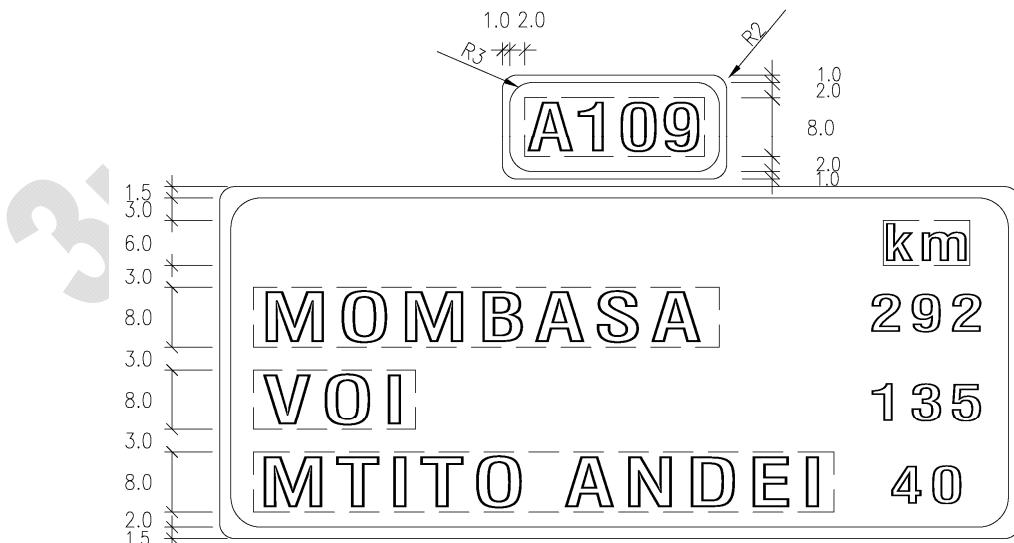


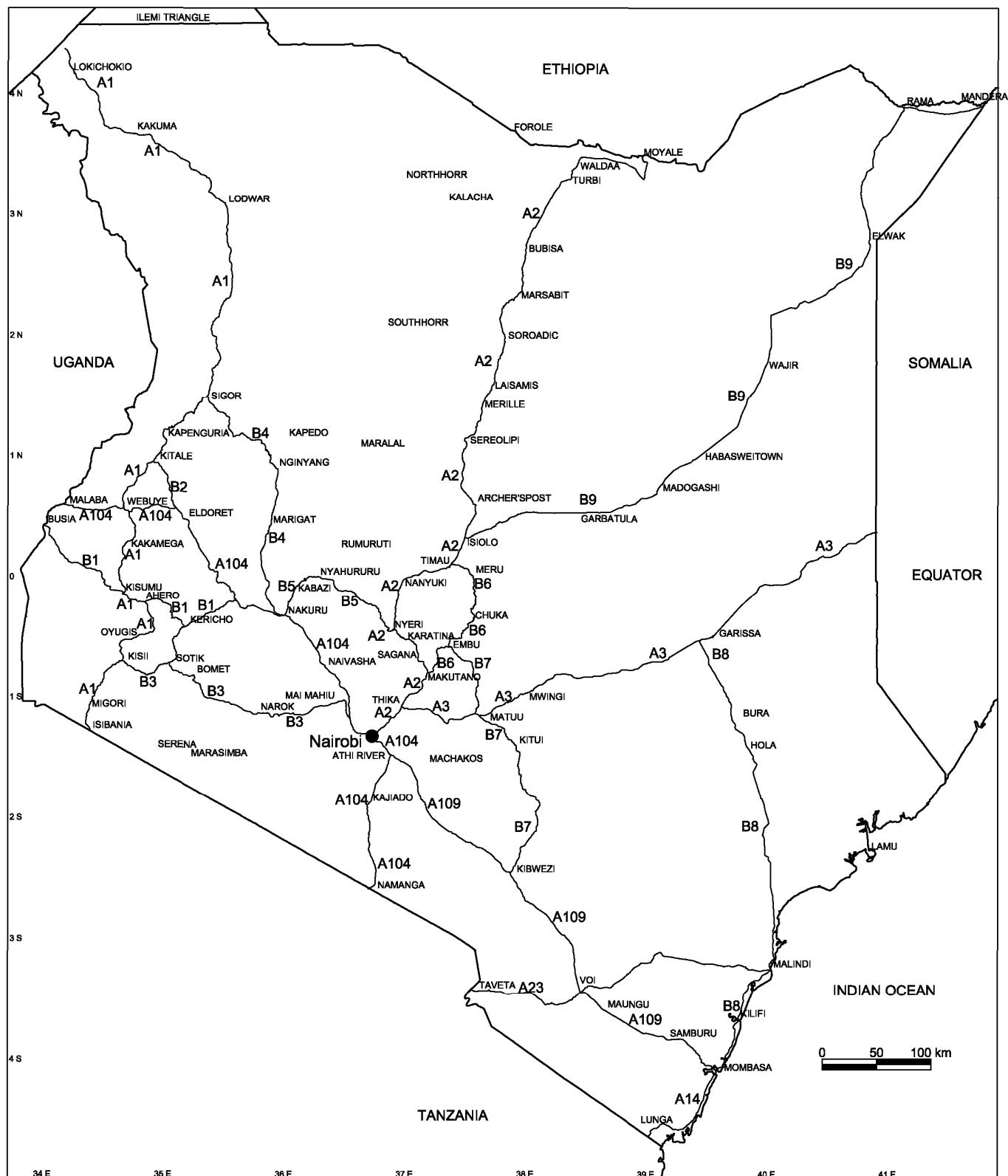
Figure 2.29
Design of Route Confirmatory Sign With Three Destination (I. 6b)

Type of Road	Advance Directions signs			Direct signs		Route Confirmatory signs	Route Directions signs	Route Marker signs	Town and Village signs
	x-height(mm)	Distance of signs from intersection (m)	Clear minimum visibility distance of sign(m)	x-height(mm)	Clear minimum visibility of sign (m)	x-height (mm)	x-height (mm)	x-height (mm)	x-height (mm)
(i) Motorways	250 (200)	Standard siting	180	200 (150)	140	200 (150)	–	–	–
(ii) Dual Carriage roads built to near motorway standards	200(150)	Standard siting	180	200 or 150	110	150	–	120(150)	–
(iii) Unrestricted dual carriageways and single three-lane carriageways	200(150)	230 (note1)	140	(note 2) 150 or 100	110 (75)	150	–	120(150)	–
(iv) Other dual and single Carriageway roads on National Routes	150(120)	150 (Note 1)	110	100 (Note 3)	75	120 (150)	100 (80)	120 (100)	100
(v) Other roads	100 (80)	50	60	100 (80) (50)	30	100 (80)	100 (80)	–	100 (80)
(vi) Slip roads leading from the through carriageway at grade separated junctions	100 (80)	50 or halfway along slip road/which ever is less							

Notes

1. These distances apply to level roads: they should be decreased on uphill gradients and increased on down hill gradients
2. The smaller sizes may be used at junctions where traffic speeds are generally less than on the open road, for example at roundabout exits or where there is real difficulty in siting the larger size
3. In lieu of the 100mm x-height a specially reduced 80mm x-height can be used if lack of space forbids the use of the larger Size: for advance direction signs other than roundabout signs if a map type sign with 100mm x-height is too large a 100mm stack type sign is to be preferred to a 80mm x height map type sign.
4. The route marker sign follows the normal rules for route confirmatory sign: height at 50 mm should only be used at Local road junctions or restrictive junctions.

Table A2.1- Letter Sizes and Siting Details of Directional Information Signs



Figures A2.1 Terminal Destination for Arterial or Trunk Roads (Class A and B)

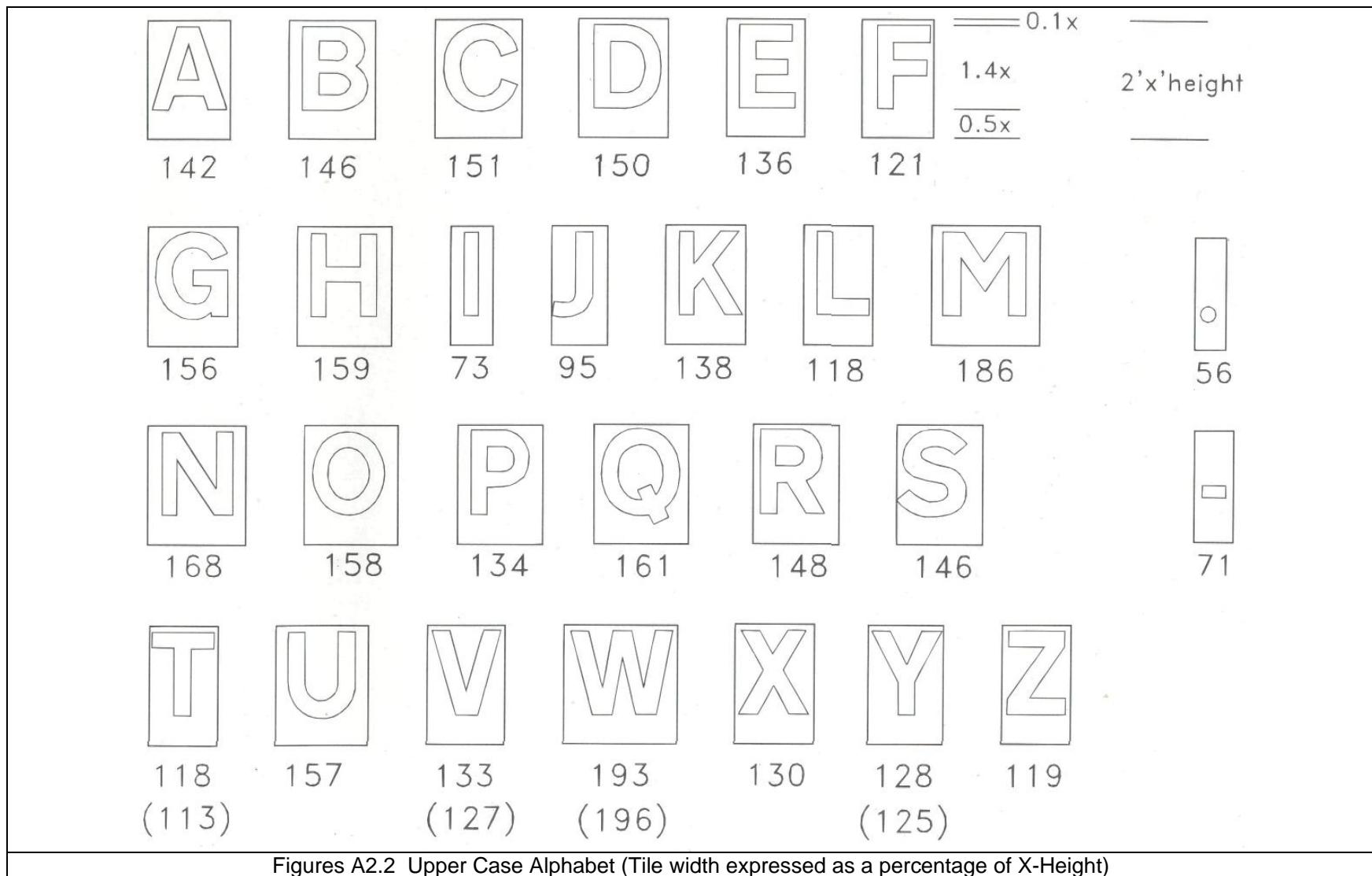
Table A2.2a Terminal Destination for International Trunk Roads (Class A)

International Route Number	Terminal Destinations
A1	Isbania – Kisumu – Kitale – Lodwa - Lokichogio
A2	Nairobi – Isiolo – Marsabit - Moyale
A3	Thika – Garissa - Somalia
A104	Malaba – Nakuru – Nairobi – Athi River - Namanga
A109	Athi River – Voi - Mombasa
A14	Mombasa – Lunga-Lunga – Tanga (Tanzania)
A23	Voi – Taveta – Himo (Tanzania)

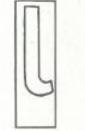
Table A2.2b Terminal Destination for National Trunk Roads (Class B)

National Route Number	Terminal Destinations
B1	Busia – Kisumu – Kericho - Londiani
B2	Kitale - Eldoret
B3	Kisii – Narok – Mai Mahiu Turn-off
B4	Nakuru - Sigor
B5	Nakuru – Nyaururu - Nyeri
B6	Makutano - Embu – Meru
B7	Embu - Kitui - Kibwezi
B8	Garissa – Hola – Garsen – Malindi - Mombasa
B9	Isiolo – wajir - Mandera

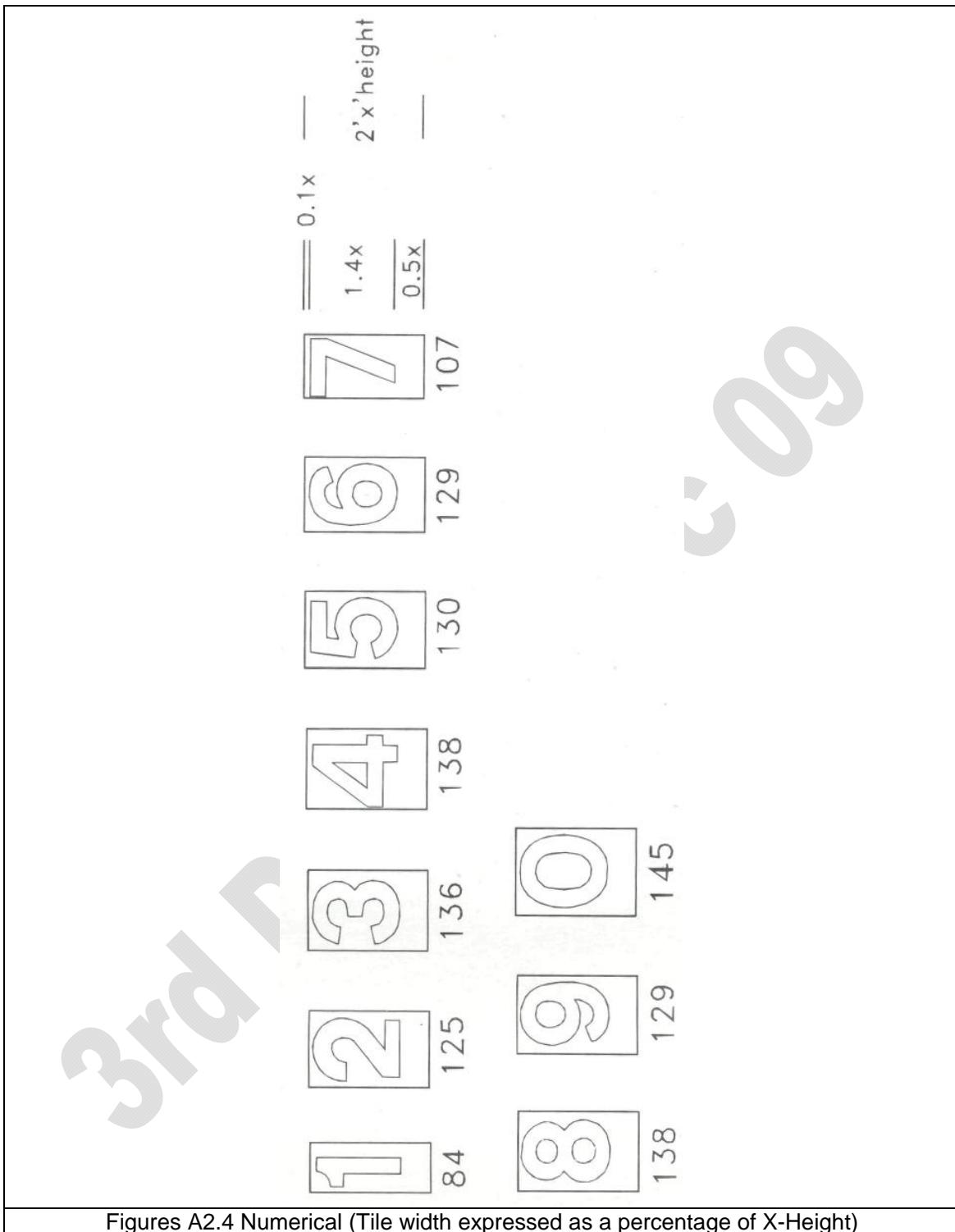
Note: For practical purposes it may be necessary in some cases to include the names of destinations other than those listed above. See Table 2.3 in section 2.2 above for general guidelines

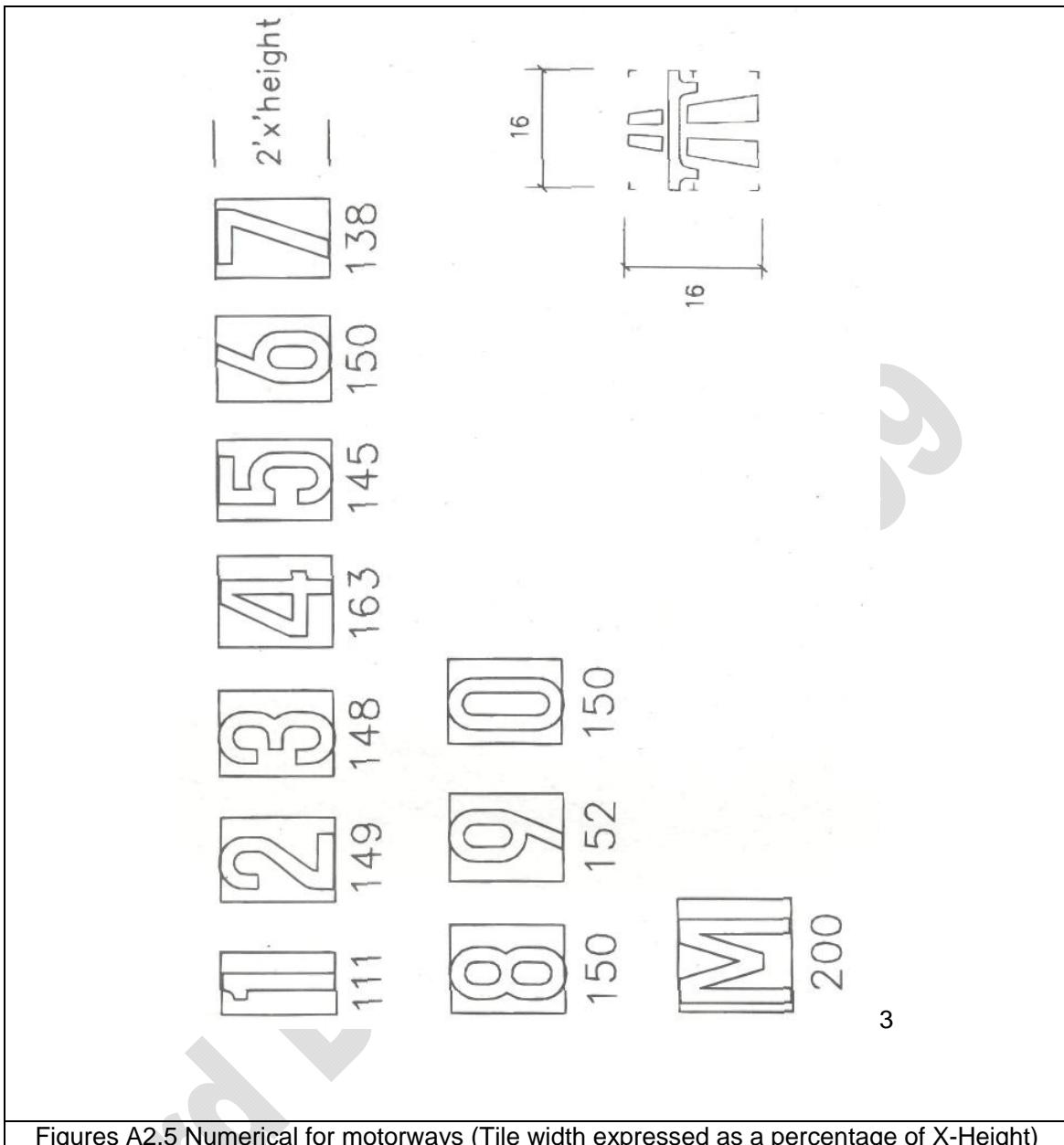


Figures A2.2 Upper Case Alphabet (Tile width expressed as a percentage of X-Height)

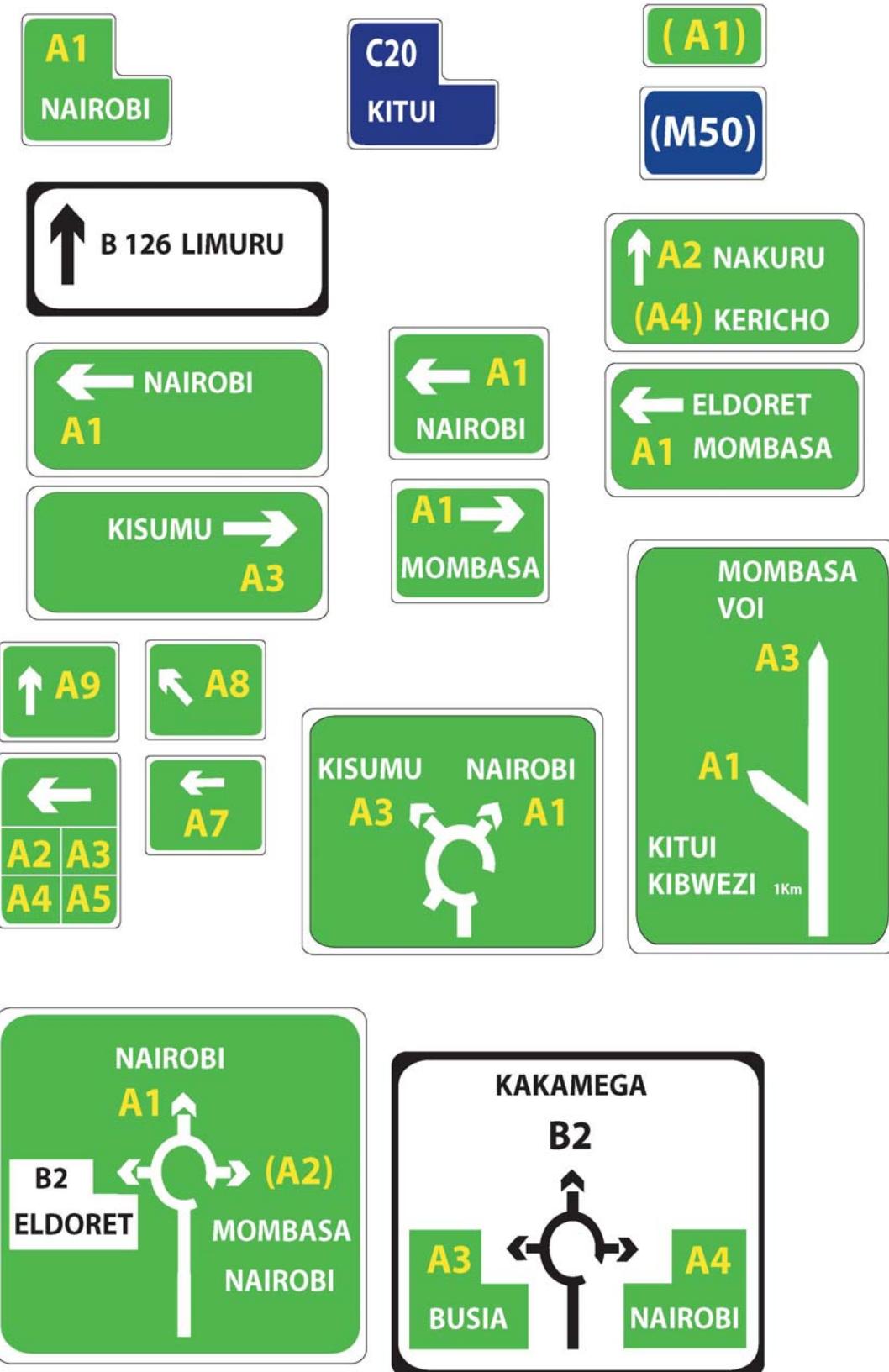
								
111 (104)	122	107	119	110 (103)	79	117 (110)	119	55
								
71	114	63	173	119	115	120	120	80 (87)
								
100 (98)	84	120 (107)	107	160 (154)	110	106 (104)	93	

Figures A2.3 Lower Case Alphabet (Tile width expressed as a percentage of X-Height)

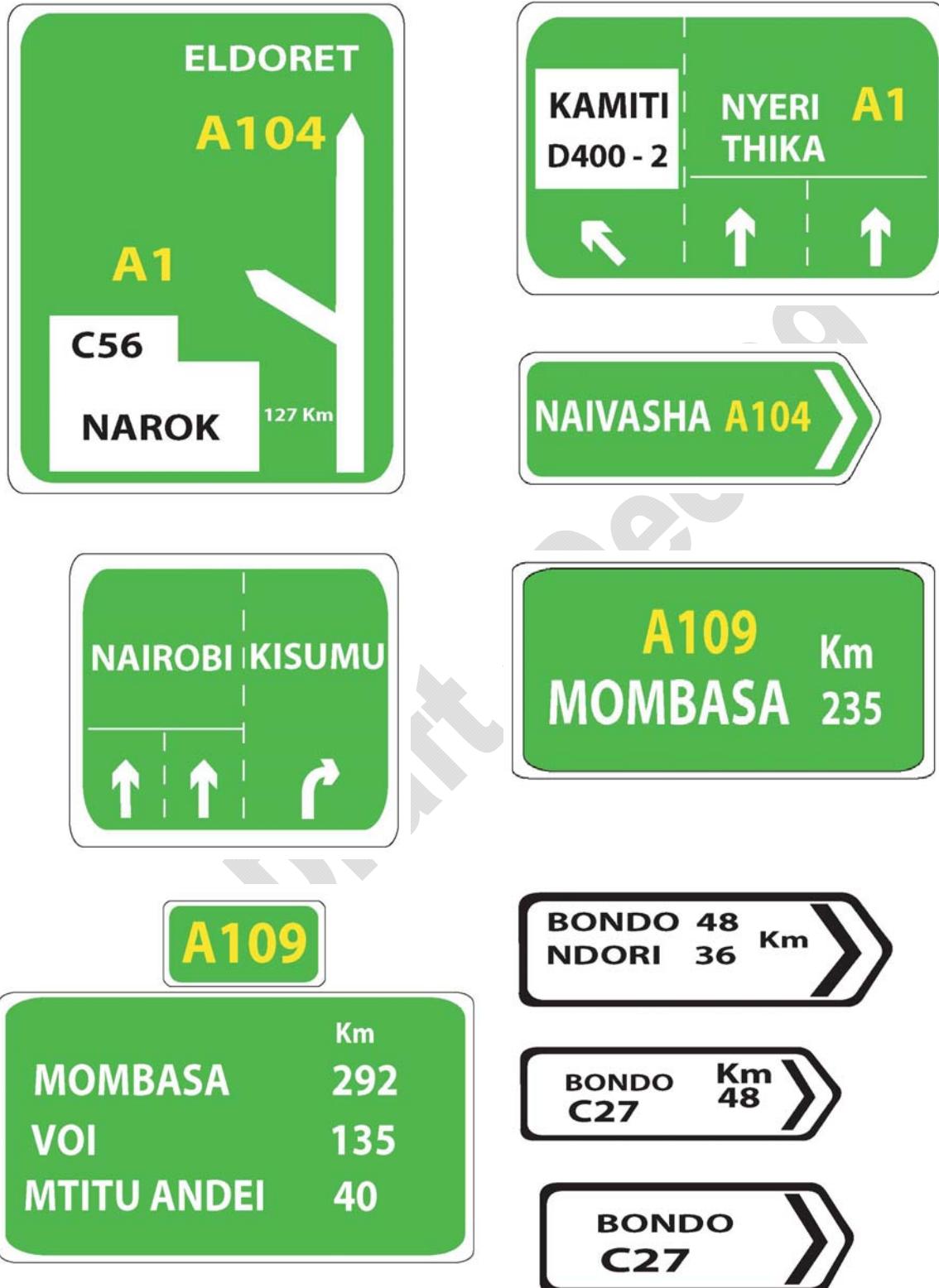




Figures A2.5 Numerical for motorways (Tile width expressed as a percentage of X-Height)



Examples of Coloured Sign Faces



Examples of Coloured Sign Faces

CHAPTER 3

MOTORWAY SIGNS

3rd Draft, Dec 09

CHAPTER 3

3. MOTORWAY SIGNS

3.1 INTRODUCTION

This chapter describes the design of signs on motorways and also the design of signs that direct traffic to motorways from other roads.

The provision of signs on motorways presents fewer problems than for other roads because:

- (i) There are no junctions at grade except at the terminals
- (ii) There are standard road layouts for entering and leaving motorways
- (iii) The classes of traffic using motorways are restricted.

Drivers of vehicles on motorways must be given adequate early indication of junctions and the end of the motorway. The high speed of traffic and infrequency of junctions make it essential to give clear and precise messages so that drivers have sufficient time to make any manoeuvres safely.

Whether signs are on motorways or indicate motorways from other roads, the design rules normally conform to those covered in Chapter 2 for directional information signs. A distinctive colour scheme of white lettering, symbols and borders on a blue background is used.

Motorway signs include advance direction signs, direction signs and route confirmation signs, examples of which are shown in Figures 3.1 to 3.3. They also include some other information signs which are used in specific situations such as the 'End of Motorway' sign shown in Figure 3.4.

A number of the warning signs described in Chapter 6 may also be sited on motorways to warn of merging traffic.



Figure 3.1
Advance Direction
Sign (I. m1)



Figure 3.2
Direction Sign
(I. m2)



Figure 3.3
Route Confirmation
Sign (I. m3)



Figure 3.4
End Of Motorway
Sign (I. m4)

3.2 GENERAL PRINCIPLES OF DESIGN

This section defines the general principles of design for motorway signs. It should be read in conjunction with the corresponding section of Chapter 2 which covers design rules applicable to directional information signs.

3.2.1 Colour Coding

Signs located on the main carriageway of motorways are normally white on a blue background. They do not contain any patches or panels of other colours except where a junction number is indicated, which should be shown as white on a black patch. This is illustrated in section 3.3.

At the terminals of the motorway, signs on the mainline should retain a blue background but connecting national or regional roads should be indicated by appropriately coloured legend panels. On motorway exit slips leading to other routes, the background colour of map type signs will be appropriate to the route with the higher classification.

For signs located on other roads, the route number of a motorway that can be reached by following that road should be shown in brackets on a blue patch.

Direction signs on other roads approaching a motorway junction should show the motorway symbol illustrated in Figure 3.5 on a legend panel. Direction signs located at the same junction pointing down the motorway or a slip road should also include the motorway symbol but should be white on a blue background.

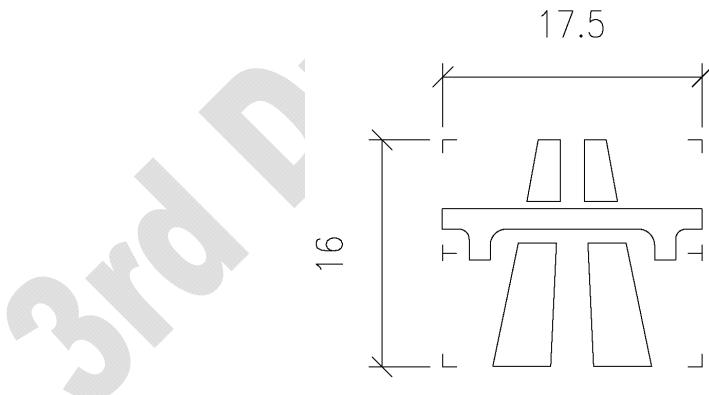


Figure 3.5
Motorway Symbol

Signs demonstrating the system of colour coding are illustrated in the Annex to this chapter.

3.2.2 The Selection of Destinations

The selection of destinations on motorway signs should be determined in accordance with the principles set out in Chapter 2.

3.2.3 Alphabets

Where motorway route numbers are indicated the "Motorway" alphabet shall be used as shown in figure A2.5 in Chapter 2.

The size of the alphabets is defined in terms of the 'x' -height which is fully described in Chapter 2. The 'x' -heights recommended for use on signs on different speed categories of road are given in Table A2.1 in the annex to that chapter.

3.3 Sign Face Design

This section describes the sign face design of two categories of sign, namely:

- (i) Signs located on national or regional roads that indicate motorways
- (ii) Signs located on motorways.

3.3.1 Signs on Trunk or Collector Roads Indicating Motorways

In order to encourage the use of motorways in preference to other roads, appropriate advance information should be provided.

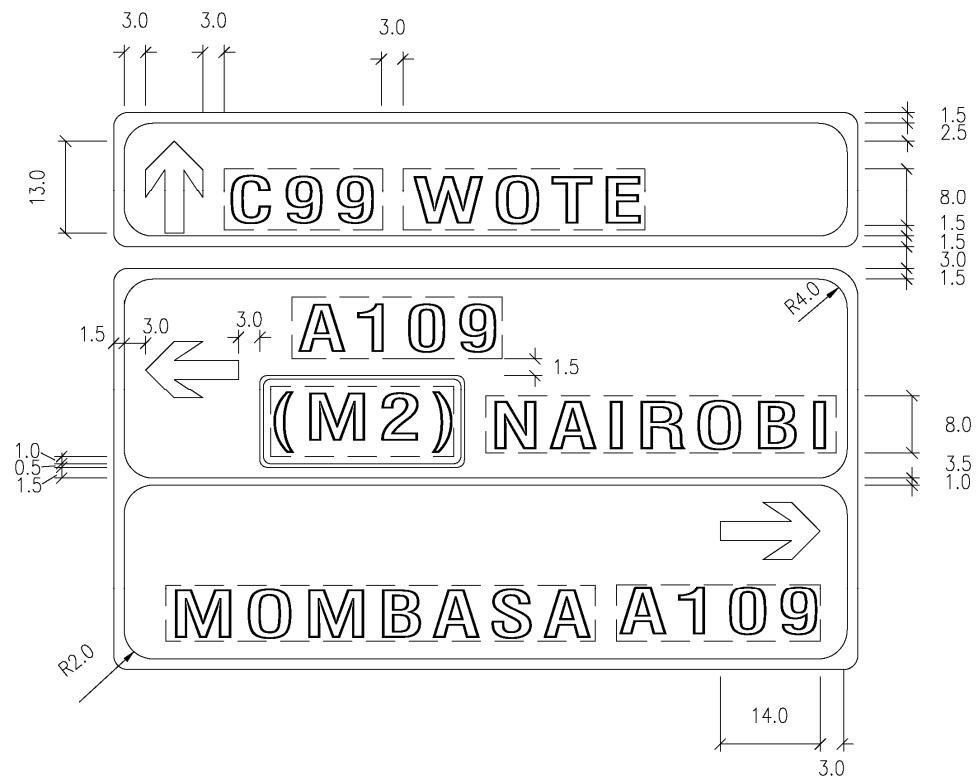
3.3.2 Patches

Where it is appropriate to indicate the direction to a motorway from a distant junction, the motorway route number (enclosed in brackets) should be placed on a blue patch on the main background of the sign. See Figures 3.6 and 3.7.

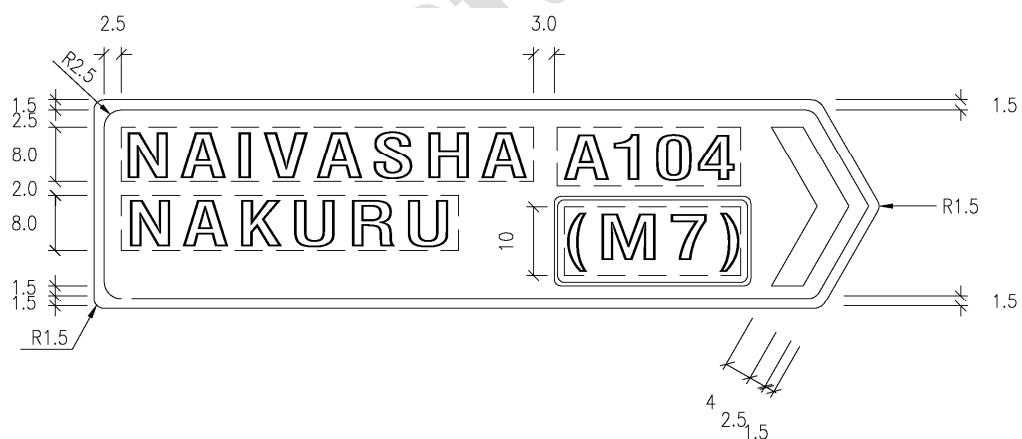
Blue patches containing motorway numbers should use the Motorway alphabet and can be placed on any of the advance direction or direction signs defined in Chapter 2. The design of patches is described in Section 2.2 of Chapter 2.

Patches should usually be placed to the right of the main route number indicated for the direction. They should usually be centred horizontally. Clearances shall be measured from the patch as though it were a normal route number. In the interests of minimising sign size, the patch may be placed underneath the main route number and vertically centred.

Figures 3.6 and 3.7 show examples of signs incorporating motorway patches.



Figures 3.6 Sign Incorporating Motorway Patch (l. m5)



Figures 3.7 Sign Incorporating Motorway Patch (I. m6)

3.3.3 Legend Panels

Motorway legend panels should be used on map type advance direction signs on roads (other than motorways) which have junctions with a motorway. The junction arm indicated by the legend panel should be the start of the motorway or a motorway slip road. The motorway destinations, route number and the motorway symbol may be shown on the blue panel.

Legend Panels should be designed as described in Section 2.2 of Chapter 2.¹ The relative positioning of the motorway symbol, route number and destinations may be varied to optimize the sign design. Alternative layouts of legend panels are illustrated in Figures 3.8 to 3.10.

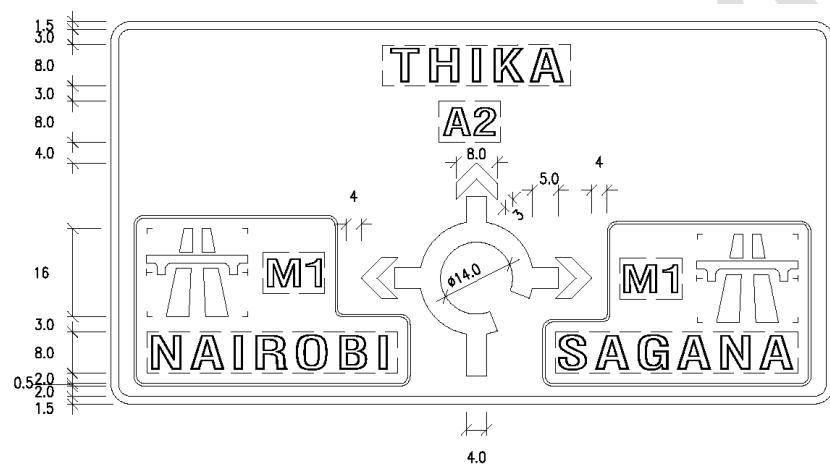


Figure 3.8
Intermediate Junction Signing from
Connecting National Route (I. m7)

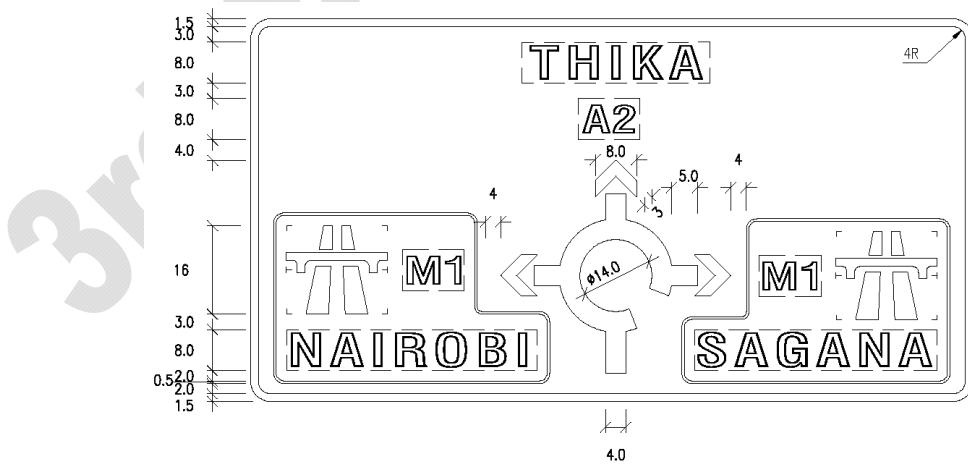


Figure 3.9
Signing from a terminal Roundabout (I. m8)

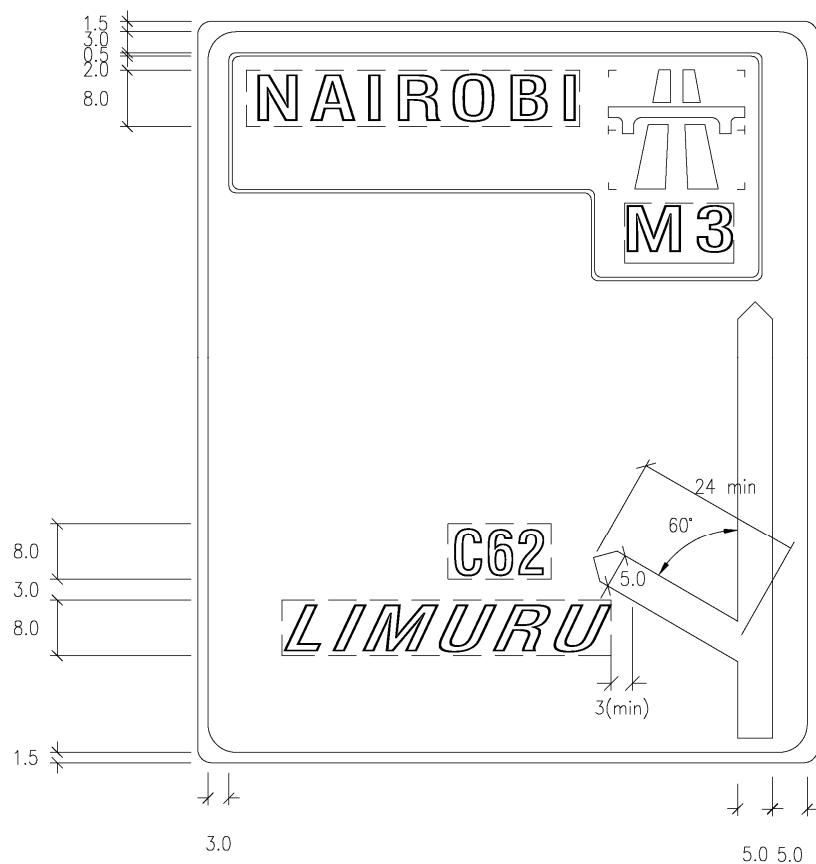


Figure 3.10
Signing Of Road Class Change Ahead (I. m9)

Map type signs incorporating blue motorway panels are shown in Figures 3.8 to 3.10. Figure 3.8 shows how an intermediate junction on the motorway should be signed from a connecting national road. Figure 3.9 shows how the start of the motorway should be signed from an at-grade roundabout. Figure 3.10 indicates the sign used where the road ahead changes to a motorway.

Stack type advance direction signs can be used to indicate routes of motorway status. Whilst map type advance direction signs incorporate blue legend panels to indicate the motorway, shown in fig. 3.10 above, stack type signs have separate coloured panels for each class of road. When a route of motorway status is shown, the normal design rules apply, except that the motorway symbol has also to be shown. For left and straight ahead directions, the symbol should appear to the right of the destinations mentioned. For a right turn the symbol should appear on the left. In each case normal clearances should be used to position the symbol which should sit 1 s/w above the baseline of the tiles of the English place-name. An example sign is illustrated in Figure 3.11. A coloured version of this sign is shown in the Annex.

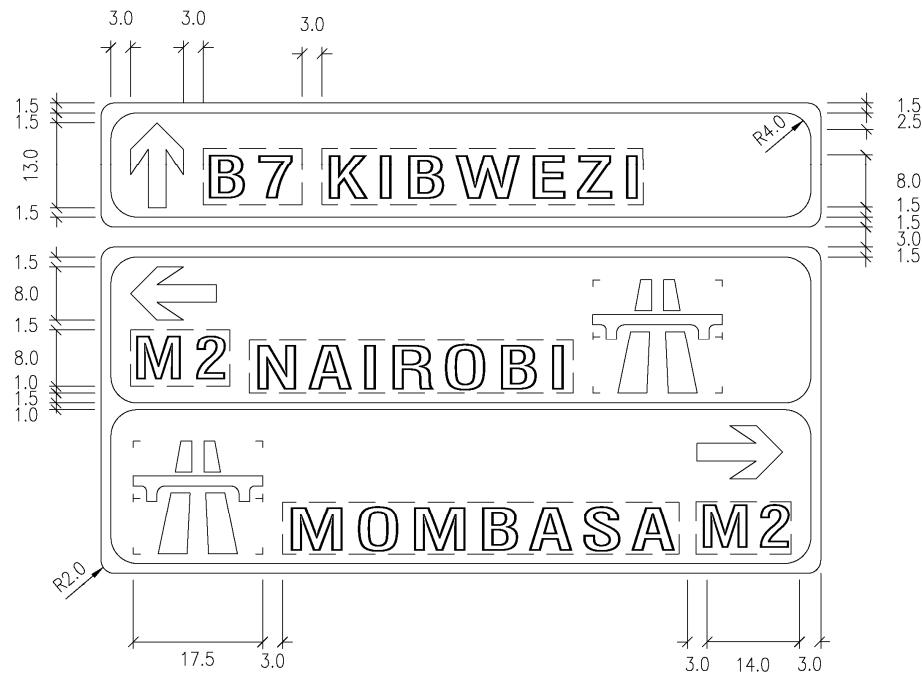


Figure 3.11
Motorway Status Sign on National Route (I. m10)

3.3.4 Direction Signs

Direction signs located on roads other than motorways but pointing directly onto a motorway should be white on a blue background. The motorway symbol should be placed at the opposite end of the sign to the chevron as indicated in Figure 3.12.



Figure 3.12
Direction Sign From National or Regional Road (I. m11)

3.3.5 Signs on Motorways

All directional signs on motorways are in the blue and white colour scheme. On exit slip roads, map type signs should have a background colour appropriate to the higher classification of joining roads and appropriate coloured legend panels. Stack type signs on exit slip roads should have full coloured directional panels appropriate to the route indicated.

The "entry to motorway" sign (Fig. 3.14) indicates the commencement point of a motorway. An additional sign (Fig. 3.13) may be required to indicate the restrictions on traffic entering the motorway.

Note:

This sign should be used in advance of the start of the motorway. Variations include "Motorway Left" and "Motorway Right".



Fig 3.13
Motorway Ahead Sign (I. m11)

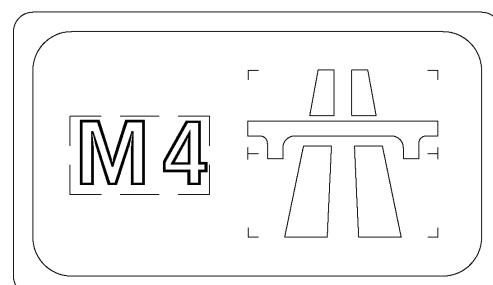


Figure 3.14
Entry to Motorway Signs (I.m12)

On the approach to intermediate junctions on the motorway, a map type advance direction sign should be sited at 1km from the start of the slip road taper. The design should incorporate the junction number and the distance as indicated in figure 3.15.

A final advance direction sign should be sited at 500m from the start of the exit slip road taper. This sign is shown in Figure 3.16 and should not indicate the distance. It should be sited to avoid obscuring the 300m countdown marker shown in Figure 3.17, or avoid being obscured itself by any over-bridges.

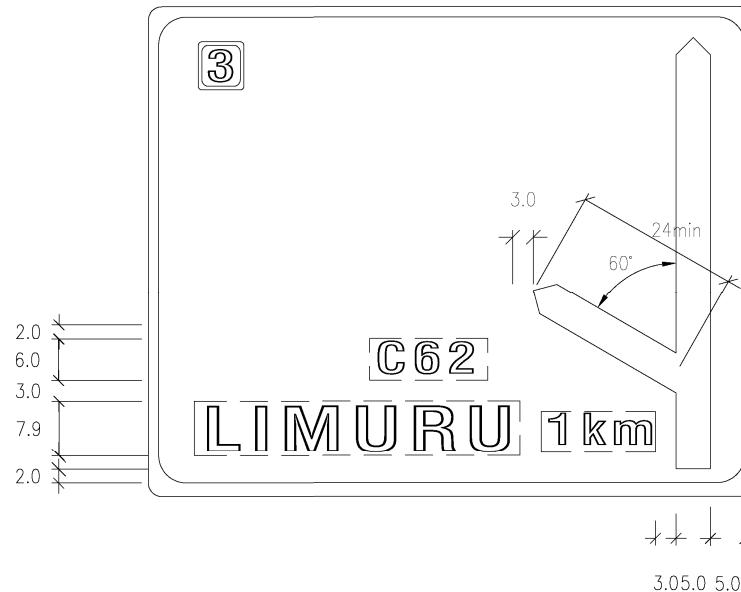


Figure 3.15
Advance Direction Sign For
Intermediate Motorway Junction (I. m13)

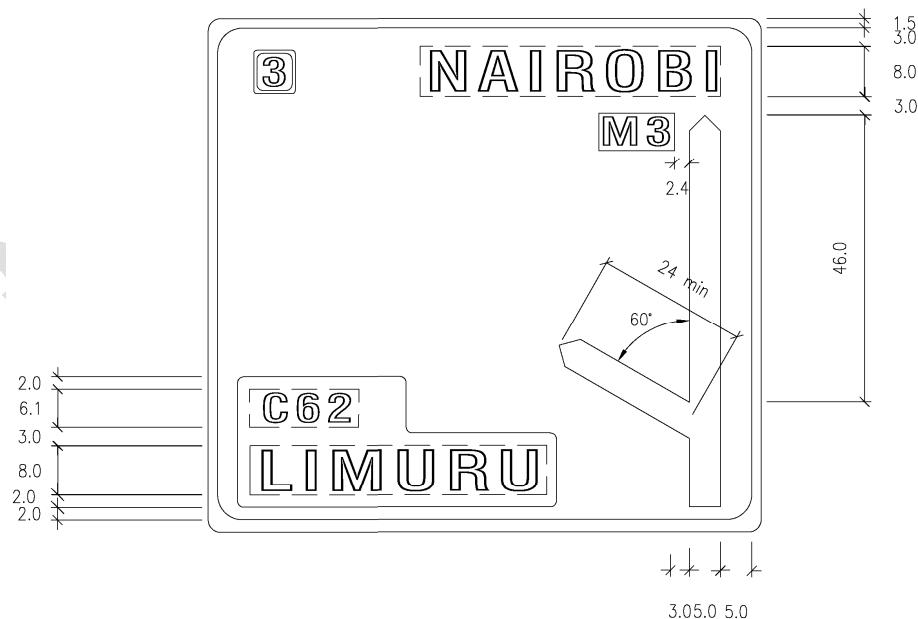


Figure 3.16
Final Advance Direction Sign for
Intermediate Motorway Junction (I. m14)

The count down marker posts illustrated in Figures 3.17 to 3.19 should be used at 300m, 200m and 100m from the start of the slip road taper.



Figure 3.17
300m Countdown
Marker (l. m15)



Figure 3.18
200m Countdown Marker
(I. m16)



Figure 3.19
100m Countdown Marker
(I. m17)

The count down marker posts illustrated in Figures 3.17 to 3.19 should be used at 300m, 200m and 100m from the start of the slip road taper.

A direction sign should be sited on the nose of the division between the main carriageway and the exit slip road. It should show the major route or destination already signed on the advance direction sign for that junction. The sign should have white borders, chevron and text on a blue background. An example is shown in Figure 3.20.

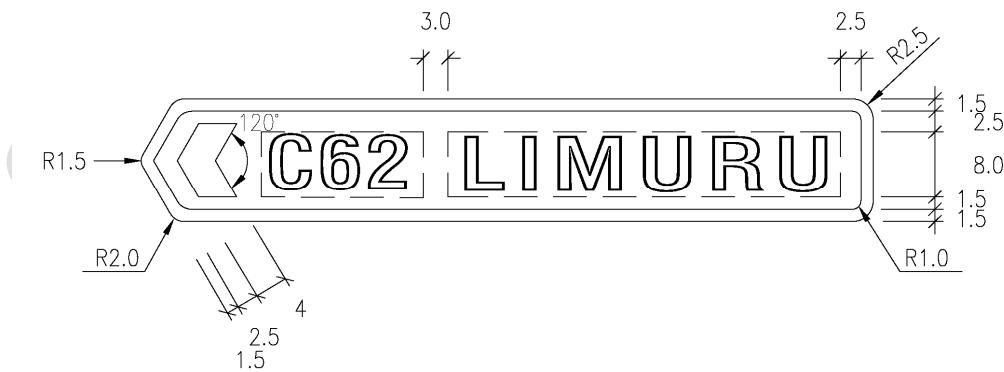


Figure 3.20
Direction Sign for Motorway Exit
Slip Road (I. m18)

The relative positioning of all signs on the motorway at an intermediate junction is indicated in Figure 3.21.

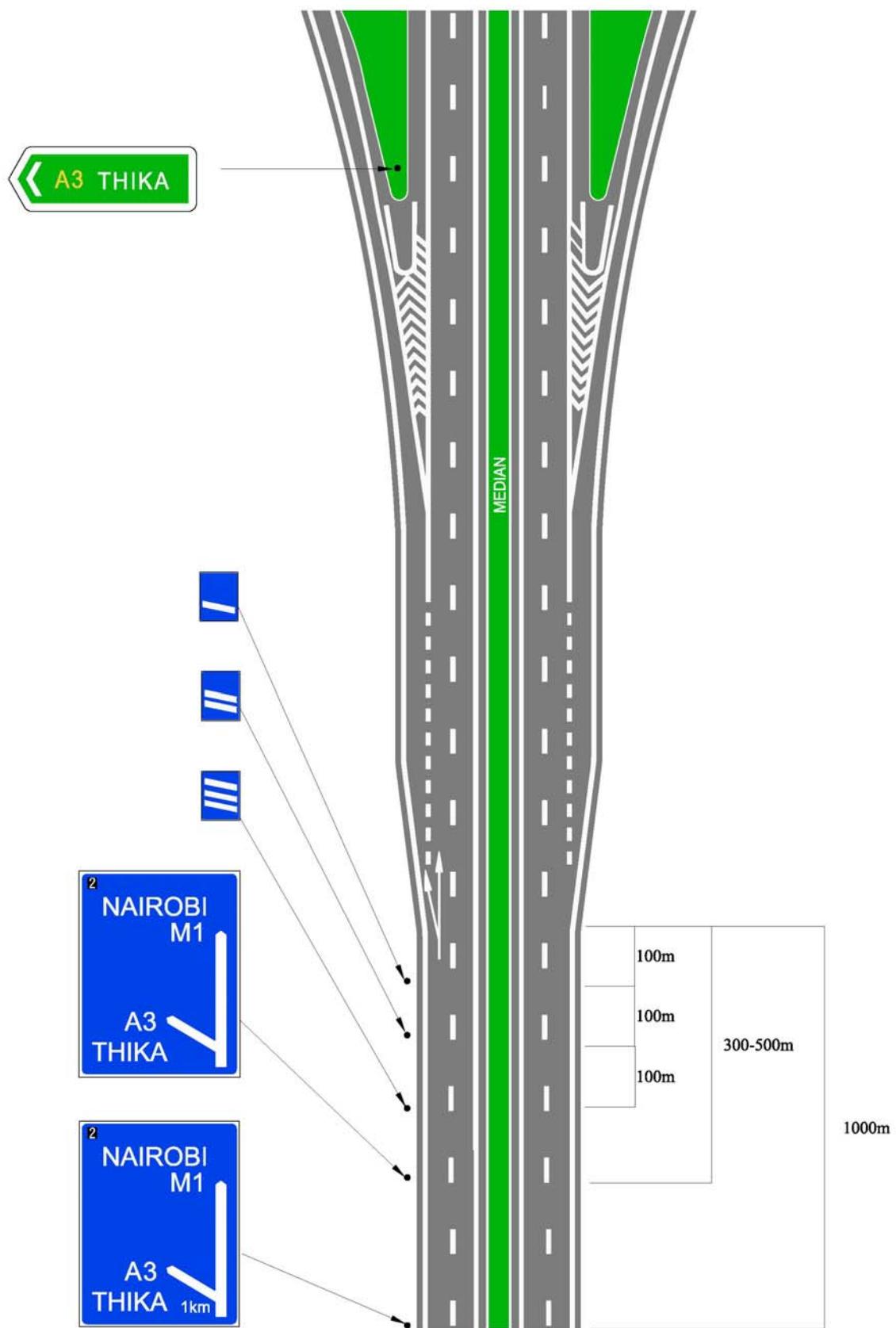


Figure 3.21
Position of Motorway Signs at an Intermediate Junction

On exit slip roads, map type advance direction signs take the background colour appropriate to the higher classified route at the junction. Information relating to other routes is shown on legend panels. See Fig 3.22.

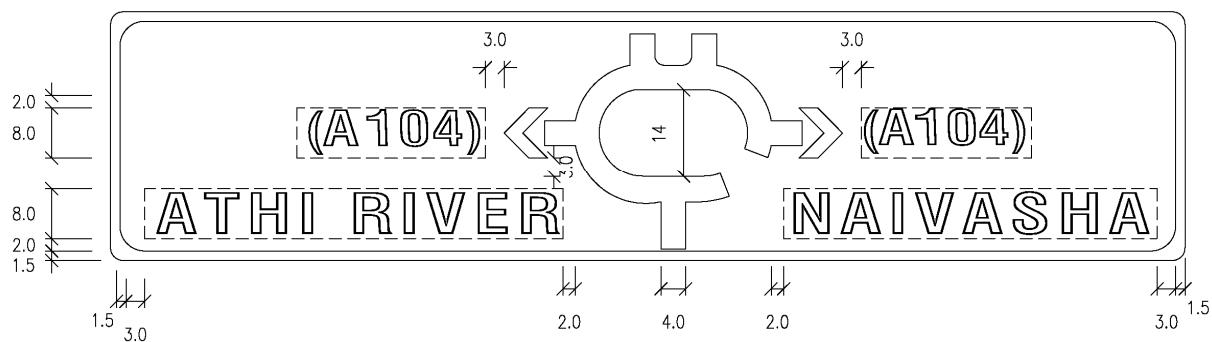


Figure 3.22
Map Type advance direction sign on Motorway Exit Slip Road (I. m19)

A route confirmation sign may be provided at a distance of 350 metres beyond the acceleration lane of an entry slip road. See Figure 3.23. Where interchanges are at close intervals, these signs may be omitted.

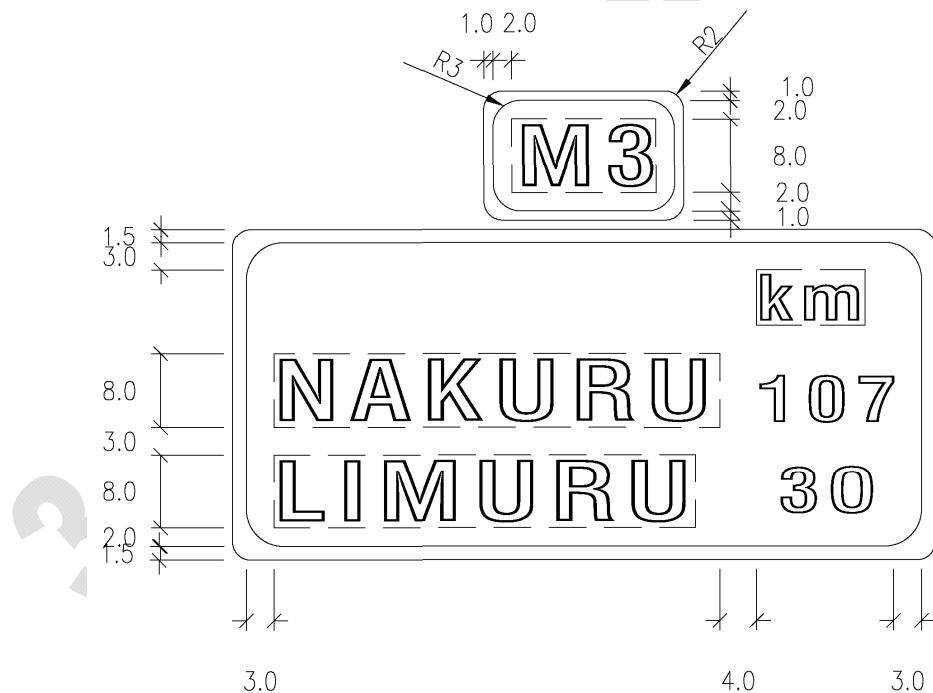


Figure 3.23
Route Confirmation Sign for Placement Beyond Entry Slip Road (I. m20)

When a motorway ends at an at-grade terminal roundabout, advance direction signs should be sited at 1km and 0.5km from the roundabout. Roads leading from the junction should be indicated on coloured legend panels appropriate to their classification. Count-down markers should be placed on both sides of the approaching carriageway. See Fig 3.24.

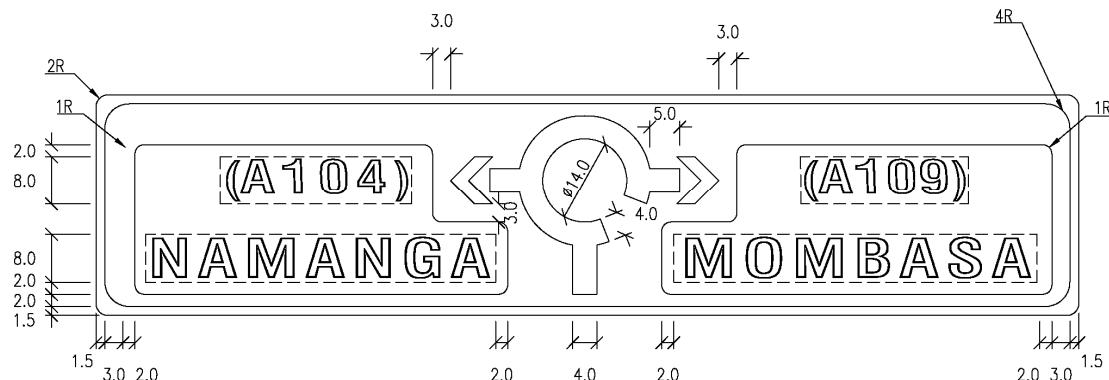


Figure 3.24
Countdown Marker Arrangement for Both Sides (I. m21)

Where a motorway leads straight into a road of another classification at a grade separated junction, the junction will be signed as normal. Details of the joining roads appear on the blue background in legend panels, coloured according to their classification. See Fig 3.25.

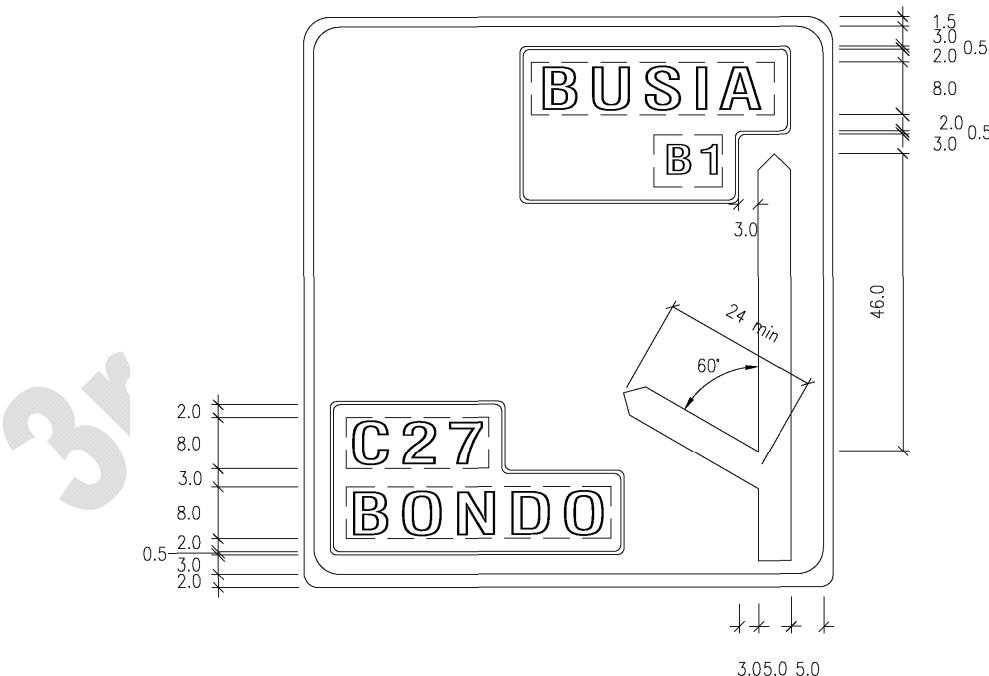


Figure 3.25
Sign Arrangement for entry to Roads of different Classification at Grade (I. m22)

The sign shown in Fig. 3.28 should be placed on both sides of the carriageway, at the point where the motorway regulations cease to have effect. The signs shown in Figs. 3.26 and 3.27 should also be placed on both sides of the carriageway in advance of the sign in Fig. 3.28 at the distances shown.



Figure 3.26
End Of Motorway 1km
(I. m23)



Figure 3.27
End Of Motorway 500m
(I. m24)



Figure 3.28
End Of Motorway
(I. m25)

3.3.6 Gantry Signs on Motorways

Consideration may be given to the use of gantry signs where:

- (i) Lane indication is necessary for the appropriate destinations ahead.
- (ii) The geometric configuration at the junction (e.g.-horizontal or vertical curve) requires it.
- (iii) There are 3 traffic lanes or more in one direction.

There are two types of gantry signs:

- (i) One for the "lane-drop" situation where the left lane of the approach carriageway forms the off-slip lane and does not continue through the junction.
- (ii) One for the "non lane-drop" situation where the number of lanes on the approach carriageway continue through the junction.

3.3.7 Non Lane-Drop Signs

The non lane-drop sign is similar in design to standard stack type signs. The assembly consists of two main signs, one above the other. The lower sign with the ahead arrow should be centred over the main running carriageway whilst the upper sign is offset so that the inclined arrow is not directly above the lower sign. An example sign is shown in Figure 3.29.

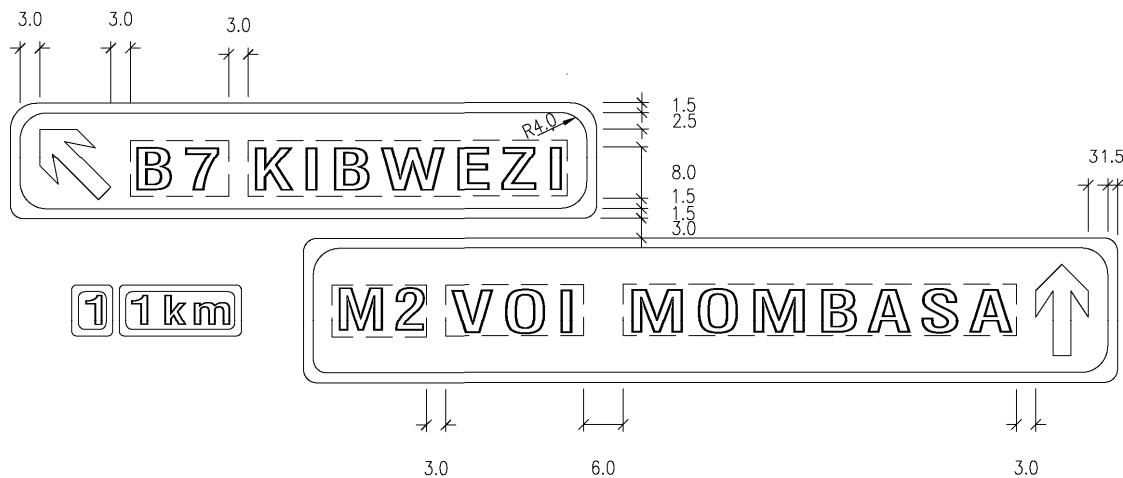


Figure 3.29
Non Lane-Drop Down Signing (I. m26)

3.3.8 Lane-Drop Signs

Lane-drop signs are also similar in design to stack type signs although directional arrows are replaced by lane arrows located below the main signs. Each route should be shown on a separate directional panel to give the appearance of two panels side by side. These separate signs should be aligned over the appropriate traffic lanes. See Fig 3.30.

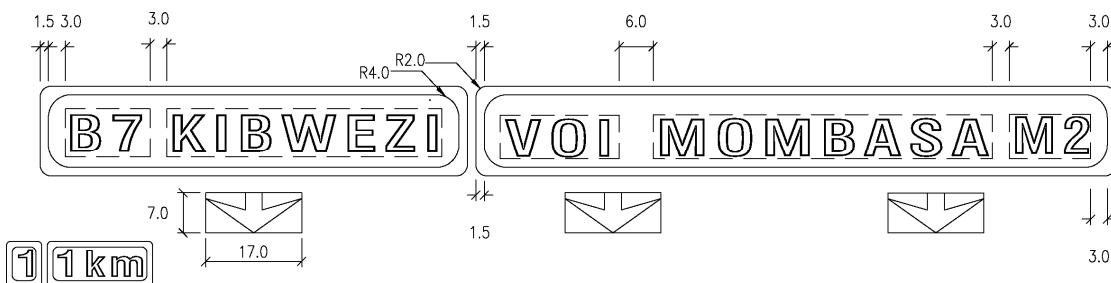
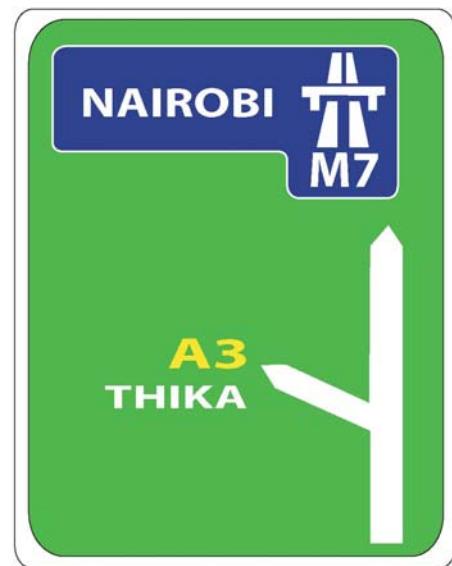
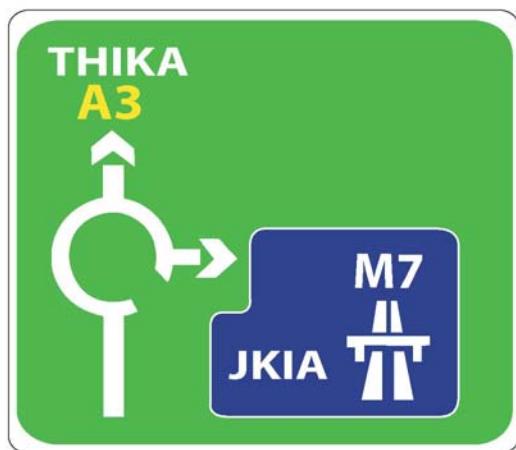
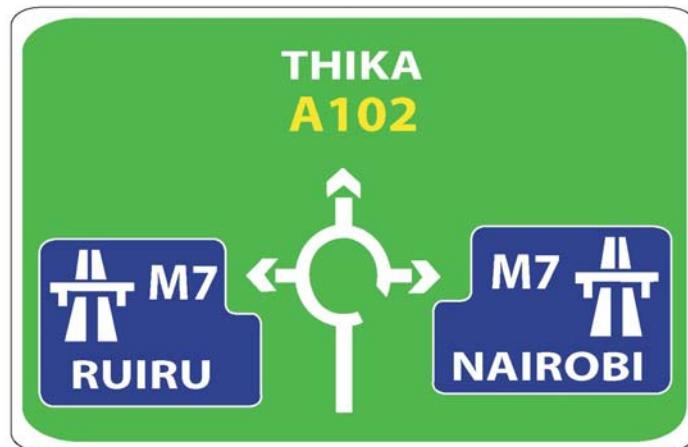
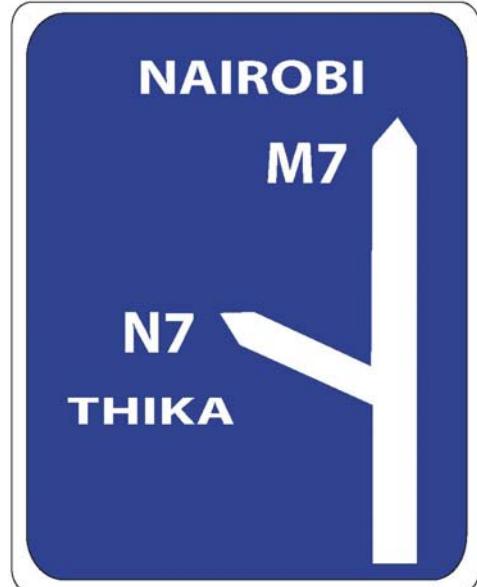
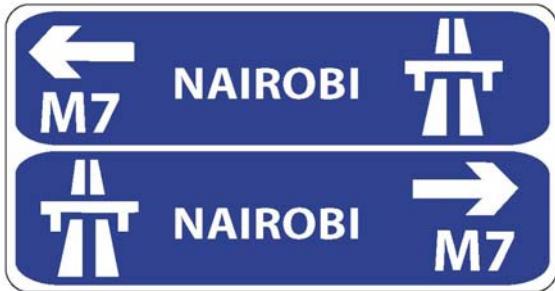
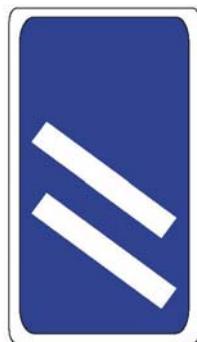


Figure 3.30
Lane-Drop Signing (I. m27)







Chapter 4

OTHER INFORMATION SIGNS

3rd Draft Dec 09

CHAPTER 4

4. OTHER INFORMATION SIGNS

4.1 INTRODUCTION

Other Information signs are those that provide guidance information on facilities rather than route selection or regulations.

The 'other' information signs described in this chapter can be categorised into four groups:

- (i) Signs displaying civic or geographic information such as the name of a town or river.
- (ii) Signs indicating alternative or diversionary routes.
- (iii) Signs indicating facilities available ahead that are of interest to road users generally.
- (iv) Signs indicating tourist facilities available ahead.

An example of each of these sign types is presented in Figures 4.1 to 4.4.



Figure 4.1
Town or Village Sign (I. 7)



Figure 4.2
Alternative Route For High Vehicle
Sign (I. 8)



Figure 4.3
Car Park with facilities for disabled (I. 9)



Figure 4.4
Tourist Facility (I. 10)

There is a mixture of directional and pure information signs described and defined in this chapter. The directional signs defined here should normally be mounted separately to those defined in Chapter 2.

The design of the signs should conform to the design rules covered in Chapter 2 for directional information signs. Sign size will be governed by the 'x'-height in the normal way as described in Chapter 2.

4.2 GEOGRAPHIC INFORMATION SIGNS

4.2.1 Town or Village Signs

The name of a town or village may be indicated by a sign (I. 7) as shown in Figure 4.5. In most cases the place-name should be indicated in English language.



Figure 4.5
Town or Village Sign (I. 7)

These signs should be coloured as appropriate to the status of the road on which they are located i.e. white letters and borders on a green background for a national route or black letters and borders on a white background for a regional or local route. These signs should not appear on motorways.

4.2.2 County Boundary Signs

County boundary signs (I. 10), as illustrated in Figure 4.6, indicate the name of the county and its crest if desired. All script shown on county boundary signs should appear in both Local Language and English languages. All county boundary signs should have white text and borders on a brown background.



Figure 4.6
County Boundary Sign (I. 10)

4.3 Advisory Information Signs

Advisory information signs provide details of alternative and diversionary routes.

4.3.1 Advance Sign for Low Clearances at Bridges

Advance information of restricted height clearances may be provided by the sign (I. 11) shown in Figure 4.7.

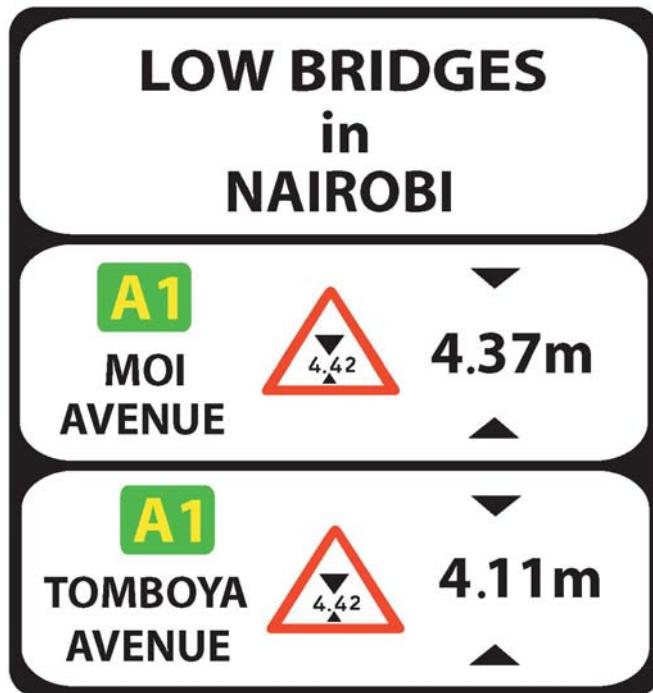


Figure 4.7
Advance Sign for Low Clearance (I. 11)

This sign should be designed like a stack type sign (see Chapter 2). It should incorporate Triangular warning signs of 300mm size, and the height restriction, should be shown beside the Triangular. The height(s) shown should be the same as that indicated on the warning signs located immediately before the hazard. A separate panel should be provided to display the location of the height restriction(s).

The sign should be sited in advance of the alternative route.

4.3.3 Slow Lanes

On long inclines, it is sometimes necessary to provide a "Slow Lane" to accommodate slow moving vehicles. The sign (I. 12) shown in Figure 4.8 should be used up to 300m before the start of the slow lane. This sign has black symbols, text and borders on a white background. For the associated road markings see Road Markings Manual.

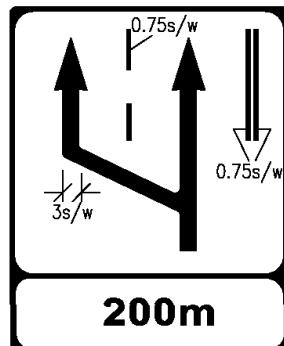


Figure 4.8
Slow Lane Sign (I. 12)

In order to indicate the end of the "Slow Lane", a warning sign denoting a narrowing of the road should be used (see chapter 6).

This sign should be sited up to 200 metres before the start of the taper leading back to the normal carriageway.

4.3.4 No Through Way

The sign which may be used to indicate that the road ahead is not a through road is shown in Figure 4.9. It need not be used at the entrance to all such roads but should be used when the road user might otherwise expect the road to be a through route



Figure 4.9
No Through Way (I. 13)

4.4 Signs Indicating Facilities Ahead

This section describes signs showing facilities available on the road ahead that may be of general interest to road users. (Tourist signs are described in the next section).

4.4.1 Parking Signs

Parking signs (I. 14) may be used to indicate lay-bys, car parks or other parking areas. The basic white on blue "P" symbol should be the main feature of parking signs and is shown in Figure 4.11.

4.4.2 Lay-Bys

Lay-bys are important parking and resting facilities particularly on long stretches of road in rural areas. The lay-by may be indicated up to 500 metres ahead by the sign (I. 15) shown in Figure 4.10. Figure 4.11 should be used to indicate the existence of the lay-by itself and should be erected to face oncoming traffic at the start of the entry taper to the lay-by. Both signs have white symbols, lettering and borders on a blue background.



Figure 4.10
Lay-by Ahead Sign (I. 14)



Figure 4.11
Lay-by Sign (I. 15)

4.4.3 Car Parks

Car parks can be signed using the "P" symbol together with any legend or symbols associated with the car park. Signs to car parks should have white lettering and borders on a blue background as shown in Figure 4.12.

The "P" symbol may be supplemented by another symbol positioned below or to the right, such as the disabled persons symbol (white symbol on blue background). This is illustrated in Figure 4.13. This sign (I. 17) should be used to indicate the location of parking facilities which incorporate wide spaces to facilitate easy access by persons who use wheelchairs.

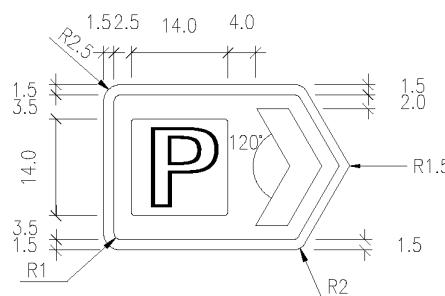


Figure 4.12
Car Park Sign (I. 16)

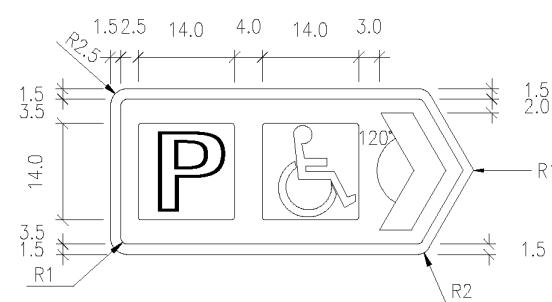


Figure 4.13
Disabled Car Park Sign (I. 17)

4.4.4 Hospital Signs

The main feature of all signs indicating hospitals should be the "H" symbol illustrated in Figure 4.15.

The hospital may be indicated up to 500m ahead by the sign shown in Figure 4.14. In the immediate vicinity of the hospital, the sign shown in Figure 4.15 should be erected to face oncoming traffic. Both signs should have white symbols, lettering and borders on a blue background.



Figure 4.14
Hospital Ahead Sign (I. 18)



Figure 4.15
Hospital Sign (I. 19)

4.4.5 Airport Signs

Airports should be signed using the aeroplane symbol shown in Figure 4.16. This symbol should normally be incorporated onto the directional signs shown in Chapter 2 and will assume the relevant colour scheme. For example, an airport located on a national route should be shown with a white symbol on a green background, as shown in Figure 4.17. Repeat signs showing only the symbol will normally be black on a white background



Figure 4.16
Airport Symbol

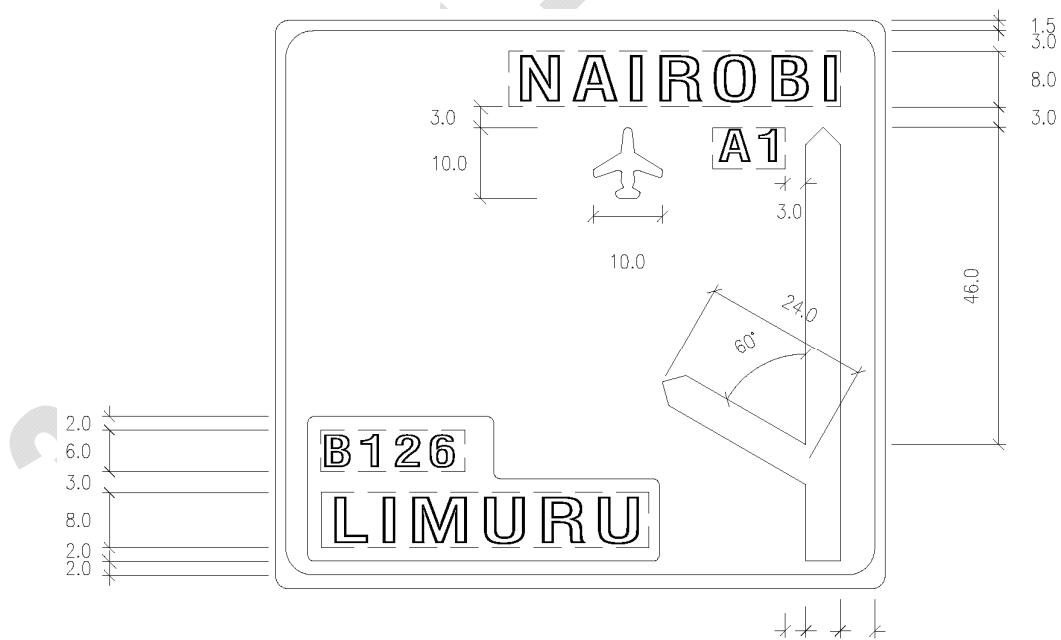


Figure 4.17
Directional Sign Incorporating Airport Symbol (I. 20)

4.4.6 Ferry Terminal Signs

Ferry terminal signs incorporate the ferry symbol shown in Figure 4.18 which should assume the colour scheme of the route along which the ferry terminal is reached. The ferry terminal symbol should normally be accompanied by the relevant name such as Dun Laoghaire. This is shown in Figure 4.19. Where the ferry does not accommodate trucks, the truck symbol may be replaced by a car.



Figure 4.18
Ferry Symbol

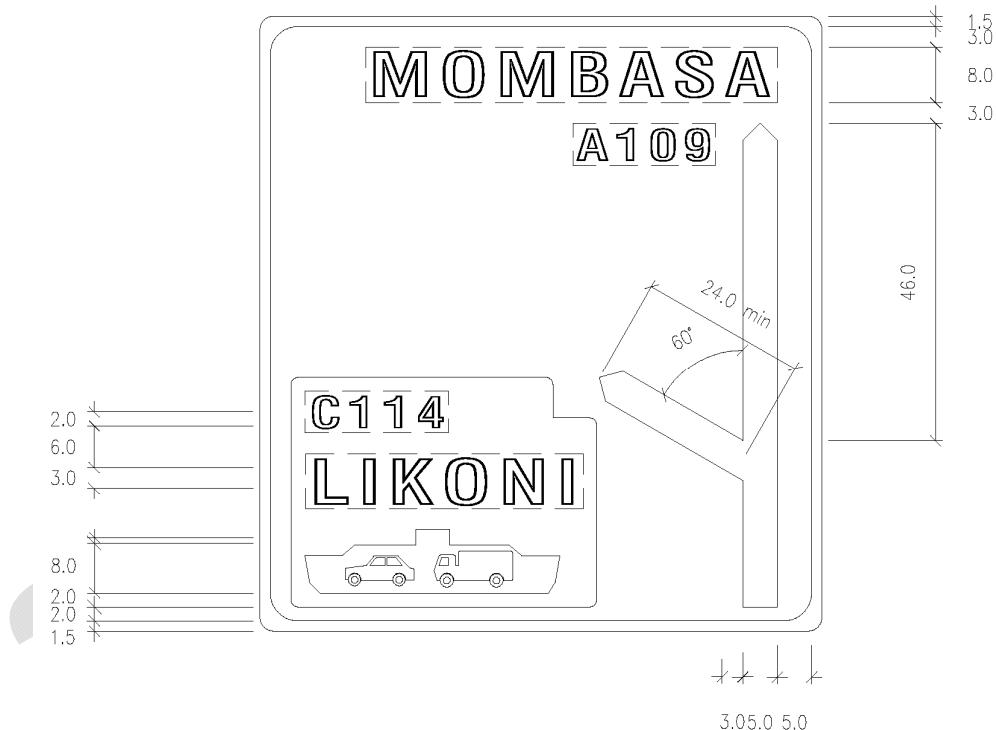


Figure 4.19
Directional Sign Incorporating Ferry Symbol (I. 21)

4.4.7 Industrial Estate Signs

Signs to industrial estates follow the same rules as ferry terminal and airport signs as previously described. The industrial estate symbol is shown in Figure 4.20 and should be incorporated onto signs as shown in Figure 4.21. The symbol may be foreshortened by the omission of one (1) roof peak.



Figure 4.20
Industrial Estate Symbol

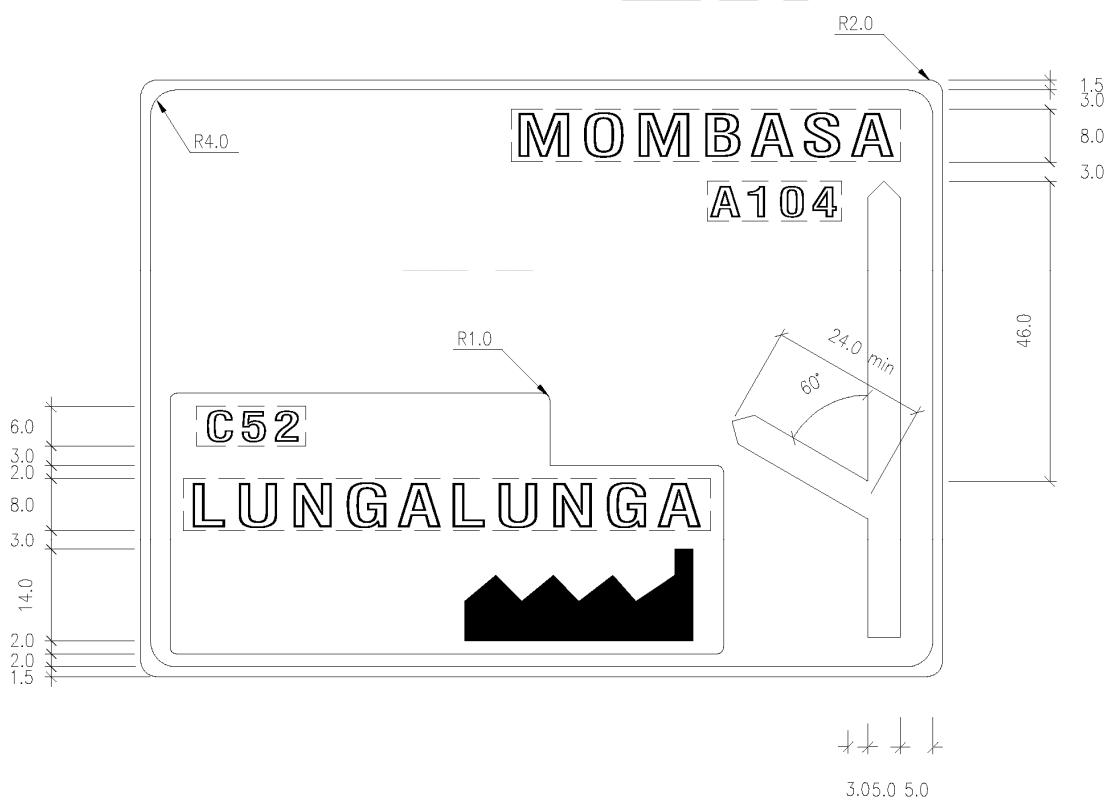


Figure 4.21
Directional Sign Incorporating Industrial Estate Symbol (I. 22)

4.4.8 Disabled Drivers Parking Bay

Where a parking bay for disabled drivers has been provided, the traffic information sign shown in Figure 4.22 should be provided. The associated road markings are described in Road Markings Manual.



Figure 4.22
Disabled Drivers Parking Bay (I. 23)

4.5 Signs to Tourist Attractions

Signs indicating tourist attractions and amenities have white lettering and symbols on a brown background. These are not traffic signs; however, they are very wide ranging and have extensive usage, and they are therefore, of considerable relevance to road users.

The criteria for the provision of tourist attraction signs are set out in a memorandum issued by the Ministry of Roads and Tourism. The memorandum includes a comprehensive range of standard symbols and a list of suitable bilingual legends for use on these signs.

4.5.1 Sign Design and Siting

The basic sign designs should conform to the normal design rules for traffic signs described in Chapter 2 and should feature white legend, borders, arrows and chevrons on a brown background. Reflectorization is recommended on national routes and where attractions are open after dark.

Examples of some standard tourist attraction signs are shown in the annex.

Particular care must be taken with the siting of signs so as to avoid clutter and intrusion. Advance direction signs to major tourist attractions should be combined with those to other destinations by using brown panels on map or stack-type signs (see examples in annex). On the other hand, in the case of direction signs (finger post signs), separate signs should be used for tourist attractions. Where these signs, due to number or size, intrude on traffic signs, they should be mounted on a separate pole.

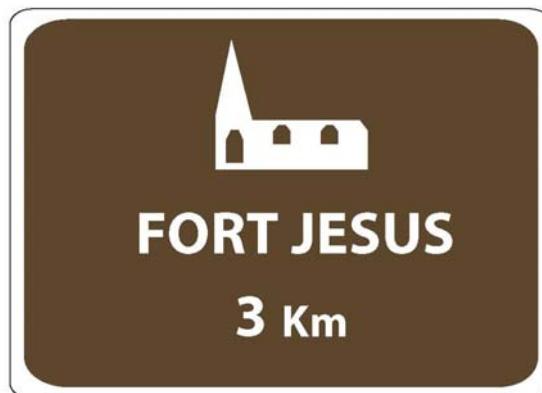
Tourist Advance Direction Sign



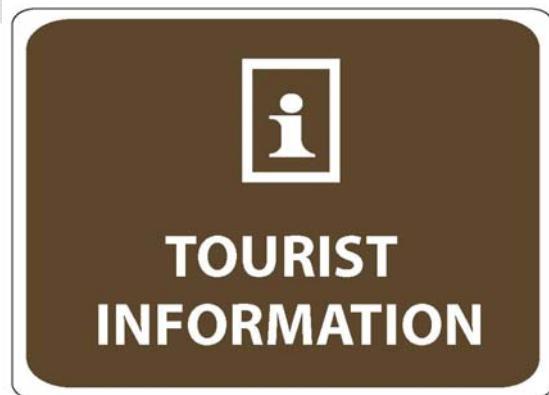
Tourist Attraction Direction Sign



Sign showing distance to Tourist Attraction



Signing to Approved Tourist Information Points



Signing to Approved Tourist Information Points





Advance Signing For A Lay-by
With Tourist Information Panel



Direction Sign



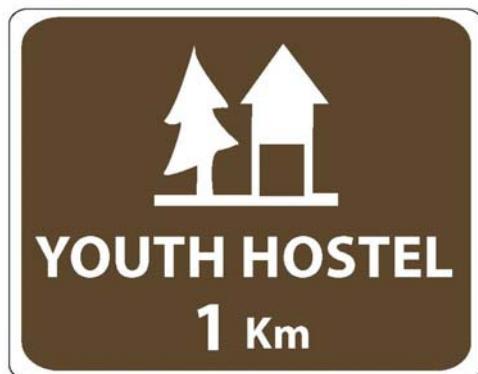
Continuity Repeater Sign



Pedestrian Sign To
A Tourist Information
Point or Centre



Pedestrian Sign To a Car Park



Youth Hostels

CHAPTER 5

REGULATORY SIGNS

3rd Draft / Dec 09

CHAPTER 5

5. REGULATORY SIGNS

5.1 INTRODUCTION

A regulatory traffic sign is a sign that indicates the existence of a road regulation or implements such a regulation, or both, or indicates the existence of a provision in an enactment relating to road traffic.

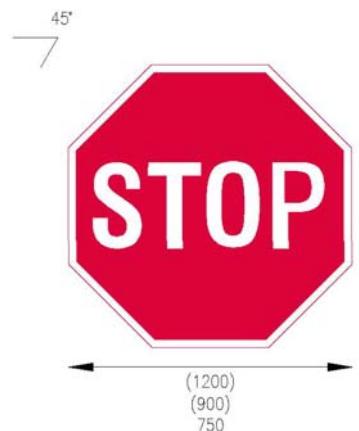
Regulatory signs are either mandatory or prohibitory.

The mandatory signs give instructions to drivers and must be obeyed, for example, KEEP LEFT, STOP, and GIVE WAY. Most mandatory signs such as the Keep Left sign are circular with white symbol and border, on a blue background. Others such as the GIVE WAY sign have black lettering on a white background, with a red border.

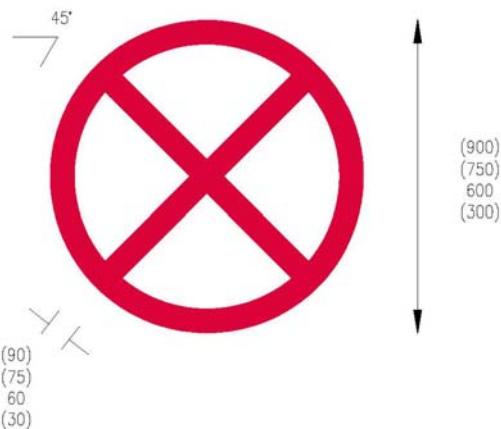
The prohibitory signs, of which there are many more types, give instructions to drivers on prohibited moves, for example, signs banning turns or entry. Speed restriction signs, clearway signs and signs for weight restrictions are further examples. Most are circular, have a red border, and a cancellation bar.

The standard dimensions for different types of regulatory signs are given in Figure 5.1 below.

Different sizes of regulatory signs are appropriate to different road speeds in order that drivers can see the sign and absorb their messages in sufficient time. Table 5.4 following indicates the sign sizes appropriate for the different approach speeds along with the respective 'x' heights of lettering to be used on supplementary plates. Guidelines regarding sizes and siting are described in the subsequent sections dealing with each sign or group of signs. Sign location in general is discussed in Chapter 6 which also includes a definition of the 85th percentile approach speed.

Border Width 1/30th sign width

a) Octagonal (STOP Sign Only)



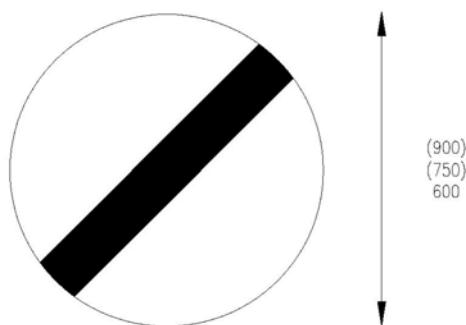
Unless otherwise indicated, borders, and cancellation bars on circular regulatory signs (i. e. signs with red border on white background) should be 1/10 of the overall diameter of the sign.

c) Circular Prohibitory sign



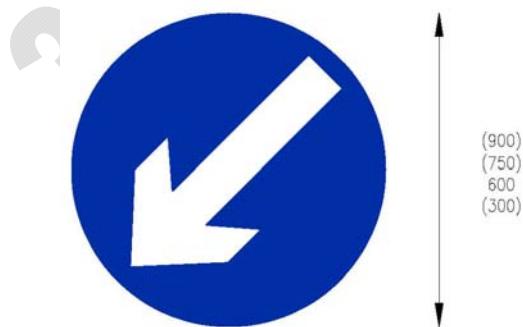
Radius of Corners = 6% of Sign Dimension
Border Width = 1112 Sign Side

(b) Triangular (GIVE WAY sign only)



Black Bar Width = 1/4 Sign Height. No Border.

d) Circular (End Of Special Speed Limit Sign Only)



For circular blue mandatory signs the border width should be 1/50 of the overall diameter

e) Circular Mandatory Signs.

Figure 5.1 Standard Dimensions of Regulatory Signs

5.2 THE STOP SIGN

The STOP sign (R1) (Figure 5.2) imposes a requirement on all approaching traffic to stop. It is generally provided in association with a STOP line (see Kenyan Road Markings Manual 2010). Vehicles must stop at or in advance of a STOP line or, in the absence of a STOP line at or in advance of a STOP sign.

At priority intersections, traffic on the minor road is expected to give Way to traffic on the major road. Priority intersections are usually controlled by GIVE WAY signs. Where visibility is less than that recommended for GIVE WAY control in Table 5.1, an intersection should be controlled by a STOP sign.

At STOP sign controlled intersections the appropriate sight distance along the major road given in Table 5.1 should be provided from a position on the minor road 3 metres back from the major carriageway edge.

Three sizes of the STOP sign are recommended and their appropriate applications are given in Table 5.2.



Figure 5.2 STOP Sign
R1

Table 5.1 - Minimum Dimensions of Sight Triangle at New or Improved Priority Intersections**(a) Rural Road Classes**

Major Road Class	RLU 40 RLU 60 RCU 40 RLU 80	RCU 100	RTD 120
	RTU 40 RCU 80	RCD 100	
	RCU 60 RCD 80	RTU 100	
	RCD 60 RTU 80	RTD 100	
Distance Type	RTU 60 RTD 80		
Distance along major road (metres) (1)	80 160 170 230 280		
Distance from edge of major carriageway along minor road (metres) (2)	340		
(i) GIVE WAY control	6 12 12 12 12		
(ii) STOP control	3 3 3 3 3		

(b) Urban Road Classes

Major Road Class	UCU 40	UCU 60	UCD 80
	UCD 60	UAU 80	
	UAU 60	UAD 80	
Distance Type	UAD 60		
Distance along major road (metres) (1)	80	120	160
Distance from edge of major carriageway along minor road (metres) (2)			
(i) GIVE WAY control	6	6	6
(ii) STOP control	3	3	3

Notes:

1. (i) Measured from the intersection of the minor road centre line with the nearer edge of the major road carriageway.
- (ii) Where the major road to be crossed is wider than 7.5 metres this dimension should be increased by 5% per metre width in excess of 7.5 metres.
- (iii) 1.15 metre object height to be used in checking sight distance.
2. (i) Where the major road has a hard shoulder, this distance should be measured from the verge edge of the hard shoulder.
- (ii) 1.05 metre eye height to be used in checking sight distance.

The three letter road code shown on the previous page may be interpreted as follows:

- (i) The first letter indicates whether the road is Rural or Urban
- (ii) The second letter gives the road classification e.g. R=Regional
- (iii) The third letter indicates if the road is divided or undivided
- (iv) The figures indicate the design speed of road.

Note: The classifications differ between urban and rural as indicated below

Rural		Urban	
T	Arterial or Trunk: Class S, A & B	A	Arterial Class H & J
C	Collector Class C & D	C	Collector Class K & L
L	Local Class E, F, & G	L	Local Class M, N & P

Table 5.2 - Sizes of STOP Signs and Road Markings

Description of Road Type (Km/h)	Size of STOP Sign	Size of STOP Sign Carriageway Marking	
		(mm)	(mm)
30	Narrow roads with <1500 VPD and <300 commercial VPD	750	1600
30-50	Local urban and rural roads	750	1600
50-65	Single carriageway 2 lane Roads	750 (900)	1600 (2800)
65-80	Urban motorways & high standard 2 or 3 lane rural roads with few junctions	(900) (1200)	(2800)
80-95	Dual carriageways or single 900 carriage ways with 3 or more lanes	900 (1200)	2800
> 95	Motorways and modern high standard dual carriageways	900 (1200)	-

Notes:

1. VPD = vehicles per day
2. The alternative sizes shown in brackets should be used where greater emphasis is required by site conditions or by the accident record.

5.2.1 Siting the STOP Sign

The STOP sign should be sited as close as possible to the STOP line without impairing visibility along the major road. It will be placed between 1.5 and 6 metres in advance of the STOP line with the former measurement being the ideal. The sign should always be sited on the left hand side of the road but can be duplicated on the right hand side for greater emphasis. Duplication should be normal on a wide one-way road and where a central refuge exists in the mouth of the minor road.

A STOP sign should be accompanied by associated road markings (See Kenyan Road Markings Manual 2010). The absence of road markings does not, however, invalidate the requirement to stop.

5.2.2 Associated Road Markings

Road markings should accompany the STOP sign. These are shown and defined in full in the Kenyan Road Markings Manual 2010.

5.3 THE GIVE WAY SIGN

The GIVE WAY sign R2 (Figure 5.3) imposes an obligation on approaching traffic to give Way right of way to traffic on the major road.

At GIVE WAY sign controlled priority intersections a driver approaching on a minor road should have sufficient visibility along the major road to make a manoeuvre without stopping. Table 5.1 in the previous section indicates the visibility criteria for deciding to use either a GIVE WAY or STOP sign.



Figure 5.3 GIVE WAY Sign
R2

Several sizes of GIVE WAY sign are prescribed and their appropriate applications are given in Table 5.3 below.

Table 5.3 - Sizes of GIVE WAY Signs

Description of Road Type (Km/h)	Size of GIVE WAY Sign	(mm)
30	Narrow roads with <1500 VPD and <300 commercial VPD	600
30-50	Local urban and rural roads	750
50-65	Single carriageway 2 lane Roads	750
65-80	Urban motorways & high standard 2 or 3 lane rural roads with few junctions	(900) (1050)
80-95	Dual carriageways or single 900 carriage ways with 3 or more lanes	1050 (1200)
> 95	Motorways and modern high standard dual carriageways	1200

Notes:

1. VPD = vehicles per day
2. The alternative sizes shown in brackets should be used where greater emphasis is required by site conditions or by the accident record.

5.3.1 Siting the GIVE WAY Sign

The GIVE WAY sign should be sited as near as possible to its associated transverse road markings as long as it does not then impair visibility.

The sign will normally be sited on the left hand side but it can be duplicated on the right hand side if greater emphasis is required. Duplication should be considered where there is a refuge in the mouth of the minor road and should be the norm for wide one-way streets.

5.3.2 Associated Road Markings

Road markings should accompany the GIVE WAY sign. These are shown and defined in full in the Kenyan Road Markings Manual.

5.4 REGULATORY MANDATORY & PROHIBITORY SIGNS

5.4.1 Regulatory, Mandatory Signs

The "Straight Ahead" sign Figure 5.4 below, indicates that vehicular traffic must proceed straight ahead only.



Figure 5.4
STRAIGHT AHEAD
SIGN M1



Figure 5.5
TURN LEFT SIGN
M2



Figure 5.6
TURN RIGHT SIGN
M3

The "Turn Left" sign (fig. 5.5) indicates that vehicular traffic must turn left at that location. In addition to its use for urban traffic management the sign may also be used on the central island of roundabouts and on the median at junctions on dual carriageways where there is no median break.

The "Turn Right" sign (fig 5.6) indicates that vehicular traffic must turn right at that location.

The "Turn Left Ahead" sign (fig. 5.7) indicates that vehicular traffic must turn left at the junction ahead.



Figure 5.7
TURN LEFT AHEAD
SIGN M4



Figure 5.8
TURN RIGHT AHEAD
SIGN M5



Figure 5.9
KEEP LEFT
SIGN
M6



Figure 5.10
KEEP RIGHT SIGN
M7



Figure 5.11
PASS EITHER SIDE
SIGN M8

The "Turn Right" ahead sign (fig. 5.8) indicates that vehicular traffic must turn right at the junction ahead.

The "Keep Left" sign (fig. 5.9) indicates that vehicular traffic must keep to the left of the sign.

The "Keep Right" sign (fig. 5.10) indicates the vehicular traffic must keep to the right of the sign. This sign is most commonly used at road works sites.

The "Pass Either Side" sign (fig. 5.11) indicates that vehicular traffic may reach the same destination by passing either side of the sign. The sign should not be used at junctions or on traffic islands where traffic streams diverge to reach different destinations.

5.4.2 Regulatory, Prohibitory Signs

Signs shown in Figures 5.12 to 5.15 indicate that traffic is prohibited from proceeding in the direction indicated by the arrows. The NO ENTRY sign is usually associated with one-way streets and should be accompanied by appropriate road markings (See Kenyan Road Marking Manual 2010).

The "No U-Turn" sign is usually used in connection with dual carriageways or other roads having a central reservation. It should be mounted on the central reservation as close as practicable to the junction. It should face traffic approaching from the direction or directions to which the prohibition applies. Where there is no central island, a sign should be mounted on the left hand side of the road and duplicated on the right hand side.



Figure 5.12
NO ENTRY Sign
P1



Figure 5.13
NO RIGHT
TURN Sign P2



Figure 5.14
NO LEFT TURN
Sign P3



Figure 5.15
NO U-TURN Sign
P4

Sizes for regulatory signs and their appropriate uses are given in Table 5.4 below.

Table 5.4 – Sizes of Regulatory Signs

85%ile Approach Speed of Vehicles (Km/h)	Description of Road Type	Size of Sign (mm)	'X' Height of Supplementary Plate (mm)
30	Narrow roads with <1500 VPD and <300 commercial VPD	500 (600)	60
30-50	Local urban and rural roads	600 (750)	60 (75)
50-65	Single carriageway 2 lane Roads	750 (900)	75 90
65-80	Urban Dual Carriageways	(900) (1200)	90 120
> 80	Rural Dual Carriageways	1200	120

5.5 SPEED LIMIT SIGNS

5.5.1 Maximum Speed limit

Maximum Speed limit signs indicate the maximum allowable speed applying to a road. Traffic law provides for four types of maximum speed limits viz. the built-up area speed limit (50 KPH); special speed limit (70 KPH or 80 KPH); the general speed limit (100 KPH); and the motorway speed limit (120 KPH).

The speed limits are prescribed in the Road Traffic Acts or in regulations made by the Ministry of Roads.

Maximum speed limit signs are shown in Figures 5.16 to 5.19.



Figure 5.16
Built Up Area
Speed Limit(50
KPH)
P5



Figure 5.17
Special Area
Speed Limit
(70 KPH)
P6



Figure 5.18 Special
Area Speed Limit
(80 KPH)
P7



Figure 5.19
Motorways Speed
Limit (120KPH)
P8

The sign for the end of built-up area or special speed limit and commencement of general speed limit is shown in Figure 5.20. Figure 5.21 Shows end of minimum speed limit.



Figure 5.20
End of Maximum Speed Limit
(Other Than General Speed Limit)
P9



Figure 5.21
End of Minimum Speed Limit
P10

In addition to the standard speed limit signs, repeater signs may be provided where it is considered appropriate.

In the case of roads of an appreciable length to which a special speed limit applies it is recommended that repeater signs be used at intervals of 500m.

Repeater signs of half the normal diameter may be erected on long sections of speed restricted road at the discretion of the local authority.

Speed limit signs should be located as determined by the bye-laws and on both sides of the road. On one-way slip roads, the signs should be located before entry onto the main carriageway. In the case of a dual carriageway, signs should be provided on both sides of the carriageway.

The sizes of speed limit signs and their appropriate uses for different categories of road are given in Table 5.5 below.

Table 5.5 - Sizes of Speed Limit Signs and their Appropriate Uses

Sign Location and Usage	Size of Sign (mm)
Repeater Signs	300
Urban and Rural Single Carriageway Roads	600
All Purpose High Standard Single and dual Carriageway Rural Roads and Motorway Slipways	750
Motorway Mainline	900

5.6 PARKING RESTRICTION SIGNS

Parking restrictions are applied by a range of methods. This chapter relates only to controls applied by the provision of up-right signs.

The sign shown in Figure 5.22 indicates that parking is allowed, subject to restrictions. Such restrictions should be shown on information plates (Figure 5.23) which accompany the sign. (The information plate and the sign may be mounted on the same post or on the same plate)



Figure 5.22
Parking Permitted
P11



Figure 5.23
Restriction Plate
P12



Figure 5.24
Parking Prohibited
P13



Figure 5.25
No Stopping Sign
P14

Figure 5.24 shows the sign used to indicate that parking is prohibited. The details of the prohibition should be shown on an information plate accompanying the sign.

The sign shown in Figure 5.25 indicates that a section of a road has been designated as a Clearway. A vehicle may not stop or park on a Clearway during the period of operation, which should be shown on information plates which accompany the sign. The end of a clearway should be designated by the sign as on Figure 5.25 and a supplementary plate with the message END



Figure 5.26
Disc Parking Plate
P15



Figure 5.27
Taxi Rank Sign
P16

Where a system of disc parking operates an information plate as shown in Figure 5.26 should be used, supplementary to the sign shown in figure 5.22. It should indicate the hours of operation of the disc parking and the length of time permitted for a single stay on the particular stretch of road concerned. See chapter 7 for associated road markings.

Figure 5.27 indicates an appointed stand for taxis. No vehicle other than a taxi which is available for hire may park at an appointed stand.

All signs in this section should be erected parallel to the carriageway, facing the road.

5.7 SIGNS FOR CYCLE FACILITIES

5.7.1 Cycle Tracks

A Cycle Track is part of a road including part of a footway or part of a roadway which is reserved for the use of pedal cycles. All mechanically propelled vehicles, other than mechanically propelled wheelchairs, are prohibited from entering a cycle track except for the purposes of access.



Figure 5.28
Commencement of Cycle
Track
P17



Figure 5.29
End of Cycle Track
Sign
P18



Figure 5.30
Commencement of
Cycleway
P19

The sign shown in Figure 5.28 indicates the commencement point of a cycle track. Figure 5.29 shows the sign to indicate the termination point of a cycle track. These signs are used in association with road markings for cycle tracks (see Kenyan Road Markings Manual 2010).

5.7.2 Cycle Ways

A cycleway is part of a public road reserved for the exclusive use of pedal cyclists or both pedal cyclists and pedestrians.

Figure 5.30 indicates the commencement point of a cycleway. Figure 5.29 indicates the termination point of a cycleway.

5.7.3 Shared Pedestrian/Cycle Facilities

Where there is a shared facility for cycles and pedestrians on a cycle track or cycleway the sign shown in figure 5.31 should be used.



Figure 5.31
Shared Cycle/Pedestrian Track Sign
P20

5.8 SCHOOL WARDEN'S STOP SIGN

The school warden's STOP sign is illustrated in Figure 5.32. The sign is double-sided. Only the 450mm diameter size is prescribed for the sign.



Figure 5.32
School Warden's Stop Sign
P21

5.9 PEDESTRIANIZED STREETS

5.9.1 Prohibition on Entry to or Parking in Certain Streets

Figure 5.33 shows the sign used to indicate that traffic or a specified class of traffic is prohibited in both directions. The sign is usually used for pedestrianization of certain streets and should, when used for this purpose be accompanied by information plates showing the hours/days of operation.

The "Pedestrianized Street" sign should usually be provided on both sides of the street and orientated to face oncoming traffic. On very narrow Pedestrianized streets the entrances may be marked by only one sign as long as it can be seen clearly by all approaching drivers.



Figure 5.33
Pedestrianized Street
P22

5.10 WEIGHT AND HEIGHT RESTRICTIONS

The sign shown in Figure 5.34 is used to indicate that any vehicle, the unladen weight of which exceeds the weight specified on the sign, is prohibited from entering. The sign should be located on both sides of the road where the restriction commences and should face approaching traffic.

For bridges where restrictions apply, the signs shown in Figures 5.35 and/or 5.36 may be placed at each end of the bridge or on the approach roads adjacent to the bridge.

The advance sign indicating the restriction and showing the distance should be provided on all approaches to the bridge. (Fig. 5.37)

The signs shown on figs. 5.38 and 5.39 should be provided at appropriate locations to indicate alternative routes for heavy vehicles.



Figure 5.34
Weight Restriction
Sign
P23



Figure 5.35
Vehicle Weight Restriction
Sign
P24



Figure 5.36
Axe Weight Restriction Sign
P25



Figure 5.37
Advance Sign Indicating Restriction Ahead
P26

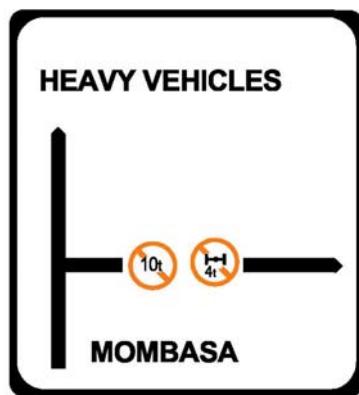


Figure 5.38
Sign Indicating Route Subject To
Restriction ('x' ht. 100mm)
P27

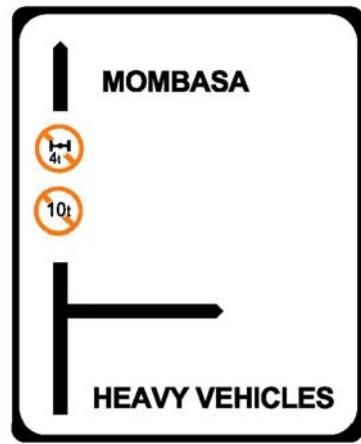


Figure 5.39
Sign Indicating Route Subject To Restriction
('x' ht. 100mm)
P28

The sign illustrated in Figure 5.40 is used to restrict the height of vehicles using a particular road. The sign should be placed at the entrance to the road with information regarding suitable detours for high loads.



Figure 5.40
Height Restriction Sign
P29

In common with the corresponding warning sign, both metric and imperial measurements of the height restriction should appear on this regulatory sign. The dimensions displayed will depend on how the original measurement of the height restriction was made.

For railway overhead bridges, the available height is measured from a 12.2m. chord simulating a truck wheel base. The actual figure to be used should be agreed with the Rail Authority Engineer.



Figure 5.41
P30



Figure 5.42
P31

The sign shown in figures 5.41 indicates that there is a zone restriction on the parking of vehicles exceeding a specific weight e.g. 3 tonne as shown in the figure. The sign shown in figure 5.42 indicates the end of the restriction zone and should be placed at all exit points.

5.11 THE NO OVERTAKING SIGN

The "No Overtaking" sign shown in Figure 5.43 is used to prohibit overtaking where it is dangerous to do so and is usually used in conjunction with Road Works. It should not be used in situations where the same result can be achieved by the use of a continuous solid centreline or double-line marking.



Figure 5.43
NO OVERTAKING Sign
P32

A "No Overtaking" sign should be erected on both sides of the road at both ends of the affected length of road to face traffic approaching from each direction. The signs should be supplemented by the distance plate shown in Figure 5.48. Distances less than 1 kilometre should be shown in metres, those greater than this should be shown rounded to the nearest whole kilometre.

The siting and size of the "No Overtaking" sign is governed by the 85th percentile approach speed and is contained in Table 5.4.

The end of the restriction should be indicated by the sign as in Figure 5.43 with a supplementary plate with the message 'END'.

5.12 BUS LANE SIGNAGE

Bus lanes reserve sections of road space at designated times for buses. They are designed to minimize the delay to buses. Cyclists and taxis are also permitted to travel in with-flow bus lanes. All other road users are prohibited from using bus lanes at the specified times.

Several signs are prescribed for use with bus lanes. Most have white symbols and borders on a blue background. They should be used in conjunction with the appropriate road markings which are defined in the Kenyan Road Markings Manual. Bus lanes may be either:

- (i) With-flow which run in the same direction as the traffic using the adjacent lane
- (ii) Contra-flow which run in the opposite direction to traffic using the adjacent lane. No other traffic may use contra-flow lanes (this includes cyclists).

Normally the part of the carriageway reserved as a bus lane enables a bus to travel with its near side adjacent to the edge of the carriageway.

5.12.1 With-Flow Bus Lanes

A with-flow bus lane is usually provided on the nearside of the carriageway although it can be positioned on the off side if necessary.

Advance signing of a with-flow bus lane should be provided by a sign as shown in Figure 5.44. Note that the inclusion of the cycle symbol indicates that cyclists are permitted to use the bus lane. This sign should be positioned in advance of the dotted road marking (taper) indicating the start of the lane.



Figure 5.44
Advance Sign for With-Flow Bus Lane
P33

The mandatory sign (Figures 5.45) should be sited facing oncoming traffic at the point where the prohibition begins after the taper, and may be accompanied by a rectangular plate as shown in figure 5.46. It should be repeated along the bus lane and should be sited just beyond each side road. The distance between the signs should not normally exceed 300 metres and when junctions are further apart, additional signs should be erected to limit the spacing to about 300 metres.

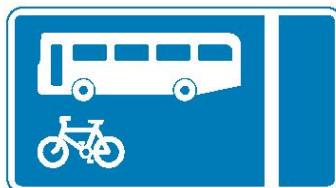


Figure 5.45
With-Flow Bus Lane
P34



Figure 5.46
Information Plate
P35

For offside bus lanes, the signs shown in Figures 5.47 and 5.48 should be used instead of those shown in Figures 5.44 and 5.45. The signing for a with-flow bus lane is demonstrated in Figure 5.50.



Figure 5.47
Advance Sign for Offside Bus
lane
P36

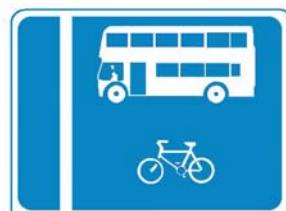


Figure 5.48
Offside Bus Lane
P37

5.12.2 Contra-Flow Bus Lanes

Unlike with-flow bus lanes, contra-flow bus lanes usually operate 24 hours a day. Cyclists and taxis are not permitted to use them. At the start of a contra-flow lane "No Entry" signs as defined in section 5.4 should be positioned on either side of the bus lane carriageway (this will require a traffic island between the bus lane and lane of opposing flow). Black on white plates as shown in Figure 5.54 should be located immediately below the: 'No entry" sign to indicate that the prohibition does not apply to buses.



Figure 5.49
Information Plate
P38

The mandatory sign shown in Figure 5.51 should be erected facing traffic entering the street. These signs should also be repeated facing the direction of the main traffic flow after every side road junction on whichever side the side road is located.

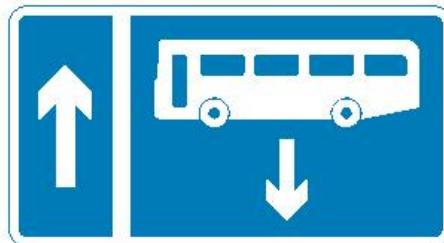


Figure 5.51
Contra Flow Bus Lane
P39

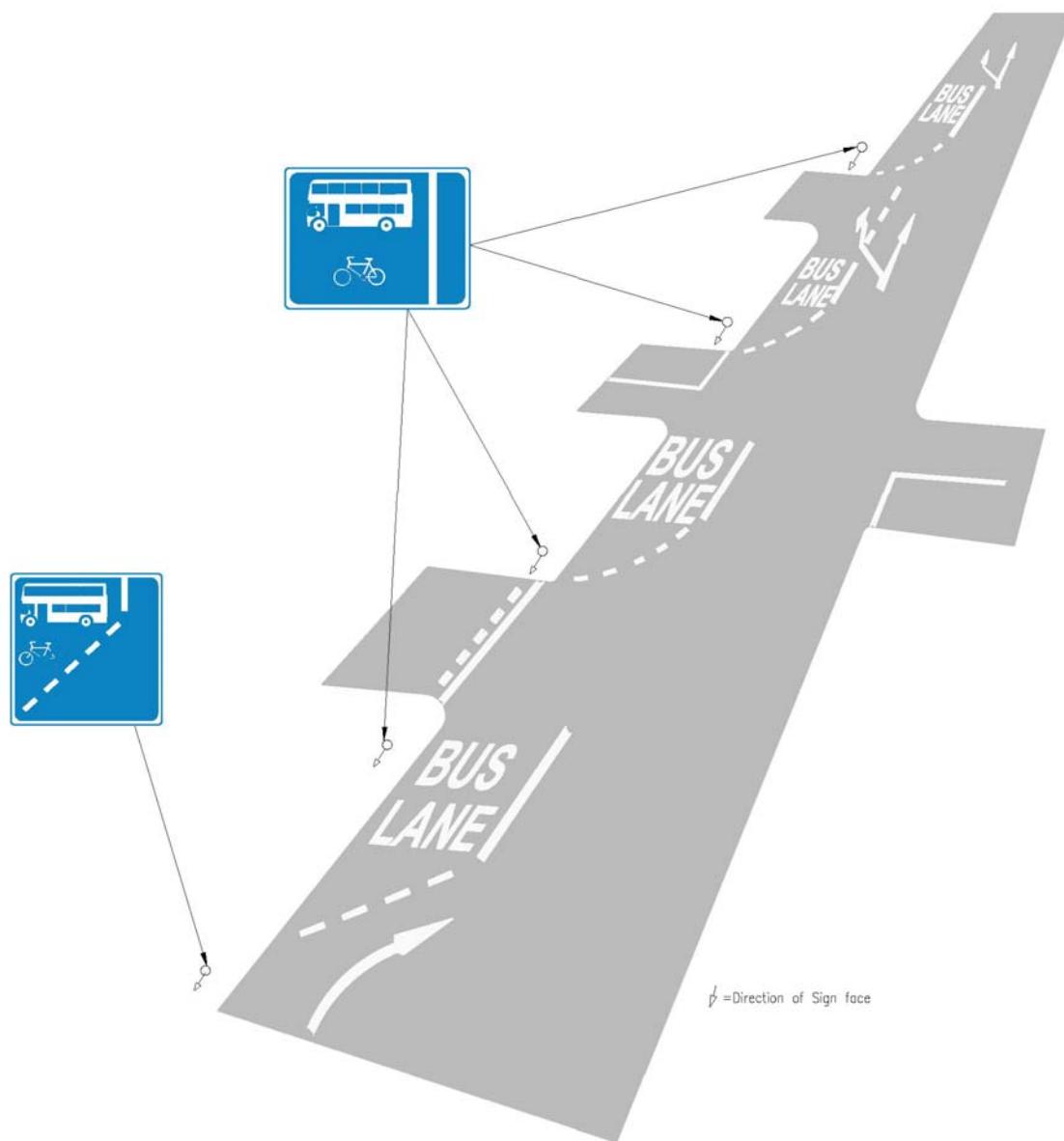


Figure 5.50
Signing for a With Flow Bus Lane

The signing scheme for a contra-flow bus lane is given in Figure 5.56.

5.12.3 Other Signs for Bus Lanes

Five other signs are used in association with Bus Lanes and are shown in Figures 5.52 to 5.57. These signs are not regulatory, but inform other road users and pedestrians of the presence of the bus lane.

Every side road carrying traffic proceeding towards the bus lane should be provided with one of the signs illustrated in Figures 5.52 to 5.53.



Figure 5.52
P40

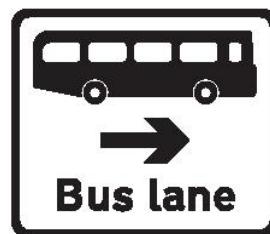


Figure 5.53
P41



Figure 5.54
P42



Figure 5.55
P43

The signs shown in Figure 5.59 and 5.60 should be used along the bus lane to warn pedestrians to look in the direction of oncoming buses.

For each bus lane sign there are two sizes prescribed as shown below. The smaller signs should be used on roads having 85th percentile approach speeds of 30 mph (50 Km/h) or less. The larger signs should be used on all other roads.

5.12.4 Sizes of Bus Lane Signs

Figure	Width	Height
5.49	750 (1000)	750 (1000)
5.50	810 (675)	645 (537.5)
5.52	750 (1000)	750 (1000)
5.53	81(675)	645 (537.5)
5.56	825 (990)	587.5 (705)
5.57	600 (480)	587.5 (470)
5.58	600 (480)	587.5 (470)
5.59	600 (450)	500 (375)
5.60	600 (450)	500 (375)

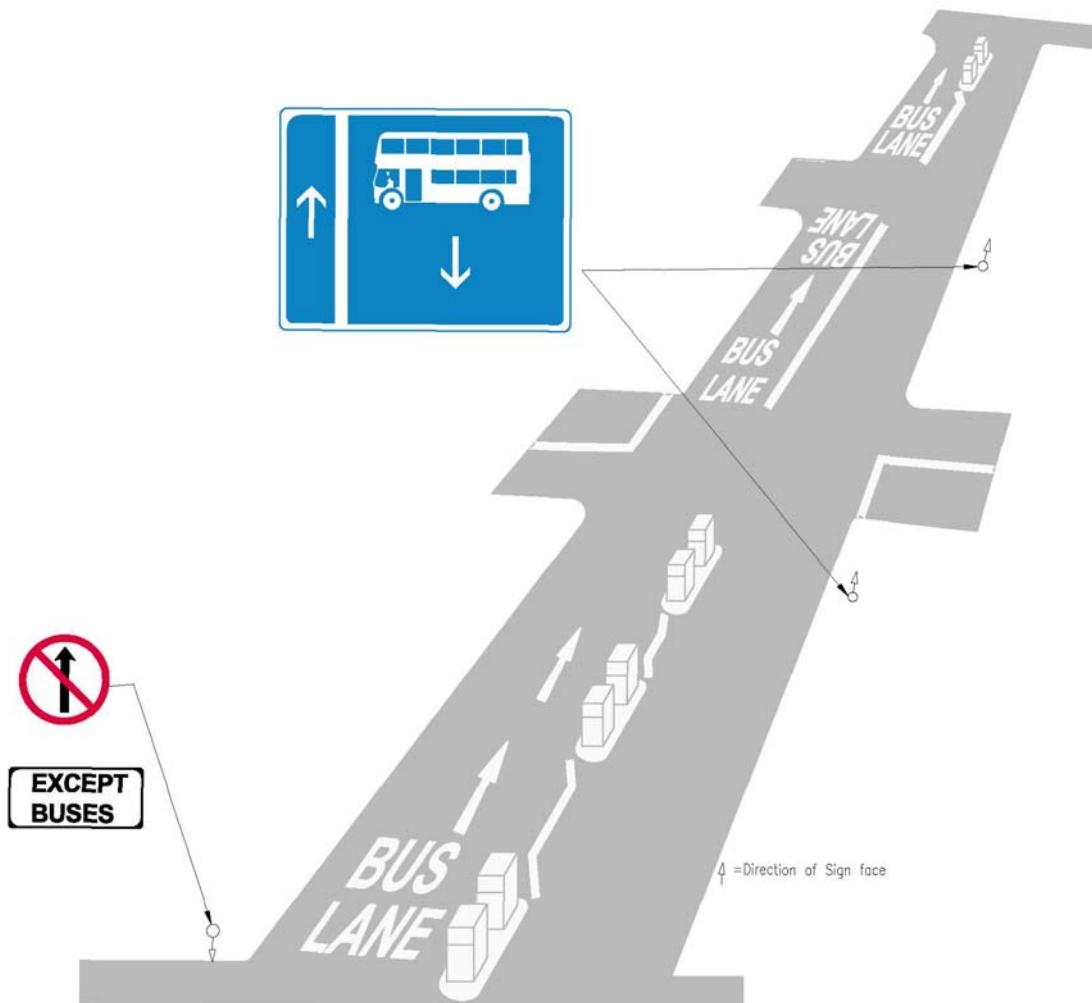


Figure 5.57
Signing Scheme for Contra Flow Bus Lanes

CHAPTER 6
WARNING SIGNS

3rd Draft Dec 09

CHAPTER 6

6. WARNING SIGNS

6.1 INTRODUCTION

Warning signs are used to alert drivers to danger or potential danger ahead. They indicate a need for extra caution and may require a consequent manoeuvre or a reduction in speed.

Most warning signs are Triangular in shape with a black border encompassing a black symbol on a yellow background. The black symbol is usually a pictorial representation of the hazard. Supplementary plates showing a word or phrase can occasionally be mounted either separately or combined with the sign on a common backing plate underneath.

Warning signs are prescribed in three sizes. The larger sizes are for use on the higher speed roads and should be sited at greater distances in advance of hazards. This should allow sufficient time for the warning message to be absorbed and necessary manoeuvres to be completed before the hazard is met. The standard dimensions of warning signs are illustrated in Figure 6.1.



Figure 6.1
Standard Dimensions of Warning Signs

There must always be a distance clear of obstructions in advance of a sign. This is known as the clear visibility distance and varies according to the speed of the traffic. Table 6.1 summarises all the available sign sizes and gives the appropriate siting distance and clear visibility distance for each category of road. The sizes of supplementary plates should be determined by choosing the appropriate 'x' - height size of lettering which is also indicated in Table 6.1. The text should be arranged using the same tiles that are used for directional informative signs.

Table 6.1 - Sizes of Warning Signs and Their Siting Details

85%ile Approach Speeds of Private Cars	Type of Road	Dimension of Side	Siting Distance of Sign From Hazard	Advisable Clear Visibility Distance of Signs	Advisable 'x' – height for Supple- mentary Plates
(Km/h)		(mm)	(m)	(m)	(mm)
<50	Urban & Rural Single Carriageway Roads	600 (900)	50-100	60	60
50-65	Urban Motorways & Urban Dual Carriageways	900	100-200	75	75
>65	Rural Motorways & Rural Dual Carriageways	1200	200-300	100	100

Where the geometry of the road dictates it, opposite hand versions of the signs may be used.

The following sections of this chapter deal with the types of warning signs and describe their conditions of use. The use of black on orange warning signs in connection with road works is described in Chapter 7 of this manual.

6.2 JUNCTION AHEAD

These signs provide advance warning of a junction and illustrate the priority route at the junction by use of varying widths of the road symbol arms.

"Junction Ahead" warning signs can be categorized into three groups showing:

- (i) A junction ahead with a road of lesser importance
- (ii) A junction ahead with a road of equal importance
- (iii) A junction ahead with a road of greater importance

The width of the junction arms should be 1/12th of the sign side for roads of lesser importance, 1/9th for roads of equal importance and 1/6th for roads of greater importance.

6.2.1 Junctions with Roads of Lesser Importance

The roads of less importance on these signs are indicated by arms of lesser widths. The five signs shown in Figures 6.2 to 6.6 are those available for use.

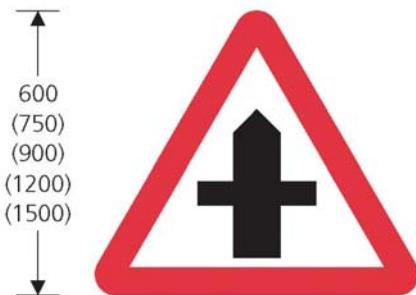


Figure 6.2
Crossroads
W1

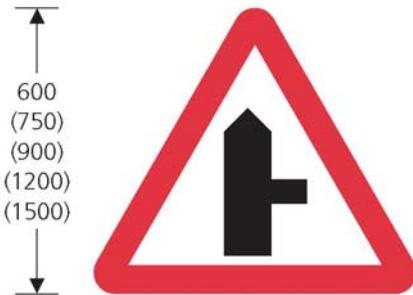


Figure 6.3
Side Road
W2

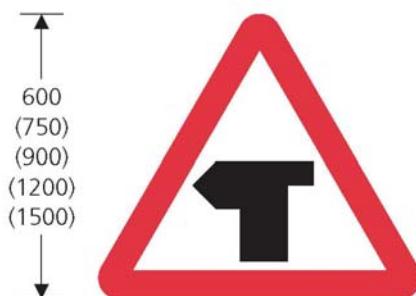


Figure 6.4
T-Junction
W3

The sign illustrated in Figure 6.6 should only be used where the distance between two consecutive junctions does not exceed 60 metres. Otherwise two versions of the sign shown in Figure 6.3 should be used (one of which should be reversed).

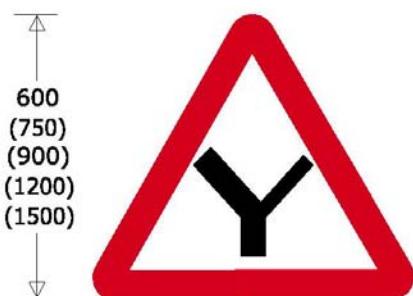


Figure 6.5
Y-Junction
W4

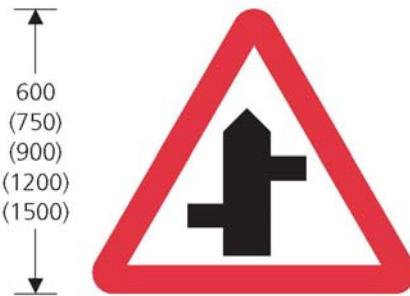


Figure 6.6
Staggered Crossroads
W5

6.2.2 Junctions with Roads of Equal Importance

In the interest of safety it should be the policy of road authorities to eliminate the designation of junctions with roads of equal importance. New road junctions should always have one road designated as the major route.

Junctions with roads of equal importance can be indicated by signs shown in Figures 6.7 to 6.11. These show the same junction layouts as the signs in Figures 6.2 to 6.6 except that all route symbols components have equal widths.

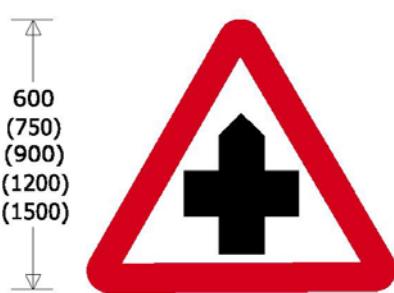


Figure 6.7
Crossroads
W6

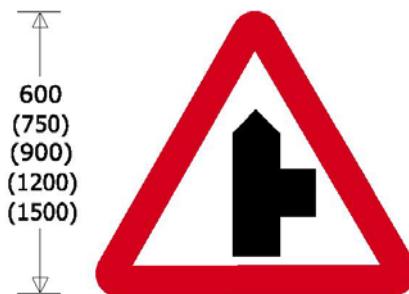


Figure 6.8
Side Road.
W7

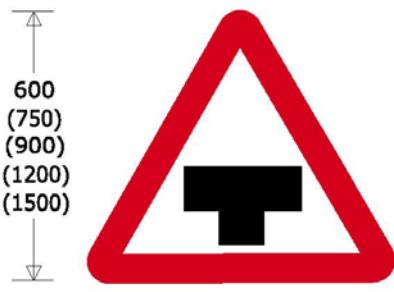


Figure 6.9
T-Junction
W8

The "Staggered Crossroads Ahead" sign shown in Figure 6.10 should be used where consecutive junctions are within 60 metres of each other.

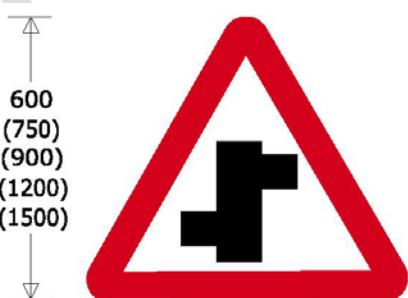


Figure 6.10
Staggered Crossroads
W9

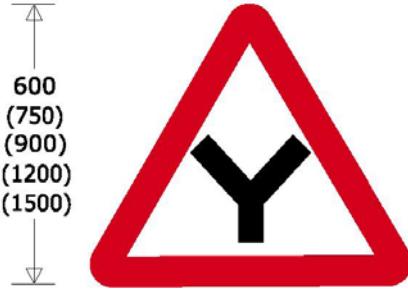


Figure 6.11
Y – Junction
W10

6.3.3 Junctions with Roads of Greater Importance

Figures 6.12 to 6.15 show the signs that are permitted for use on roads approaching a junction with a road of greater importance. Figures 6.12 and 6.13 show junction layouts where the road of greater importance is a single carriageway.

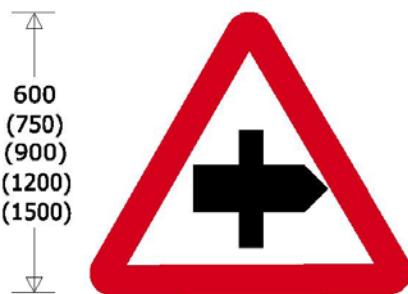


Figure 6.12
Crossroads
W11

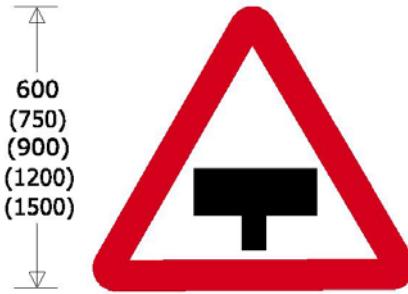


Figure 6.13
T – Junction
W12

Dual carriageway junctions are represented by the signs in Figures 6.14 to 6.15.

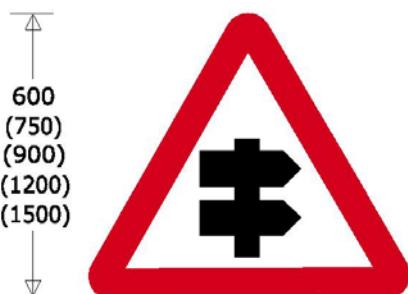


Figure 6.14
Crossroads with Dual Carriageway
W13

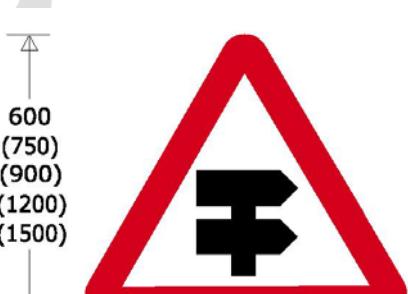


Figure 6.15
T – Junction with Dual
Carriageway
W14

All of the "Junction Ahead" signs described above give advance warning of a major road ahead which is marked at the junction either by a STOP sign or GIVE WAY sign. These signs are described in Chapter 5.

6.3 MERGING TRAFFIC

Figure 6.16 illustrates the warning sign used to indicate merging traffic. It gives warning where two physically separated streams of traffic proceeding in the same direction join the same undivided section of the carriageway.

This sign should not be used where there is no need for either traffic stream to concede priority (e.g. where an additional lane is picked up from the junction). When used, the sign should not obstruct the driver's view of vehicles entering the motorway or dual carriageway.

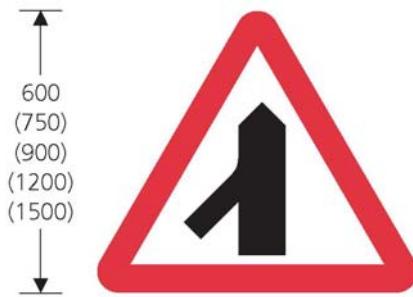


Figure 6.16
Merging Traffic
W15



Figure 6.17
Merging / Diverging Traffic
W16

When traffic merges to join the same section of carriageway and then diverges shortly afterwards the sign shown in Figure 6.17 should be used.

6.4 ROUNDABOUTS

The sign presented in Figure 6.18 should be used to indicate that there is a roundabout ahead.

On dual carriageways, two roundabout warning signs should be used in addition to the map-type sign. One should be sited on the central reserve and the other on the verge.

The siting of this sign should be in accordance with the recommendations contained in Table 6.1.

6.4.4 The roundabout warning sign should only be used for 'true' roundabouts. This excludes advance warning of one way working round a triangular or "Y" junction or at the entry to a large one-way system.

The sign shown in Figure 6.19 should be used to indicate a mini-roundabout.

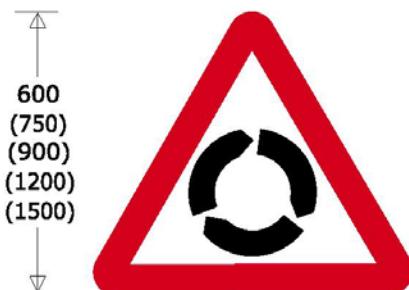


Figure 6.18
Roundabout Ahead
W17



Figure 6.19
Mini-Roundabout Ahead
W18

6.5 BENDS AND CORNERS

There are four signs prescribed to indicate corners or bends ahead and they are shown in Figures 6.20 to 6.23. Generally corners are much more extreme changes of direction than bends. Corners will require a greater reduction in speed if the road user is to negotiate them safely. They will also provide a smaller distance of forward visibility for drivers than bends.

All of the signs should be used sparingly and only where the driver will genuinely experience difficulty in negotiating the corner or bend without slowing down.

The symbols should indicate whether the change of direction is to the left or right. Each of the signs therefore has one permitted variant by reversing the symbols as appropriate.

The degree of danger at a corner or bend varies with five factors:

- (i) The speed of approach
- (ii) The radius of curvature
- (iii) The super elevation
- (iv) The skid resistance of the road surface
- (v) Forward visibility

The distinction between a bend and a corner is a matter for the technical judgement of the roads authority.

The signs illustrated in Figures 6.22 and 6.23 should only be used where corners or bends of similar severity follow in close proximity.

The black on white distance plates shown in Figure 6.24 is prescribed for use with both signs where roads are hazardous for longer distances. If a supplementary plate is provided it should not be necessary to sign individual corners or bends occurring within the distance stipulated.

Distances below 1km should be indicated in metres. Distances greater than this should be indicated in kilometres.

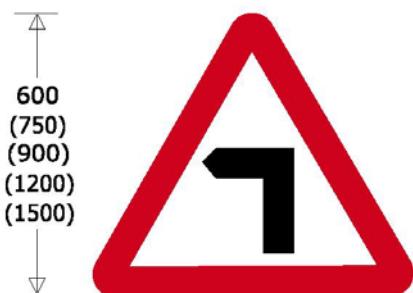


Figure 6.20
Dangerous Corner Ahead.
W19

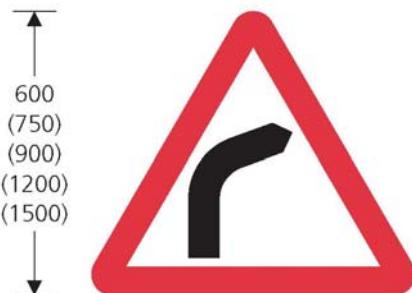


Figure 6.21
Dangerous Bend Ahead
W20

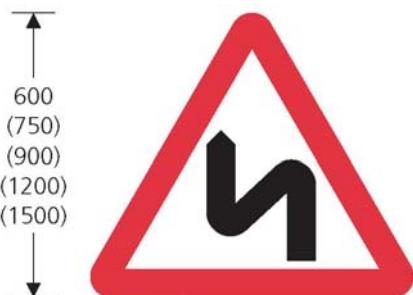


Figure 6.22
Series of Dangerous Comers
Ahead.
W21



Figure 6.23
Series of Dangerous Bends Ahead
W22



Figure 6.24
Distance Plates
W23

6.6 SHARP CHANGE OF DIRECTION

The "Sharp Change of Direction" sign or Chevron shown in Figure 6.25 should be used:

- (i) On all roundabouts to face traffic on all approaches. The chevron is used at roundabouts with the turn left sign. Its use in this respect is illustrated in Chapter 5
- (ii) Elsewhere to supplement a bend or corner sign which on its own does not provide sufficient warning
- (iii) At a rural T-junction where the major road turns through an angle of 90° or more
- (iv) At road works as a temporary measure to aid delineation of the site (see Chapter 8).

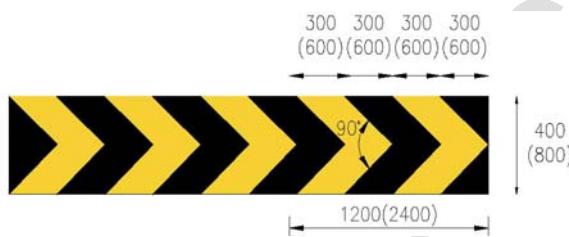


Figure 6.25
Sharp Change of Direction
W24

Note: Yellow chevron on black background

This sign should not be used to indicate a narrowing of the road.

Widths of 400mm and 800mm are prescribed for this sign. The minimum length of the 400mm sign is 1200mm which may be increased by increments of 600mm as required.

The 800mm sign has a minimum length of 2400mm increased by increments of 1200mm as appropriate. The larger size should generally be used for high speed approaches.

The normal mounting height should be 1 metre to the lower edge of the sign.

6.7 ROAD NARROWS

The signs available for indicating road narrows on one side or both sides are shown in Figures 6.26 and 6.27 respectively. The signs can also be used with an orange background for use at roadworks (See the Kenyan Road Markings Manual 2010).

The sign should be erected where a reduction in carriageway width presents a danger to road users.

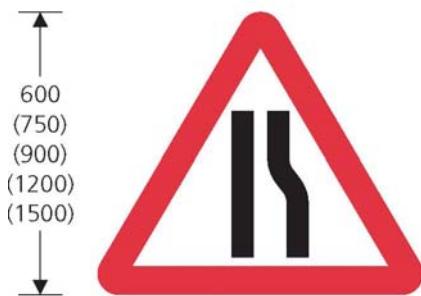


Figure 6.26
Road Narrows on One Side
W25

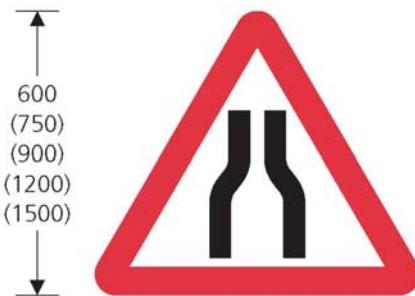


Figure 6.27
Road Narrows on Both Sides
W26

6.8 DUAL CARRIAGEWAY

6.8.1

The "Road Divides" sign shown in Figure 6.28 is used at the beginning of a dual carriageway to indicate a central reservation ahead.

6.8.2

The sign shown in Figure 6.29 is used to indicate the end of a dual carriageway. The sign may be accompanied by a plate showing the distance to the merge.

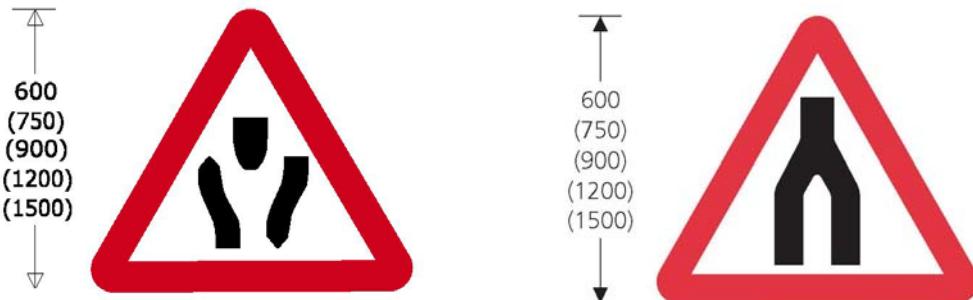


Figure 6.28
Road Divides
W27

Figure 6.29
End of Dual Carriageway
W28

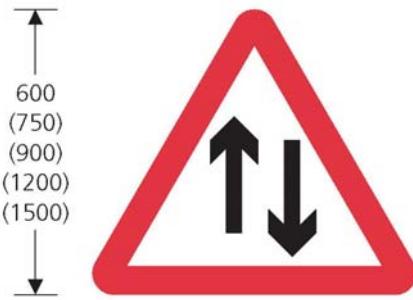


Figure 6.30
Two Way Traffic.
W29

The sign shown in Figure 6.30 above should be erected at or as near as possible to the beginning of the two-way traffic and it may be repeated after 100 metres.

In rural areas or where the road has a high speed limit, more frequent signs are needed. The sign shown in Figure 6.29 should be erected on both sides of the carriageway at distances of 400 and 200 metres from the end of the dual carriageway.

Where dual carriageways end at roundabouts, "Dual Carriageway Ends" signs (Figure 6.29) should be sited on both sides of the carriageway 100 metres before the roundabout. The "Two-Way Traffic" (Figure 6.30) sign should then be erected immediately after the entry to the two-way carriageway.

An example of signing the transition between a single and dual carriageway is shown on fig. 6.31.

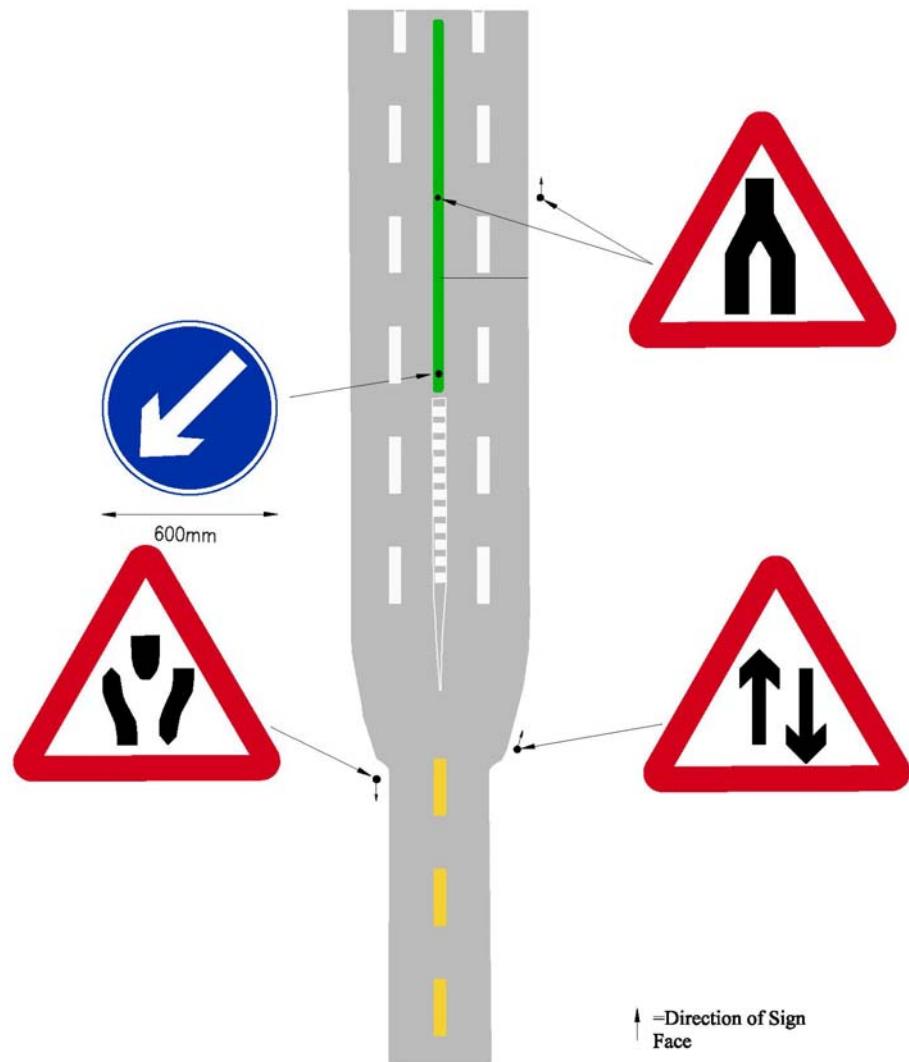


Figure 6.31
Dual Carriageway Signing

6.9 STEEP HILL

The signs prescribed for indicating steep gradients are shown in Figure 6.32 (Descent) and Figure 6.33 (Ascent).

The descent sign shown in Figure 6.32 should be used where the gradient is greater than 5% or 1 in 20. The sign can be repeated on the hill where the gradient steepens noticeably.

On a fairly long descent there may be portions that are steep and others that are appreciably less so and below the 5% or 1 in 20 criteria. In this case it may be advisable to treat the steeper portions as separate hills.

The ascent sign shown in Figure 6.33 should only be used where the gradient exceeds 10% or 1 in 10.

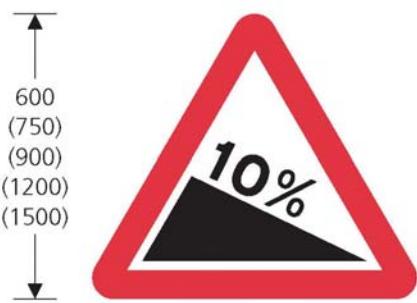


Figure 6.32
Steep Descent Ahead.
W30



Figure 6.33
Steep Ascent Ahead
W31

6.10 RESTRICTED HEADROOM

The sign illustrated in Figure 6.34 should be used to indicate restricted headroom over the carriageway.

This sign should also be mounted, where possible, on the structure itself to give additional warning. In the case of rail over road bridges this sign is fixed by the Rail Authority. If the headroom varies across the width of the carriageway (e.g. at an arch bridge) the sign should be supplemented by the "goal post" marking shown in Figure 6.35, indicating the width over which the clearance height is available..

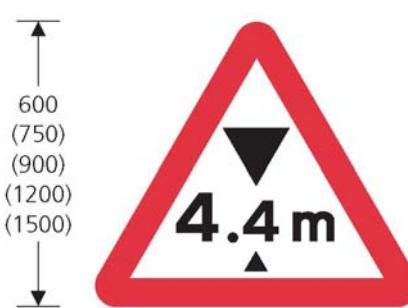


Figure 6.34
Restricted Headroom
W32

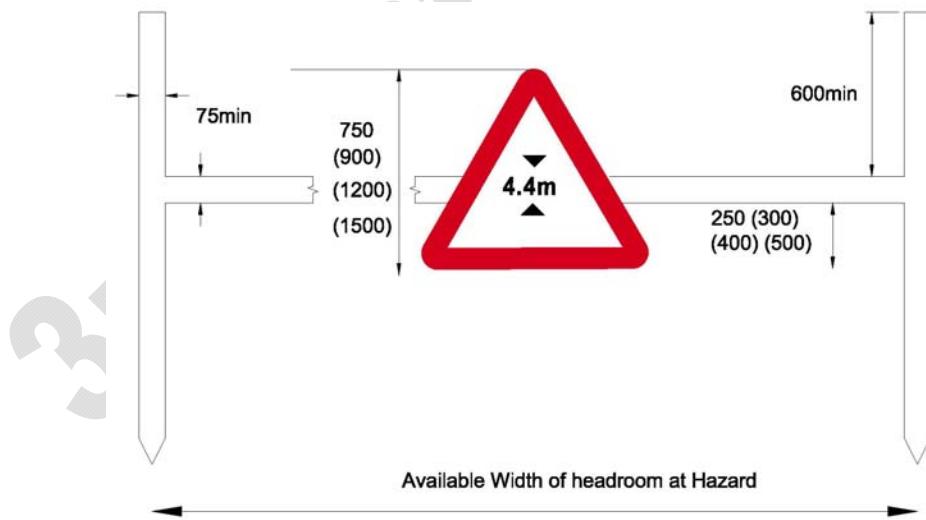


Figure 6.35
"Goal Post" Marking at Hazard.
W33

In the case of rail over-bridges, the clearance height should be agreed with the Rail Authority area engineer.

6.11 OVERHEAD ELECTRIC CABLES

The sign warning of overhead electric cables is presented in Figure 6.36 below. It must always be accompanied by the supplementary plate shown in Figure 6.37 which should have black text on a white background.

These signs are normally only associated with the overhead electrified railway cables of Urban Rail Systems, and they should be used in advance of all level crossings on these lines.

Measurements appearing on the supplementary plate should be agreed with the Rail Authority.

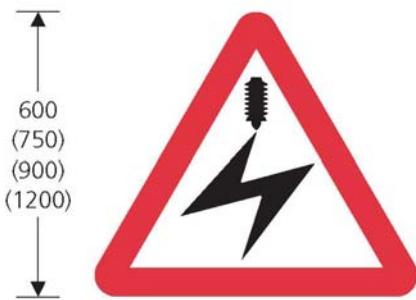


Figure 6.36
Overhead Electric Cables
W34



Figure 6.37
Safe Height Plate.
W35

Note: This sign and the plate may be placed on the same Post.

6.12 LEVEL CROSSINGS

Signs warning of level crossings ahead are shown in figures 6.38 to 6.40.

The sign shown in figure 6.38 may also be associated with level crossings operated by "Lights and Bells" only.

Automatic level crossings other than "Lights and Bells" crossing are equipped with barriers (half barriers or full barriers) and lights. The signs associated with such crossings are show in figures 6.40 to 6.42.

The recommended layout for road markings at an automatic half-barrier crossing is illustrated in the Kenyan Road Markings Manual 2010.

Before undertaking any works or alteration to sign layouts, consultation should take place with the relevant railway authority. Reference should also be made to the document "Requirements and Guidelines for the Provision of Automatically Operated Half-Barriers at Railway Level Crossings" issued by the Department of Transport.

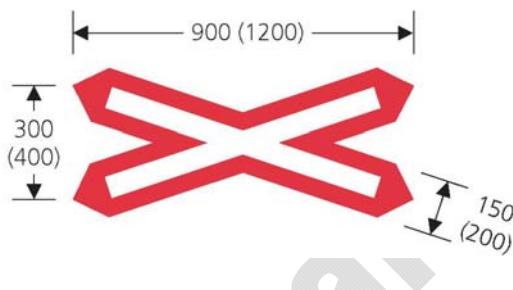


Figure 6.38
Level Crossing Ahead, Unguarded By
Gates Or Lifting Barriers.
W36

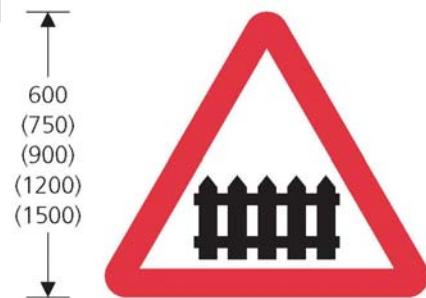


Figure 6.39
Level Crossing Ahead, Guarded By
Gates Or Lifting Barriers.
W37



Figure 6.40
Level Crossing Ahead With Lights And
Barriers.
W38

The spacing and distance of signs from the level crossings is indicated in Figure 6.43. Where local site conditions preclude full compliance with these guidelines, departures may be acceptable provided that safety standards are not impaired.

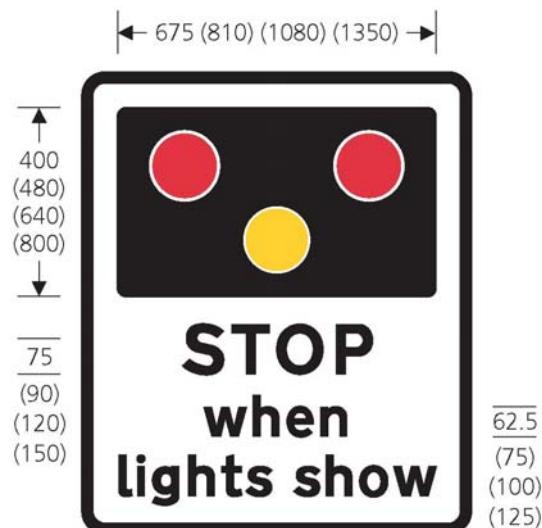


Figure 6.41
Stop When Red Lights Show
W39



Figure 6.42
Slow Automatic Level Crossing
W40

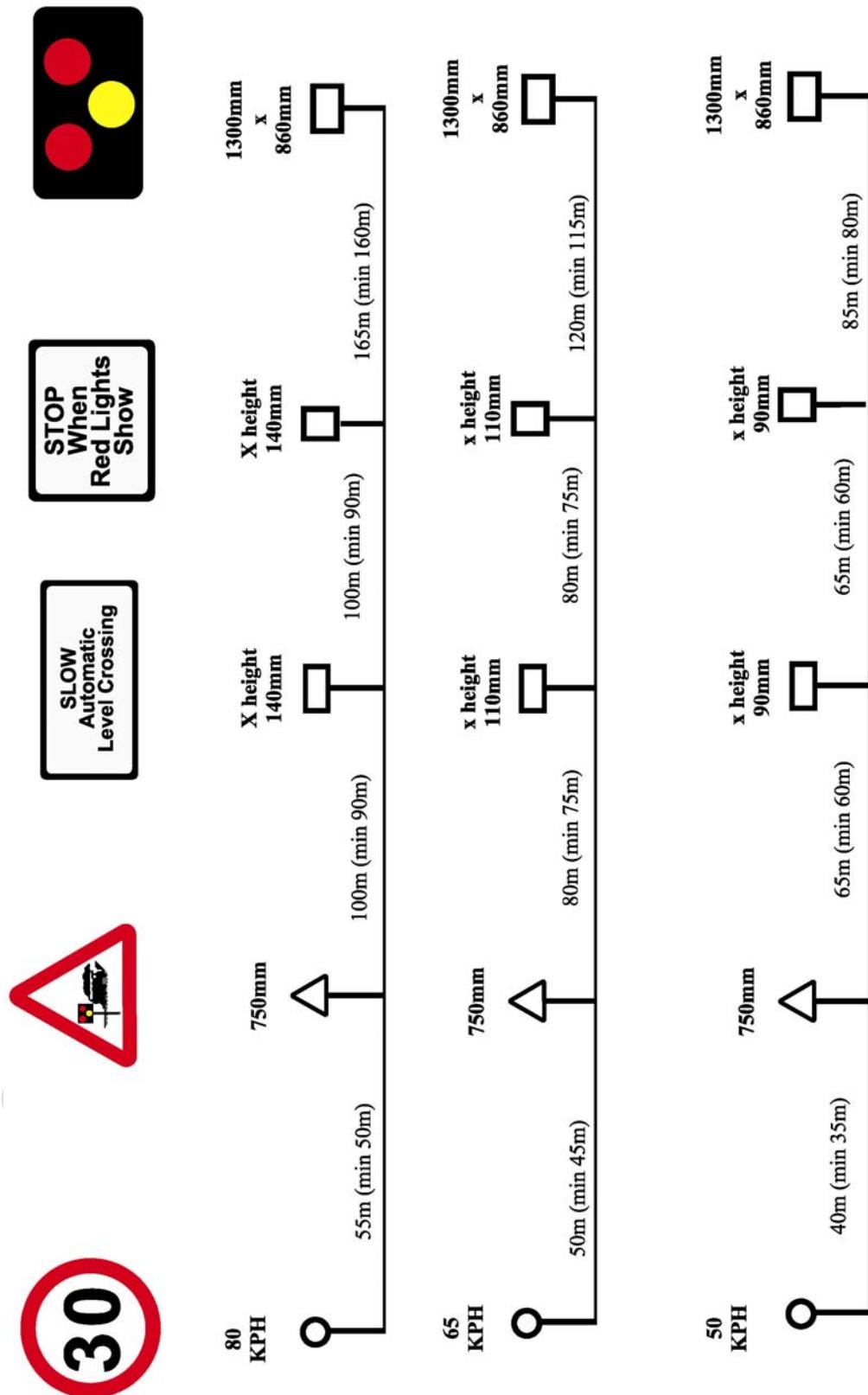


Figure 6.43
Spacing and Distance of signs from Level Crossing

6.13 RISES OR DEPRESSIONS

Local sharp rises or depressions in the road are indicated by three types of warning signs which are shown in Figures 6.44, 6.45 and 6.46.

The sign shown in Figure 6.46 should be used to indicate a series of sharp rises and depressions or an uneven road. It is also used to indicate dangers arising from irregularities in the road surface which would impair the control of vehicles at their normal speed.

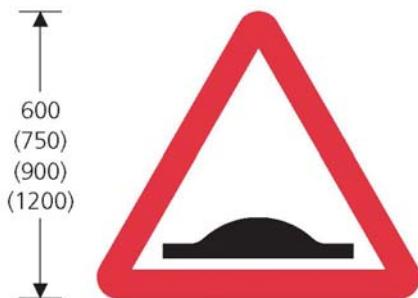


Figure 6.44
Sharp Rise Ahead e.g. Hump-Back
Bridge.
W41

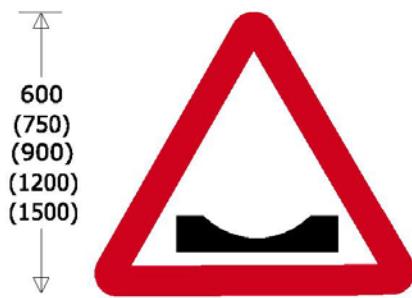


Figure 6.45
Sharp Depression Ahead.
W42



Figure 6.46
Series of Bumps Or Hollows
Ahead
W43

6.14 SLIPPERY ROAD

The "Slippery Road Ahead" sign displayed in Figure 6.47 is intended for use where the danger of vehicles skidding is higher than normal.

Where slippery conditions occur at road works sites this sign should have an orange background. Its use in this situation is fully described in Chapter 8.



Figure 6.47
Slippery Road Ahead.
W44

6.15 RIVER, CANAL OR QUAYSIDE

Wherever a public road approaches a water hazard such as an unprotected river, canal or quayside, the sign shown in Figure 6.48 should be used.



Figure 6.48
Unprotected Quay, Canal or River Ahead.
W45

6.16 TRAFFIC SIGNALS

The "Traffic Signals Ahead" sign is shown in Figure 6.49. It is recommended that the reader refers to Chapter 9, (Traffic Signals) when contemplating the use of the "Traffic Signals Ahead" sign.

The sign should always be used on approaches to signals on roads with a speed limit of 50mph or more. It is not necessary on roads restricted to 30mph or less unless the visibility of the first primary signal is less than 45 metres. The sign should not be used where visibility is only impaired by waiting vehicles, as such can be overcome by regulation.

This sign should have an orange background where it is used to indicate temporary traffic signals which have been installed to control traffic at roadworks. Further details of its use in this context are provided in Chapter 8

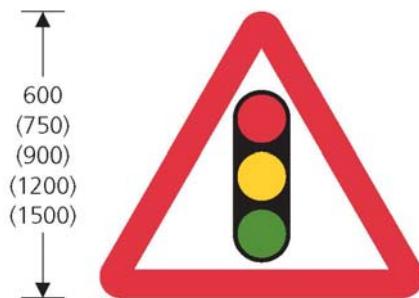


Figure 6.49
Traffic Signals Ahead.
W46

6.17 SCHOOLS AND CHILDREN

There are three signs that are prescribed to give advance warning of the presence of schools and children

- (i) "School Ahead" sign shown in Figure 6.50
- (ii) "School Children Crossing Ahead" sign shown in Figure 6.51
- (iii) Children Crossing (in Residential areas) sign shown in Figure 6.52



Figure 6.50
School Ahead.
W47

The "School Ahead" sign should be used to indicate that there is a school, children's playground or other place frequented by large numbers of children

Alternatively the sign can be used with twin amber lights mounted directly below as shown in Figure 6.51. This should be done either where an adult or junior school warden service operates or where prevailing circumstances such as vehicle speeds or highway alignment constitute a significant danger to children crossing

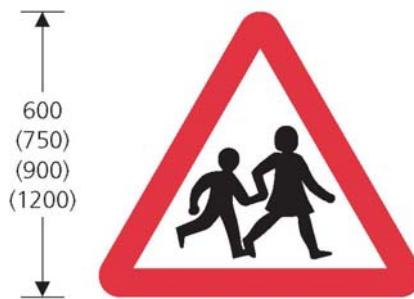


Figure 6.51
School Children Crossing Ahead.
W48



Figure 6.52
Children Crossing (in residential areas).
W49

The twin flashing amber lights should be on a black background. The lenses should have a minimum diameter of 200mm and flash at a rate of between 60-80 flashes a minute. Flashes in each amber light should overlap so that one light is always showing when in operation

Where an adult or junior school warden service is in operation, the flashing lights sequence should only be activated during the warden's relevant duty periods. In other cases the lights should only be activated for the minimum periods necessary to cover child crossing movements during those times when the children are entering or leaving the school.

Where an adult or junior warden service operates, activating and switching off the flashing light unit will be the responsibility of the adult warden or a designated member of the junior school warden team. In all cases the local authority should make appropriate arrangements to ensure that the light unit operation is managed by a responsible person.

Either of the signs shown in Figures 6.50 and 6.51 should be used in the vicinity of schools but not both simultaneously. Both signs should be sited in accordance with the distances given in Table 6.1. The "School Children Crossing" sign with flashing amber lights (Figure 6.51) should not be erected within 100 metres of traffic signals or pedestrian complexes where children may otherwise cross in safety.

The sign illustrated in Figure 6.52 should be used to alert road users to the danger of children crossing roads in residential areas rather than schools and their associated playgrounds. This sign will be accompanied by the plates illustrated.

The sign should only be provided at the entrances to roads of a primarily residential character with continuous housing frontage. Signs should be provided at the entrances to housing estates from main traffic routes.

6.18 ANIMALS CROSSING

The warning signs prescribed to indicate the possibility of animals crossing the road are:

- (i) Accompanied Horses or Ponies (Figure 6.53)
- (ii) Cattle or Farm Animals (Figure 6.54)
- (iii) Sheep (Figure 6.55)
- (iv) Deer or Wild Animals (Figure 6.56)



Figure 6.53
Accompanied Horses or Ponies.
W50

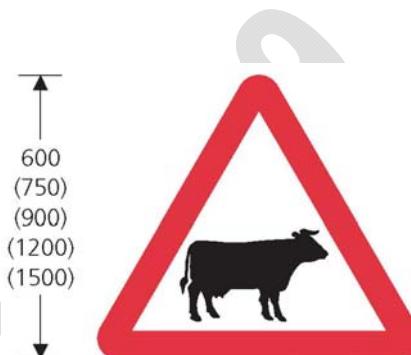


Figure 6.54
Cattle or Farm Animals.
W51

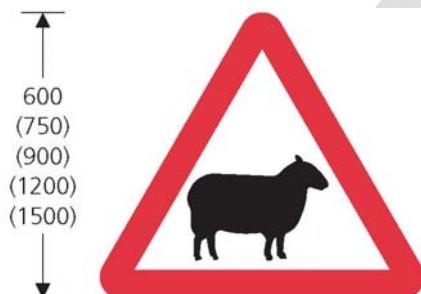


Figure 6.55
Sheep.
W52



Figure 6.56
Wild Animals.
W53

The "Accompanied Horses or Ponies" sign (Figure 6.53) should only be used where traffic volumes exceed 300 vehicles per day and where at least 5 accompanied horses or ponies regularly cross or use the stretch of road in a day.

The cattle or farm animal sign (Figure 6.54) may be used at certain locations where livestock are brought across or likely to be encountered along stretches of road. The following should be considered before the provision of such a sign:

1. The location should be in regular use for the above purpose
2. There should be evidence of an accident record or the location should be considered hazardous.
3. The available sight distance should be less than that required for the 85 percentile speed.

The sign depicting a sheep (Figure 6.55) may be used where sheep are likely to be found crossing or straying onto the road, e.g. commonage.

The sign depicting a deer (Figure 6.56) may be used where wild animals are likely to be encountered.

6.19. CROSSWINDS

The sign shown in Figure 6.57 should be used where crosswinds occur regularly and may cause road users to lose control of their vehicle. The sign can also be used when crosswinds constitute a risk of overturning high sided goods vehicles. Risk prone areas will include lengthy or elevated sections of viaducts spanning high sided valleys or in areas where 'no natural protection from crosswinds exists.

The "Crosswinds" sign can be supplemented by the plate shown in Figure 6.24 to indicate the length of road affected.

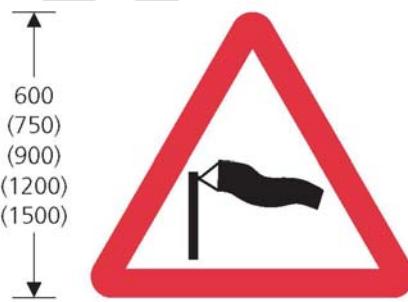


Figure 6.57
Crosswinds.
W54

6.20 PEDESTRIANS

The "Pedestrian Crossing Ahead" warning sign is illustrated in Figure 6.58 and should be used in connection with uncontrolled zebra crossings or at other pedestrian crossings where visibility of the crossing is impaired.



Figure 6.58
Pedestrian Crossing Ahead
W55

6.21 TUNNEL

The sign shown in figure 6.59 may be used in advance of a tunnel. Where the height varies across the width of the tunnel, the "goalpost" sign shown in figure 6.35 should be used.

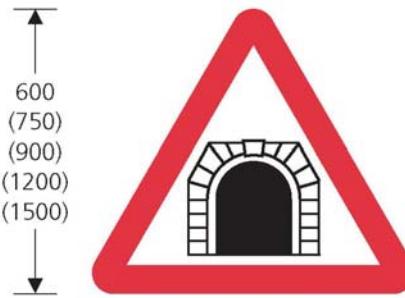


Figure 6.59
Tunnel Ahead
W56

6.22 RISK OF FALLING OR FALLEN ROCKS

The sign shown in Figure 6.60 should be used where there is a danger of rocks falling onto a stretch of road. A supplementary plate to show the distance of the stretch of road likely to be affected can be used (See Figure 6.24).

As a permitted variant, the sign may be reversed if appropriate.

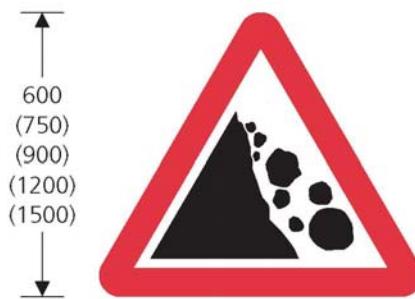


Figure 6.60
Danger of Falling Rocks.
W57

6.23 LOW-FLYING AIRCRAFT

The "Low-Flying Aircraft" sign (Figure 6.61) is for use on roads skirting or in the vicinity of airfields. It is used to warn of low flying aircraft or sudden aircraft noise which may startle road users.



Figure 6.61
Low Flying Aircraft.
W58

A supplementary plate (Figure 6.24) can be used with the sign to indicate the length of road affected.

6.24 DRIVE ON LEFT

The sign shown in figure 6.62 should be used at exits from ports and airports. It may also be used where hazards may exist on exits from long-stay tourist camps and resorts. The sign should be duplicated on the right-hand side of the road.



Figure 6.62

Keep Left
W59

6.25 ROADSIDE DELINEATORS

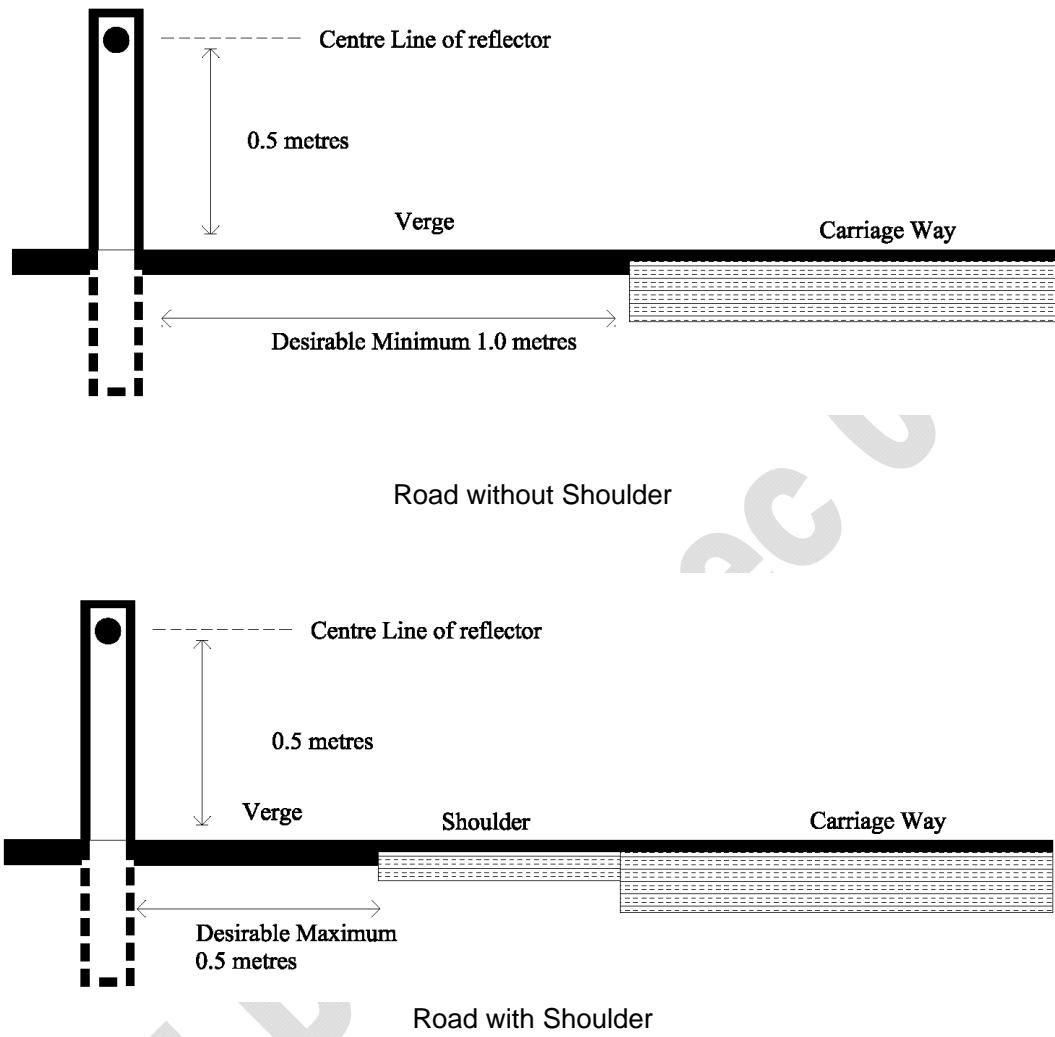
Two types of delineator are available, flexible and rigid. It is a matter for the road authority to determine which type should be used in terms of suitability and value for money.

All types of delineator should incorporate a 60mm diameter colour cube reflector of the colour specified.

Placement should be as indicated in Figure 6.63. Where drainage trenches interfere with the recommended placement, the delineators may be placed on either side of the trench at the discretion of the engineer.

Delineators can be used to indicate the edge of the carriageway on embankments, mountain roads and other points where special danger exists. They should also be used to indicate the place where the carriageway suddenly narrows such as around obstructions near the kerb like a bridge parapet. In these cases the reflectors may be affixed to the structure rather than a separate post.

Details of location and colour of delineators used on road schemes are given in the Kenyan Road Markings Manual 2010.



Note: Posts should be placed at a constant distance from the carriageway in a smooth alignment.

Figure 6.63
Placement of Roadside Delineators

6.26 MOUNTING OF WARNING SIGNS

Warning signs in rural areas should normally be mounted 1000mm to 1500mm above the carriageway level. Where spray is excessive and likely to soil the sign, the higher mounting height should be used.

Where signs are erected above footways, a minimum height of 2100mm above the pavement is recommended. If supplementary plates are used then the mounting height should be measured to the bottom of the plate.

Plates should be separated from the sign or another plate by a distance equal to the 'x'- height of the lettering. Alternatively both may be combined on a grey backing plate with 3 stroke width clearance all round.

Further details on sign mounting are given in Chapter 8.

6.26.1 Mounting More Than One Sign on a Post

Figure 6.64 shows all the allowable combinations of signs and plates that can be mounted on a single post. Normally not more than two signs can be mounted together. The combination of the sign and its associated plate can be considered as one "sign" for this purpose.

Warning signs should not be mounted with STOP or GIVE WAY regulatory signs. If mounted with other types of signs, warning signs should always appear on top.

In the event that assemblies of more than one warning sign are created, then the signs indicating hazards encountered first should be placed upper most.

No assemblies should exceed 3.75 metres above ground level. All proposed assemblies should be critically examined to ensure that the intended warning is clear.

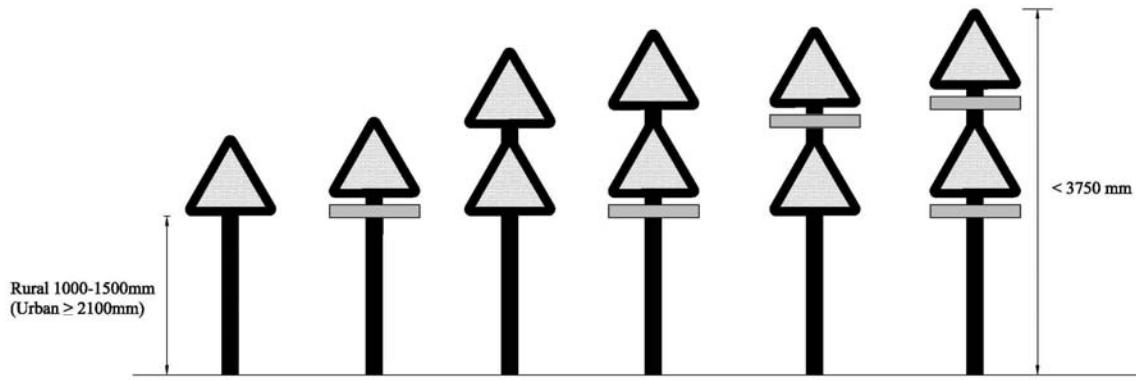


Figure 6.64
Assembly Combinations of Warning Signs and Supplementary Plates

CHAPTER 7
SIGN LOCATION

3rd Draft .Dec 09

CHAPTER 7

7. SIGN LOCATION

7.1 INTRODUCTION

In order to perform the function for which it is intended, a sign must be capable of transmitting its message clearly and in good time. The clarity of the message presented on a sign is dependent on following the guidelines in other chapters of this manual.

There are four aspects to be considered when positioning a sign:

- (i) Location in relation to the junction, or other feature, to which it applies
- (ii) Placement in relation to the edge of the carriageway and other features of the cross section
- (iii) Height above the road
- (iv) Orientation

These factors are discussed in the four subsequent sections of this chapter. Once the location of a sign has been determined, its relationship with other signs and the environment in general should be considered. Illustrations are contained in the annex to this chapter which shows examples of alternative sign locations.

In rural areas, signs should be mounted clear of any vegetation. On embankments where signs are mounted on the side slope, the bank should be extended out to accommodate the sign base.

Signs should not interfere with scenic views or with specially designed features e.g. a road bridge.

Where islands, projecting from footpaths are provided for the control of parking or as a traffic calming measure; these may be used for the erection of signs which might otherwise be obscured on the footpath.

Care should be taken to avoid the screening of heritage buildings, monuments, and buildings of architectural significance or other important items. Care should also be taken to minimize the blanking out of shop fronts and general streetscapes.

In urban areas, where practicable, signs should be combined, particularly where logos or symbols are concerned, instead of individual messages mounted separately.

7.2 SITING

Drivers must be able to read and understand a sign in sufficient time for them to safely react to its message. In order that this can be achieved, signs should be sited at the correct distance before the hazard, junction or other site to which they relate. It is also essential to ensure that signs are in fact visible from these distances and not obscured by intervening obstructions.

The siting and clear visibility distances for the different types of signs are given in tables in previous chapters. All the recommendations are classified according to the speed value of the road. The 85th percentile approach speed of private cars for the stretch of road on which the sign is to be located is the indicator used to define speed value. This is the speed which is exceeded by 15 percent of vehicles and should usually be calculated by surveying speeds at a point about 200-300 metres in advance of the position where the sign is required. The actual position of the survey will depend upon the vertical and horizontal alignment of the road, the presence and frequency of side roads and the likely visibility of the sign. It may not always be necessary to measure approach speeds where a speed limit is in force. However, it must be remembered, particularly in 50 KPH speed limit areas, that this can be a poor indication of actual approach speeds.

In siting signs, the advice given in individual chapters should be closely followed although it will not always be possible to adhere precisely to these standards due to site limitations. Variations from the standard siting distance of up to 10 percent are generally acceptable. Variations greater than 10 percent are only permissible if no other option is available.

Steps should be taken to deal with obstructions to the clear visibility of signs. Overhanging trees and shrubs should be cut back and bus stops moved if necessary. Standing vehicles that continually mask a sign may have to be prohibited. Subsequent building development and other features such as shop signs and blinds should not be allowed to obscure traffic signs once they are erected.

Care is needed to avoid any confusion which may arise, such as when a minor junction, possibly unsigned, intervenes between a directional or warning sign and the junction it serves.

Occasionally, signs must be sited on both sides of the carriageway, particularly if related to one way streets. For example the "No Entry" sign is normally so duplicated.

On all roads, duplication of speed limit signs is a requirement. On high speed dual carriageways, duplication of warning signs on the approach to a change in the main line status or configuration is recommended. Advance direction signs can also be duplicated on the central reserve of dual carriageways if it is wide enough to maintain clearances between the sign and the two carriageways (The clearances are given in the next section).

Signs may lose their effectiveness because of their setting. Smaller signs may fail to stand out against a background which is variegated and colourful and others may be overpowered by a stronger background. Advertisements behind or near signs may prove distracting. Poor and distracting backgrounds should be partially screened in an appropriate manner e.g. planting or the provision of backing boards on signs.

7.2.1 Safety Fencing

It will be necessary, in some instances, to provide safety fencing at signs to protect occupants of vehicles in case of impact. The attached flow chart will assist in arriving at a decision as to whether such fencing should be provided or not and, the appropriate type to be used.

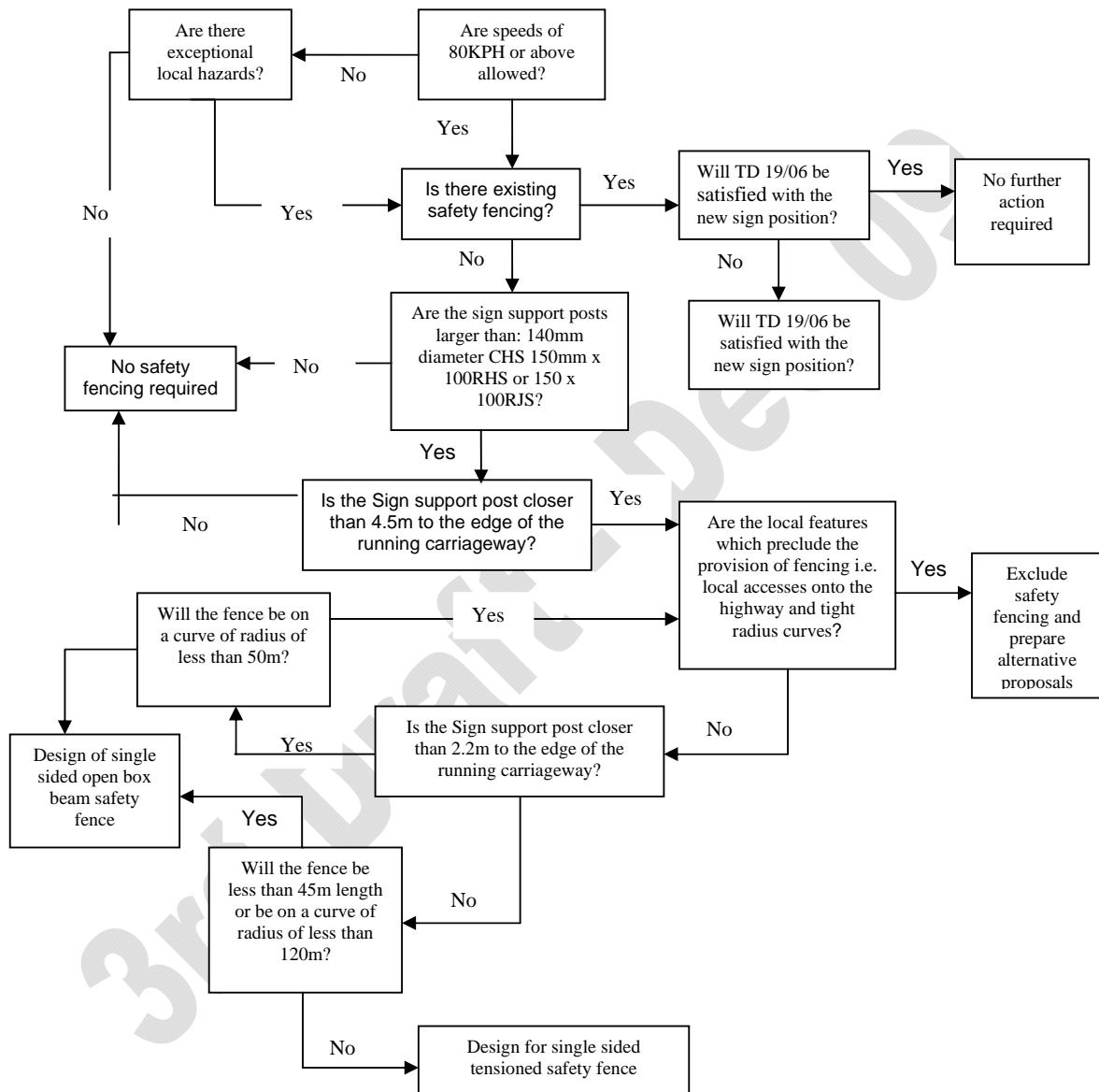


Figure 7.1
Flow Diagram for the Design of Safety Fencing

7.3 PLACEMENT

The placement of a sign is its position on the cross-section of the road. A sign should be placed so as to maintain a clearance between itself and the traffic on the carriageway.

The Nearest edge of Signs should be set at least 0.450m from the edge of the carriageway in urban areas and 0.6m in rural areas. On high-speed dual carriageways, the clearance should be at least 1.2m, and where there is a hardened verge or shoulder, the nearest edge of the sign should be not less than 0.6m from the verge or shoulder.

In urban areas the obstruction caused by posts located on narrow pedestrian footways should be minimized. Cantilever signs supported by a single post should be used wherever possible. Alternatively it may be possible to attach signs to existing structures such as walls, fences, buildings, railings and lamp posts. If signs can be mounted in this way, they should be not more than 2m from the edge of the carriageway.

7.4 MOUNTING HEIGHTS

The lower edge of signs or the supplementary plates below them should be between 1m and 1.5m above the highest part of the carriageway. If there is a likelihood of spray dirtying the sign, the greater height should be chosen. In undulating areas, the lesser dimension is appropriate for a sign located on the crest of a hill whilst the greater dimension is suitable for a sign at the bottom of a trough.

Low-level direction signs at roundabouts and junctions may be mounted lower than the standard height, but not less than 0.75m above road level.

In city centres, where congested conditions prevail, higher mountings may be required if standing vehicles consistently prevent signs from being seen. Alternatively cantilever signs or specially designed gantries can be provided on which to mount the signs.

In built up areas, signs may have to be mounted higher than 1.5m. If signs are erected on footways, a minimum of 2.1m should be provided as headroom for pedestrians. A height of 2.3m is preferable. The previous section indicates circumstances in which signs may be erected on structures adjacent to pedestrian footways.

If signs are erected on structures, mounting heights less than 2.1m can be used, provided that the signs can still be seen, do not obstruct pedestrians, and are out of the range of spray thrown up by passing vehicles. See Figure 7.2 below.

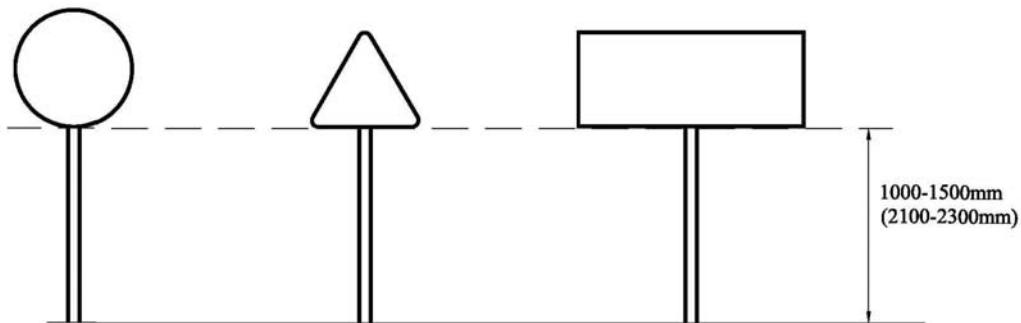


Figure 7.2
Mounting Heights.

7.5 ORIENTATION

Sign orientation is important as signs must be sited in order to avoid specula reflection caused by the head lamps of approaching vehicles. In areas where street lighting is not provided, specula reflection from traffic signs can be particularly troublesome as drivers often have to use head lamps on full beam to see the road ahead clearly.

To eliminate or minimize the effects of specula reflection, signs should be set at an angle from the beam of the head lights of approaching vehicles.

On a straight carriageway, the horizontal axis of a sign should be set at an angle of 95° away from the general alignment of the left hand side of the carriageway on the approach side. This is illustrated in Figure 7.3 below.

On some bends and complicated winding alignments, compromise solutions may have to be adopted, but generally it will be adequate on a right hand bend for a sign to be set at an angle of 90° to a line tangential to the left hand edge of the carriageway at the point where the sign is erected. This is shown in Figure 7.4 below.

Signs erected on left hand bends should be orientated at 95° from a line joining the edge of the carriageway at the sign with a point on the same edge of carriageway 200m in advance of the sign as shown in Figure 7.5.

Signs are normally to be set transverse to the line of travel of approaching road users. The main exceptions to these are the signs and plates indicating parking restrictions and taxi ranks which should be parallel to the kerb and also some direction signs which must point approximately in the direction to be taken.

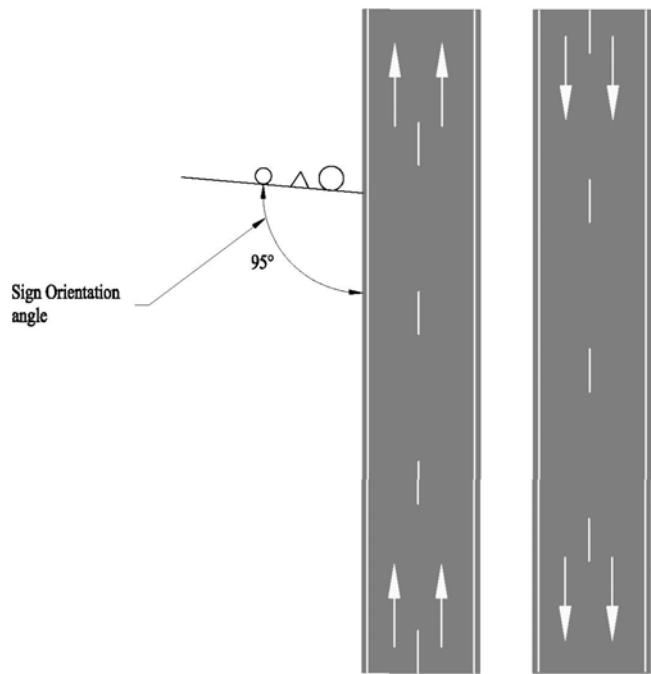


Figure 7.3
Orientation of sign on straight lengths of road

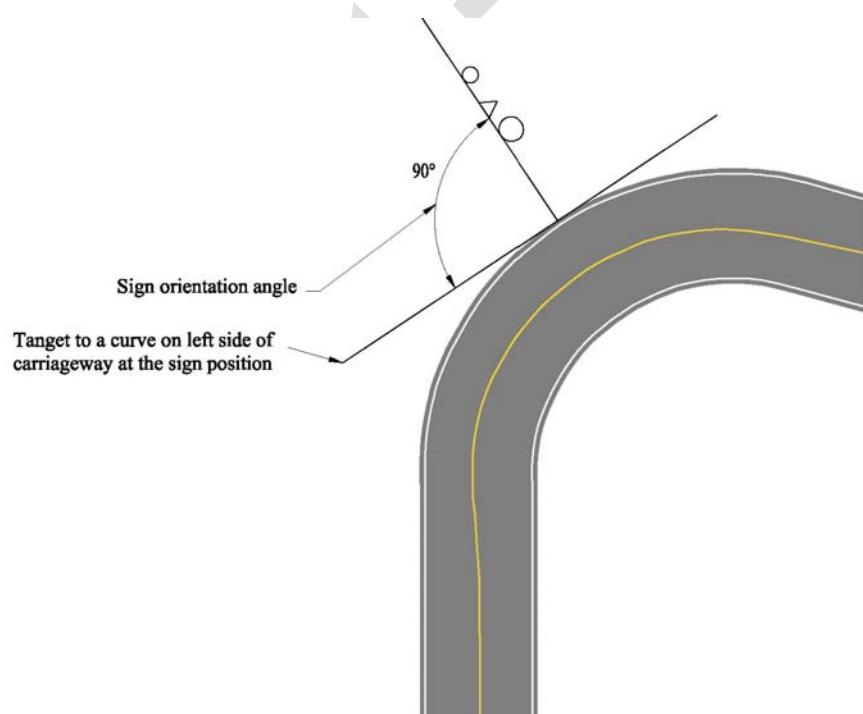


Figure 7.4
Orientation of sign on a right hand bend.

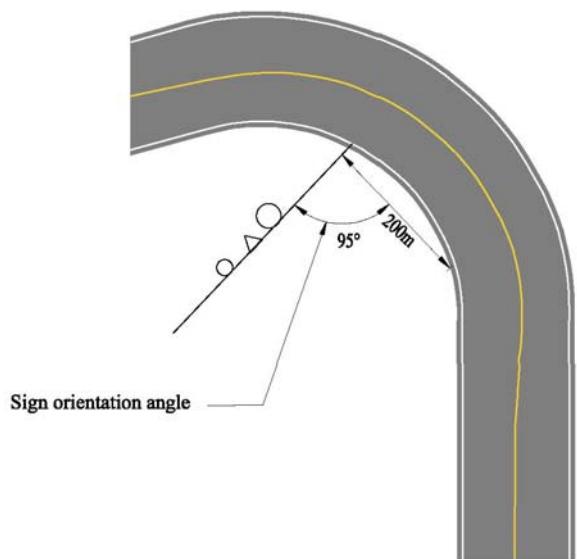


Figure 7.4
Orientation of sign on a left hand bend.

7.6 PROVISION FOR THE VISUALLY AND MOBILITY IMPAIRED

Where street furniture e.g. signs, lighting poles, traffic signal poles etc., is being installed, every consideration should be given to whether, or not, the installation or its supports would impede in any way the free circulation on the footpath by the visually and mobility impaired, the elderly and people with prams. The following guidelines, of particular concern to the visually and mobility impaired, are equally applicable to all such installations:

- (1) Street furniture should be carefully and consistently located so as not to impede the walking area and should provide directional guidance. Supports should be at the back of the footpath or as close to the kerb edge as is practicable.
- (2) Street furniture should be kept to a minimum.
- (3) Street furniture should have rounded edges.
- (4) Street furniture, when at low level, should be detectable to assist long cane users.
- (5) A clear headroom of 2.1m should be maintained in all pedestrian areas.
- (6) Where difficulties in placement arise, the local authority should have consultations with affected local parties and, if necessary, the National Rehabilitation Board before installing street furniture.

7.7 ANTI-ROTATION

To avoid interference, signs should normally be at least 2.1m above the adjoining ground level. Where it is necessary to mount signs at a lower level, a minimum of 2 post mounting should be used.

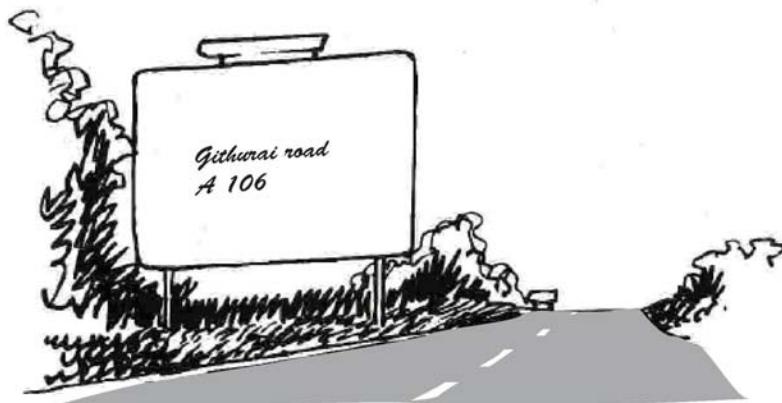
Fixing clips for single post mounted signs should have anti rotational grooving. Only the clip size specific to the post diameter used should be affixed.

Standard posts are drilled through near the bottom to permit the use of a pin preventing rotation in the ground. This pin should be provided in all cases of single post mounting.

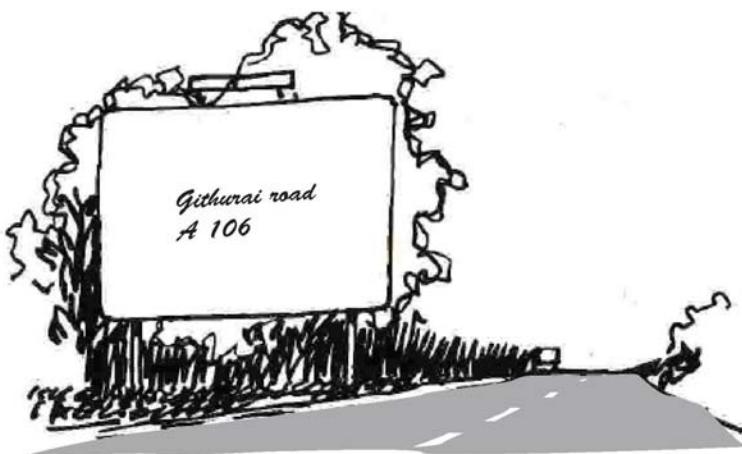
Badly placed sign clutters street and blocks view

Sign sited against house silhouette may be preferable

Figure A 7.1
Unobtrusive Siting of signs in Urban Areas



Sign sited against sky.



Sign sited against trees preferred



Trees mask the sign rear

Figure A 7.2 Vegetation can be Used to Mask Signs

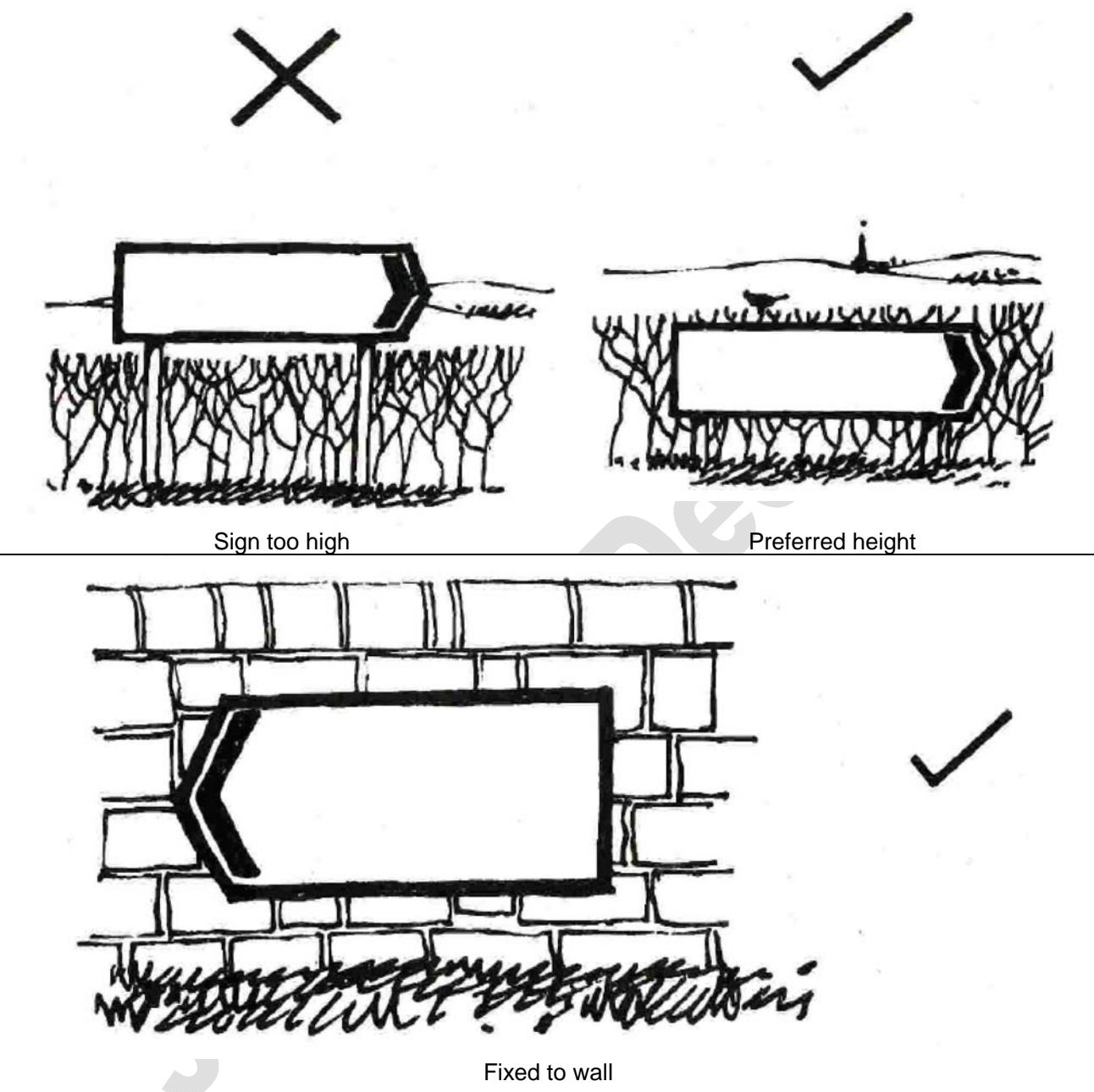


Figure 7.4
Sign Heights should be altered in order to lessen Environmental Impact or Take
Advantage of Existing Walls or Structures

CHAPTER 8
SIGNS FOR ROADWORKS

3rd Draft - Dec 09

CHAPTER 8

8 SIGNS FOR ROADWORKS

8.1 INTRODUCTION

This chapter describes the signs recommended for use at roadworks. The first section describes the design of signs which are recommended for use at both urban and rural roadworks. Section 8.2 deals specifically with works at urban locations and 8.3 with rural locations.

While it is obviously not possible to cater specifically for all situations requiring signposting, the layouts shown have been chosen so as to demonstrate the principles to be used in the treatment of various typical situations. These principles can be applied to other layouts.

The procedures set down here are presented as a guideline to help those whose responsibility it is to ensure the safe and orderly passage of traffic including pedestrians through a road works site. It is the intention that these guidelines be applied, not always literally, but sensibly, taking account of whatever unique practical features obtain at each work site. In particular the prevailing sight lines and any deceptive or distracting features should be taken into consideration. Uniformity in presentation to the road user should be such that he or she would know from previous experience what to expect. Uniformity requires that similar hazards be treated similarly and that unique hazards be treated uniquely or differently.

Detour Signs and Warning Signs associated with roadworks should have a unique colour, orange-yellow in place of the traditional golden-yellow. This will emphasize their unity as a group until the road works are passed.

For other sign types:

Mandatory is denoted by BLUE

Prohibitory is denoted by RED

Informatory is denoted by BLACK / WHITE.

Suitable colour shades for roadwork signs are indicated in the following table:

Colour	BS.381c No.	Munsell Reference
Blue	109	2.5 PB 3/7
Green	-	0.65 BG 2.84/8.45
Orange	557	2.5 YR 6/14
Red	537	7.5 R 4.5/16
Yellow	356	10 YR 7.5/12

Flashing and Steady-state lamps should be in light-yellow in place of the current regulation red.

8.2 Recommended Sign for Road works

The following signs are recommended for use at roadworks sites. Details of dimensions etc., are given in the annex to this chapter. Supplementary information plates may be used in conjunction with a number of these signs, indicating the distance to the hazard or activity ahead. Additionally, for stability on the ground, the Triangular warning signs may be mounted on a rectangular frame

8.3 Roadworks Ahead

This sign is used in advance of all roadworks and should be the first sign a driver sees on approaching roadworks. It may include a supplementary plate indicating the nature of the work. Examples of such plates are:

- Salting;
- Sweeping;
- Gritting;
- Road Blocked;
- Open Trench;
- Tree Cutting
- Road Flooded;
- Grass Cutting;
- Line Painting
- Snow Clearance;.
- Survey Party;
- Lighting Repairs



Figure 8.1
Road works Ahead
RW1

8.4 Uneven Surface

This sign should be used where it becomes necessary to direct traffic over a temporary uneven surface.



Figure 8.2
Uneven Surface
RW2

8.5 Slippery Road Ahead

This sign is appropriate where the road has become slippery due to roadworks e.g. mud deposited on the surface. Where this sign is used in a position unconnected with current roadworks e.g. to indicate a fatted up surface dressing, it should have a yellow background



Figure 8.3
Slippery Road Ahead
RW3

8.6 Road Narrows

Care must be taken in using these signs, that the one appropriate to the situation is used.



Figure 8.5
Road Narrows From one side (Right)
RW4



Figure 8.6
Road Narrows
RW5

8.7 Manual Traffic Control Ahead

These signs indicate the presence ahead of manual traffic control either by flagman or Stop/Go battens. See Figure 8.7.

8.8 Traffic Signals Ahead

This sign indicates the presence ahead of traffic control by means of temporary signals. See figure 8.8 below.



Figure 8.7 Manual Traffic Control Ahead
RW6



Figure 8.8
Traffic Signals Ahead
RW7

8.9 Two-way Traffic Ahead

This sign is used where a one-way street is converted to two-way operation for the purpose of carrying out roadworks.

This sign should also be used when a road which has been converted to one-way operation is restored to two-way traffic following completion of roadworks. The period immediately following the reopening of the road to two-way traffic can be hazardous because drivers have become accustomed to one-way operation. The sign should be left in position for a period of two to three weeks and then removed. When the two-way sign is used in this context, it should have a yellow background.



Figure 8.9
Two-Way Traffic Ahead
RW8

8.10 Signs for Lane Closures Ahead



Figure 8.10
RW9



Figure 8.11
RW10



Figure 8.12
RW11



Figure 8.13
RW12



Figure 8.14
RW13



Figure 8.15
RW14

8.11 Major Road Works Ahead

This sign should be used in advance of major works which will continue for a period of months. It should be mounted on poles, properly set into the ground, not in drums. The sign shown in Fig 8.1 should be used in association with this.



Figure 8.16
Major Road works Ahead
RW15

8.12 No Through Road (Figure 8.17)

This sign is used at the entrance to a road to indicate that it is closed to through traffic but still accessible for local traffic.



Figure 8.17
No Through Road
RW16

8.13 Road Closed (Figure 8.18)

This is a useful sign to have in stock for emergency situations such as trees across the road, etc.



Figure 8.18
Road Closed
RW17

8.14 Delineation of Roadworks

The most commonly used devices to guide traffic around roadworks are cones and drums.

There are many different schools of thought on which is the more appropriate to use in a given situation. Cones are very transportable and can be quickly deployed. However, they have the disadvantage of being unstable in windy conditions and being easily knocked over by traffic. They are also easily removed by vandals. Drums on the other hand are stable, present a solid appearance to drivers and are accordingly treated with more respect than cones. However, they occupy more road space than cones and require a considerable amount of maintenance.

A decision on whether to use cones or drums depends on a number of factors. The following guidelines are suggested:

(1) Short Term Roadworks:

Minor works which will be completed within one day and works of a mobile nature are best protected entirely by cones. Their transportability and ease of deployment are an advantage in such cases. The presence of personnel on site also acts as a deterrent to vandalism and theft of the cones. Examples of works which might come within this category are:

- a) Routine road maintenance
- b) Manhole inspection
- c) Public Lighting maintenance

(2) Long Term Roadworks:

For excavations that are to be left open for more than one day, it is recommended that the limits of the works be outlined by means of drums, with barrier tape strung between them and the lead-in and exit tapers be marked by cones. In urban areas, gaps between barrels should not be greater than 1.5 metres across each end of the excavation and not greater than 3 metres longitudinally. The spacing of cones should be in accordance with Table A8.1 for urban works and Table A8.5 for rural works.

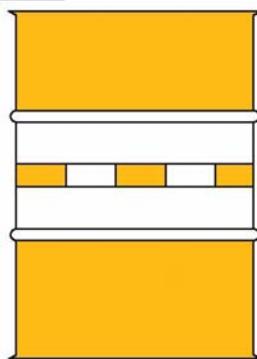


Figure 8.19
Drum
RW18

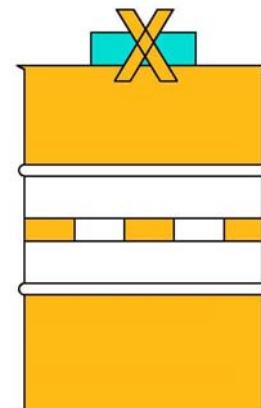


Figure 8.20
Do Not Weight Down A
Drum Using A Block
RW19

8.15 Drums:

Drums should be painted with red and white horizontal bands as illustrated in Figure 8.19. They should receive an undercoat and gloss coat. The latter gives them a brighter appearance and also facilitates cleaning. A reflective strip with alternative red and white segments should be applied around the circumference.

Drums should not be weighted down by placing a heavy weight such as a concrete block on top of it as shown in Figure 8.20. This is a highly dangerous practice, because, in the event of the drum being struck by a car, the block may go through the windscreen.

The recommended method of weighting drums is to remove the tops and fill them quarter full with sand or gravel. They must not be overfilled as this would make them too heavy and a source of danger to road users.

The practice of placing planks across drums as shown in Figure 8.21 is not recommended. When used across the end of the works, the edge of the plank presents a very small area to the road user and can become very difficult to see at night. It is particularly hazardous for motor cyclists who may be inclined to drive between the drums.

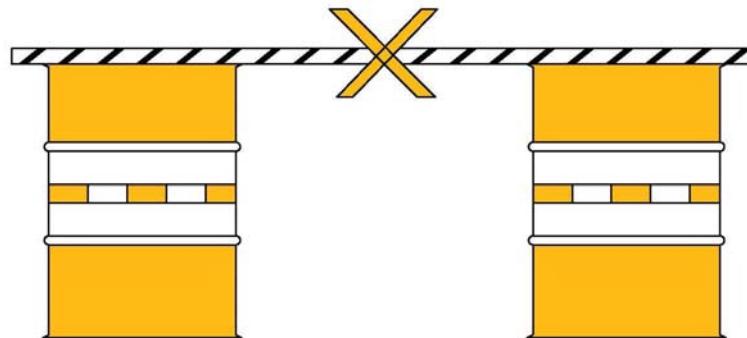


Figure 8.21
RW20

An alternative method of creating a continuous barrier around roadworks is by the use of barrier tape in conjunction with drums. This tape takes the form of a cord with free hanging reflective and fluorescent strips or alternatively a continuous red and white plastic tape.

Barrier tape should not be used to span large gaps between drums. In windy weather the tape tends to billow out causing passing traffic to swerve. Also, if the tape is attached to un-weighted drums, the wind can knock the drums over. The maximum spacing to be spanned by tape is 3 metres. Tape should be kept taut at all times.

Barrier tape is not suitable for protecting deep excavations.

8.16 Cones:

As a general rule, cones 0.75m to 1m high should be used. Additional stability may be obtained by surrounding the base with sand bags - NOT concrete blocks.

8.17 Lamps

Lamps should always be used along the length of an obstruction during the hours of darkness. Lamps should have yellow lenses and show a steady light in both directions. Flashing lights should not be used along the length of the works. These should be used only at the extremities to indicate the presence of a hazard. It is desirable that all lamps have a retro-reflective ring around the lens or have reflectors fitted to the body of the lamp. This ensures that, in the event of light failure, the lamps can still serve as a useful warning device.

8.18 Keep Left / Keep Right / Pass Either Side:

These are most useful guidance devices, used to indicate to drivers to keep left , keep right or pass either side. They consist of white arrows on a blue reflective background with a white border, as shown in Figures 8.22 to 8.24. The use of supplementary message signs is not recommended as a symbol is assimilated by a driver in a shorter time than that taken to read a worded message.



Figure 8.22
Keep Left
RW21



Figure 8.23
Keep Right
RW22



Figure 8.24
Pass Either Side
RW23

This type of sign should not be used on a footpath as guidance for pedestrians

8.19 Chevron:

The chevron illustrated in Figure 8.25 indicates a sharp change in direction and is used to guide traffic around roadworks in situations where it is not possible to provide a lead-in taper of cones, such as at a junction.



Figure 8.25
Chevron
RW24

8.20 PROTECTION OF PEDESTRIANS AT ROADWORKS

Excavations on footpaths can constitute a serious hazard for pedestrians, particularly for the visually impaired and mobility impaired. The following guidelines are recommended for their protection:

1. Where a footpath is obstructed by roadworks, the entire area so obstructed should be surrounded by a protective barrier. The barrier should be substantial enough to prevent a person from tripping over it. It should also be capable of giving positive guidance around the obstruction for a visually impaired person. Barriers may consist of identical frames hinged together. They are made from square hollow section steel onto which is welded a wire mesh. Each frame is approximately 1m square. A number of these barriers may be hinged together as demonstrated in Figure 8.26.

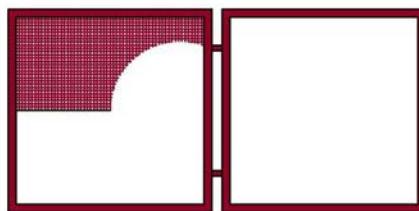


Figure 8.26
Protective Pedestrian Barrier
RW25

2. Such barriers are ideal as a protection for a small opening where the barriers can be arranged in a closed box. They are unsuitable for the protection of a long length due to their inherent instability in this configuration. In such circumstances, one of the many patent plastic barriers which are available on the market should be used.
3. When the footpath is completely blocked, an alternative passage must be provided on the carriageway. This passage must be kept clear of obstructions such as tools and timber etc. and be protected from passing traffic by means of cones or barrels. Examples of the deployment of signs and barriers are shown in the annex.



Figure 8.27
Crossing Not In Use
RW26



Figure 8.28
Pedestrians Keep Right
RW27



Figure 8.29
Pedestrians Look Left
RW28

8.21 SIGNS FOR PEDESTRIANS

The sign shown in Figure 8.27 may be used when road-works on a pedestrian crossing make the crossing unusable. They should be attached to the signal or beacon poles, and face across the carriageway. Signals or beacons should also be switched off.

The sign shown in Figure 8.28 should be used with an appropriate arrow in a situation where a new temporary route has to be made for pedestrians and the new route is not obvious.

When the direction of vehicular traffic flow at a pedestrian crossing is altered, the sign shown in Figure 8.29 with appropriate wording (Look Left/Look Right) should be provided.

8.22 TRAFFIC CONTROL AT ROADWORKS

In order to maintain two-way traffic operation at roadworks sites, a residual unobstructed width of at least 5.5m is required. Where this width is not available, it should be further restricted to not more than 3.7m in order to discourage two-way operations. The minimum width required to carry a single lane of traffic is normally 3m, but car only traffic can be maintained at 2.5m.

On minor roads with light traffic, the single lane will operate by the normal "give and take" method and no specific traffic control is needed. However, the following criteria must be met for this method to work safely:

1. Both ends of the site must be inter-visible.
2. The length of single lane operations should not exceed 50m.

If the site is not suitable for "give and take" operation some form of traffic control is required.

The most basic type of control is by means of flagmen or STOP/GO signs. The use of the latter is preferred as the message imparted to the driver is more precise than that imparted by the waving of flags.

STOP/GO signs' consist of two signs mounted back to back on a pole so that they can be easily rotated to show in either direction. (See Figure 8.30)

Roadworks up to 20 metres in length can generally be controlled by one person using a STOP/GO sign. When the length to be controlled is greater than 20 metres, it is recommended to have this sign at each end.

Where the length is greater than 100 metres, it becomes difficult to control traffic manually and, therefore, more sophisticated methods of control are recommended.



Figure 8.30
Stop/Go Sign
RW29

8.23 TEMPORARY TRAFFIC SIGNALS

When the length of the single lane is too long for manual control or when control is required during the hours of darkness, temporary traffic signals may be used.

An all-red period should be provided of sufficient duration to clear the shuttle lane. Where traffic is approximately equal in both directions, fixed time operation may be used. Where flow is tidal, such as on major commuter routes, timings must be adjusted during the day to cater for the varying traffic flows, or preferably, the signals should be operated in the "vehicle actuated" mode.

8.24 DIVERSION

An alternative to temporary traffic signals is to restrict the road to one-way operation only, by diverting the traffic in the opposing lane via alternative routes.

When traffic is diverted it is important that it is guided positively around the diversion and also notified when the diversion ends. The signs shown in figures 8.31 to 8.33 are recommended for diversion.

Advance warning of diversion ahead is provided by the sign shown in figure 8.31. Alternative distances 100m, 200m may be used as appropriate.

One of the signs shown in figure 8.32 and 8.33 should be used, with an appropriate arrow, where there is only one alternative route. Where it is possible to go either right or left, these signs should NOT be used side by side as this causes confusion. In that situation, specific destinations, with appropriate arrows should be indicated.

Further signs with arrows pointing in the appropriate directions are used at all points of decision along the diversion.

The signs in figures 8.34 and 8.35 may be used, with appropriate arrows, instead of “diversion” signs, at intermediate points along the diversion route, where the diversion route already carries significant traffic. The wording indicate that the message only applies only to traffic which has already been diverted.

The sign shown in figure 8.36 is used with an appropriate arrow to indicate a return to the original route.

Signs shown in Figures 8.37 and 8.38 are used on divided roads where one carriage way is converted temporarily to two way operation during road works. They indicate that traffic should cross over to the other carriageway.



Figure 8.31
Diversion ('m') Ahead
RW30



Figure 8.32
Diversion Right
RW31



Figure 8.33
Diversion Left
RW32



Figure 8.34
Diverted Traffic Straight Ahead
RW33



Figure 8.35
Diverted Traffic Right
RW34



Figure 8.36
End Diversion
RW35



Figure 8.37
Crossover To Left
RW36



Figure 8.38
Crossover To Right
RW37

Figure 8.39
RW38Figure 8.40
RW39Figure 8.41
RW40Figure 8.42
RW41

The sign shown in figure 8.39 indicates the separation of opposing traffic at roadworks.

The sign shown in figure 8.40 indicates the end of traffic separation at roadworks

The sign shown in figure 8.41 indicates that overtaking is prohibited. The end of the prohibition is indicated by the same sign with a supplementary plate as shown in figure 8.42.

8.25 DEPLOYMENT OF ROADWORKS SIGNS

The operation of signing roadworks is one which should be planned with the same care as other aspects of the work. If the situation is covered specifically by the typical layouts shown in the annex, the appropriate layout may be used to determine the number of cones, signs etc. required. If the situation is not specifically covered, the signs requirement can be determined by the application of the same principles contained in the layouts. The main criteria to be borne in mind when planning a sign layout are:

1. Adequate advance warning;
2. Lead-in taper, where possible;
3. Safe guidance past roadworks;
4. Protection of works personnel.

8.26 PROCEDURES FOR SETTING OUT SIGNS:

1. A responsible person should be designated the task of setting out signs and cones etc. He/she should be responsible for the maintenance of the signs throughout the duration of the works, ensuring that they are cleaned regularly and that signs and cones which are removed to allow access for site traffic are immediately replaced.
2. All personnel on site should wear brightly coloured jackets with a combination of fluorescent material (for daytime visibility) and retro-reflective material (for night time visibility).
3. The first sign a driver should see on approaching roadworks is the roadworks ahead sign. A supplementary plate may be added to this sign indicating the nature of the works.
4. The setting out of cones and signs etc. should be performed facing oncoming traffic. Setting out should commence with the roadworks sign at the recommended distance from the hazard. Signs and cones should then be set out in sequence moving back towards the obstruction.
5. Signing should be confined to those signs which are relevant to the situation. Too many signs can detract from the message they are intended to convey. A driver attempting to assimilate a number of different signs in rapid succession may miss the relevant ones. It is better to use no sign at all than an incorrect one. Motorists, who are continually confronted with inappropriate signs will eventually develop total disregard for all signs.
6. It is good practice for the person who set out the signs to drive through the area and check the signs from a motorist's viewpoint. This should be done from all approaches.
7. As work proceeds along the carriageway, signs should be repositioned as required.
8. Permanent signs which are temporarily made redundant by virtue of the roadworks should be covered up.
9. The site should be kept tidy, and all mud carried onto the road should be cleaned off.
10. On completion of roadworks, all roadwork signs should be immediately removed.

8.27 URBAN ROADWORKS

Some typical road works situations, showing appropriate locations of signs, cones, etc are set down in figures A8.15 to A8.28 in the annex. These are designed to be viewed from the perspective of an approaching driver. In urban areas it is not always possible due to the presence of parked cars, entrances, traffic islands, etc, to follow the diagrams precisely. However, the general principles should be followed insofar as this is possible.

The spacing of signs and length of taper shown in the diagrams are those appropriate to speeds of 50 KPH and a hazard width of 3.2m unless otherwise stated. For different speeds and widths of hazard see Tables A8.1 and A8.2. The layouts shown are as follows:

Figure No.	Description	Notes
A8.15 and A8.16	WORK ON FOOTPATHS	
A8.17	GIVE AND TAKE	Shuttle working – self explanatory
A8.18	ONE WAY SHUTTLE WORKING WITH FLAGMAN	This layout is suitable for daylight use only
A8.19	ONE WAY SHUTTLE WORKING WITH TEMPORARY SIGNALS	This layout is suitable for day or night use
A8.20	TWO WAY STREET – ROADWORKS FORCING TRAFFIC OVER CENTRE LANE	This arrangement should be used in situations where traffic is forced over the centre line by roadworks and where a minimum width of 5.5m is still available to traffic. In these circumstances it is essential to control opposing traffic in order to avoid head-on collisions.
A8.21 to A8.24	Self explanatory	

Figures A8.25 to A8.28 inclusive are designed for use on major commuter routes where the loss of a lane during peak hours can have a serious effect on traffic flow. The idea behind these layouts is to make the optimum use of available road space by temporarily taking a lane from the off peak side of the street for use by peak traffic. The situations illustrated relate to roadworks on the inbound side of the carriageway. The same principles apply to the outbound side. In the case of roadworks on the inbound side of the carriageway, the morning peak layout should be in position by 7.30 a.m., reverting back to the off peak layout at 10.00 a.m. For roadworks on the outbound side, the corresponding times are 4.00 p.m., and 6.30 p.m., respectively.

8.28 RURAL ROADWORKS

The procedures outlined in this section apply to roads in rural areas. Urban situations require to be treated differently and are described in the preceding section.

The first consideration is to decide what type of situation is to be provided for. In general there are three situation types which may arise singly or in combination. They are:

- Fixed Works
- Mobile Works
- Detours

These require very different treatments as will be seen in their different presentation here.

8.29 FIXED WORKS

The first and' most important step, where fixed works are concerned, is to choose a good traffic layout which must, of course, be consistent with the plan for the construction work.

8.30 CHOOSING A LAYOUT

Nine possible layouts which make provision for a like number of typical work situations are presented in Figures A8.29 to A8.37 in the annex to this chapter. Most other work situations, and there are many, can be dealt with by the intelligent application of the same principles illustrated. Six of these layouts apply to two-way roads and three to four-lane divided roads. Planning a layout is a step which should be integrated with the works plan.

The correct sequence in every situation is first to visit the proposed site, viewing it from all traffic approaches. Secondly, plan the work sequence and the traffic layout simultaneously. Finally, select the type of control and the resulting requirement for signs, cones, barriers, lighting and other control devices. To plan the work in any other sequence may result in confused or ill conceived layouts.

Different traffic layouts may be appropriate as the site works proceed. When this arises, subsequent layouts should not emerge by default but should be thought through and planned as was the first.

When a layout has been decided, the signs and other control devices may be selected with the help of the layout illustrations. Thus a full list of sign and device requirements and their availability can be established before any site work commences.

See Figures A8.29 to A8.37

A schedule of most sign requirements is included in the annex. This includes the relevant current statutory signs and several additional signs. It is also customary and proper to provide in certain cases rectangular signs with the message MAJOR ROAD WORKS AHEAD. However, the overriding requirement for the statutory "MAN-WITH-SHOVEL" sign is paramount, regardless of what other signs are employed.

It is good practice for a Road Authority / Electricity Supply Authority / Telecommunications Authority or other statutory undertaker to identify itself by way of name-plate sign at a work site. With the above exceptions it is desirable to keep any other unauthorized signs to a minimum, subject to any genuinely unique hazards referred to earlier.

8.31 MARGIN FOR SAFETY

It is good practice to provide a buffer zone between the point where a traffic lane is closed to traffic and the work area proper (See Figure A8.35) and likewise between opposing traffic streams in the same lane (See Figure A8.37).

The buffer space provides a margin of safety for both traffic and workers on fast roads. If a driver does not see the warning, or fails to negotiate a lane closure, a buffer space provides room for a "crash" stop before the work area. The buffer space should be kept free of workers, materials and vehicles.

8.32 LIGHTING

There are three distinct types of lighting and there are specific applications to which each is most suitable. These types are:

1. Floodlighting;
2. Flashing Lamps;
3. Steady-State Lamps.

Good floodlighting of the work area is essential for the safety and efficiency of the work team in the case of night shift working. There is need for protection to prevent workmen from stepping inadvertently from the illuminated work area into any non-illuminated traffic lane. The positioning of the lighting units should not be one to cause glare to drivers. Floodlighting a work area cannot be regarded as obviating the ordinary need for warning lamps and reflectorization.

Flashing lamps are best suited for hazard identification and may be positioned at prominent points, terminal points, points of change in direction and points of special hazard. Strobe lighting is best reserved for works vehicles and only when in actual use.

Steady-State lamps are most suitable for delineating the edge of the travelled way through and around the work area.

8.33 REFLECTORIZATION

Reflectorization of signs, chevrons, barriers and other devices is desirable and the overall level of reflectorization ought to be such that the work area is adequately marked if the lighting is vandalized or otherwise fails. The use of fluorescent strips alongside the reflectorization on chevrons and barriers adds to their daylight efficacy. The use of Class 1 type reflective material is recommended in this instance.

8.34 COLOURS

Detour Signs and Warning Signs associated with roadworks should be in a unique colour, orange in place of the traditional golden-yellow. This will emphasize their utility as a group until the road works are passed. For other sign types blue generally denotes mandatory, red prohibitory and black-white information.

Flashing and Steady-state lamps should be in light-yellow.

8.35 ONE-WAY OPERATIONS

Where site work on two-way roads restricts the available road width, it may become necessary to implement one-way shuttle operation using either, traffic signals or flag / battenmen.

Traffic signal control is appropriate where there is considerable traffic, where the interruption is of long time duration including hours of darkness, or where the ends of the one-way section are not inter-visible.

Flag / battenmen control is appropriate where the ends of the one-way section are inter-visible, where duration is confined to daylight periods, where works are of a mobile nature and for unscheduled interruptions arising from fallen trees, broken water-mains, collapsed culverts, etc.

It should be very clear to road users as to whether one-way or two-way operation is in force. If one lane operation is intended, there should clearly be insufficient width for two vehicles. When vehicles are required to wait for green before proceeding, a signed waiting area should be identified such that obstruction is not caused to any opposing vehicle which may first have to clear the restricted right of way. Where a one-way shuttle operation ceases at works "knocking-off-time", all related signing should be covered, lest a driver be induced not to expect an opposing vehicle.

8.36 IMPLEMENTING LAYOUT GUIDELINES

The following points of detail are intended to augment the illustrated guidelines in layouts A8.29 to A8.37 in the annex to this Chapter.

1. Passing vehicles, having been alerted by the ROAD WORKS signs should be guided through the work area and be correspondingly informed when they are about to leave it.
2. Where a pedestrian footpath is being obstructed, alternative safe provision for pedestrians must be provided
3. Prevailing traffic speed and roadway type are the principal considerations in layout. These dictate the distance of the first sign and the spacing of subsequent signs in advance of the hazard. High speed roads require larger signs and, at night, more warning lamps. Relevant guidance is given in Tables A8.4, A8.5 and A8.6 in the annex.
4. The Triangular sign MAN-WITH-SHOVEL should precede every fixed-road-works site.
5. Signs, lamps and other equipment should be cleaned periodically and should be replaced if damaged. The quality of the message which a sign imparts depends on how clean and smart its appearance is to the public eye.
6. Paraffin lamps should be filled, wick trimmed, batteries of electric lamps replaced, and lenses cleaned before they have lost their standard efficiency.
7. On high speed roads, a buffer area clear of vehicles and fixed obstructions, should, where possible, separate the work area from approaching vehicles.
8. Whenever the nature of the work permits, the work area should be clearly and positively marked off by cones, drums, barriers, garlands, etc.
9. The marked-off area should encompass all works machines, stored material and debris.
10. Access to the work area should be clearly identifiable, have good sight distance and not cause ambiguity to passing vehicles.
11. The use of STOP-GO battens as illustrated in Layouts A8.32 and A8.34 is appropriate to daylight only. The battenman should wear an orange fluorescent waistcoat and should be trained on how to deploy the batten.
12. Work staff performing any hazardous task outside the railed-off work area should wear a safety waistcoat made in orange fluorescent material and with reflective strips if worn at night.

13. Drums, cones, barriers and chevrons all have their appropriate uses; they should be fresh and clean in appearance and where appropriate carry reflective bands.
14. A loose weight must never be placed on top of a barrier or drum. Stability may be added to drums by quarter filling with sand or clay, but not water.
15. Brightly coloured tape or catenary marker is a useful aid to marking off a work area but is insufficient protection for an open trench or drop.
16. The lamps shown in Layouts A8.29 to A8.31 are included as a reminder only and their placement is merely indicative. The characteristics of each individual site should have a major bearing on the number and positioning of lamp units.
17. Mud and debris dropped by work-vehicles should be frequently cleaned off.
18. Parked vehicles should not obscure any sign or danger area.
19. The site should be kept tidy and orderly; it improves the public image and makes for a safer work environment.
20. Signs and other directions should be covered whenever they are not meant to apply and should be removed immediately their further presence is not necessary.

8.37 MOBILE WORKS

The nature of mobile works requires a different approach to the practice of signing and control. Highly mobile operations like mechanical sweeping render fixed signing impractical. Emergency work such as tree clearance during a storm may require an overseer to choose between sawing a tree trunk and waiting for road signs. Centre-line painting may require that traffic be kept off even after the works are performed. These examples illustrate the need for much greater decision making at the site of the problem. Levels of signing are advocated here for various categories of mobile works; but these are general recommendations which cannot take account of so many local circumstances. Local judgment must decide on what is a reasonable level of sign provision in the light of all the circumstances.

Surface dressing represents a very large element of mobile works. Recommendations in the DoT publication SURFACE DRESSING, covering signing and the use of a pacing vehicle, take account of the unique nature of that work and these should continue to apply. A change in the colour of signs to conform with other signs related to road works is now appropriate.

Four levels of warning related to mobile works are recognized here. These levels depend on the work type, the amount of traffic and the available clear sight distance. Appropriate levels of warning are indicated in Table 8.1.

8.38 FOUR LEVELS OF WARNING

1. NO SIGNING
2. ROAD WORKS SIGN ON VEHICLE, STROBE LIGHTING IN POOR VISIBILITY
3. ONE FLAGMEN WITH OR WITHOUT (2) ABOVE
4. FIXED SIGNING

Traffic Volume	LEVEL OF WARNING					
	Heavy		Medium		Light	
Sight Distance	Good	Poor	Good	Poor	Good	Poor
WORK OPERATION						
Snow Clearing	1,2	1,2	1	1	1	1
Salting/Gritting	1,2	1,2	1	1	1	1
Sweeping (Mechanical)	1	1	1	1	1	1
Patching	4	4	2,3,4	2,3,4	1	1
Grass/Hedge Cutting	4	4	2,3,4	3,4	1,2	3,4
Line Painting	4	4	2	3	1,2	1,3
Overhead Works	4	4	3,4	4	3,4	4
Cats Eyes / Delineators	4	4	4	4	4	4
Survey Party	4	4	1	3,4	1	3,4
Tree Clearance	4	4	4	4	1	3,4
Surfacing	4	4	4	4	4	4
Road Opening	4	4	4	4	4	4
Surface Dressing	4	4	4	4	4	4

Table 8.1 - Lead-in Taper for Urban Situations

8.39 DETOURS

Detour signs form an identifiable group. Usually such signs should be accompanied by temporary direction signing.

Road users should be warned in advance of any detour turn off; they should be given a large sign at the point of commencement and a sign at every point of possible confusion along a detour and at suitable intervals (say 2km) where there are no such points; finally they should be informed, by sign, of the point where the detour ends. Any necessary warning about bridge or right-of-way restriction on the detour should be given at the last place of unrestricted turnoff which might be before the detour proper is reached.

Table A8.1 - Lead-in Taper for Urban Situations

N o t e s : 1)	Average Speed of Traffic Km/h	Width of Obstruction		
		2m	3.7m	7.3m
	50	Length of taper	25	45
		Number of cones	9	16
	50-65	Length of taper	37	69
		Number of cones	13	24
				47

Notes:

1. This chart only applies where two-way traffic can be maintained past the works. (For "give and take" operation, all tapers should be at 45 degrees.)
2. Cone spacing: 3 metres.
3. Exit tapers at 45 degrees.
4. General rule of thumb for areas subject to 50 Km/h speed limit: Taper length = 12 times obstruction width.

Table A8.2 - Siting of Roadworks Signs in Urban Situations

Average Speed of Traffic Km/h	Siting Distance of First Sign in Advance of Works	Minimum Visibility Distance to First Sign	
		m	m
Up to 50	50		50
50-65	50-120		60

Table A8.3 - Siting of "End of Works" Sign for Urban Situations

Average Speed of Traffic Km/h	Siting Distance of "End of Works" Sign Beyond the Works	m	
Up to 50		10-30	
50-65		30-40	

Table A8.4 Siting of Roadworks Signs in Rural Situations

Average Speed of traffic	Average Siting Dist. of First Speed Sign in Advance of Works	Min. Size of "Road Works Ahead" Signs	Minimum Number of Signs in Advance of Road Works
Km/h	m	mm	No.
<50	50	600	2
50-80	150	600	3
>80	200-500*	900	4
Divided			
>80	400-750*	1,200	4

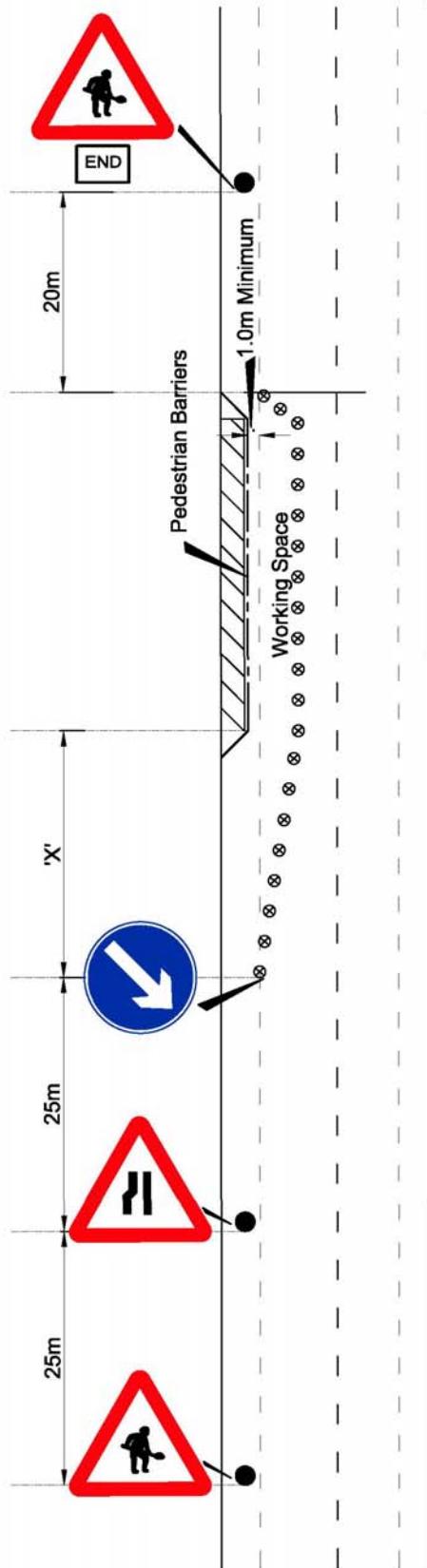
* Range intended to allow optimum placement consistent with road alignment

Table A8.5 - Lead-in Taper for Rural Situations

Average Speed of Traffic km/h	Width of Obstruction			
	2m	3.7m	7.3m	
<50	Length of taper (m)	25	45	90
	No. of Cones	5	8	16
50-80	Length of taper (m)	50	90	180
	No. of Cones	9	16	31
>80	Length of taper (m)	75	135	270
	No. of Cones	13	23	46

Table A8.6 - Siting "End of Works" Sign for Rural Situations

Average Speed of Traffic Km/h	Siting Distance of "End of Works" Sign Beyond the Works
	m
< 50	10-30
50-80	30-45
>80	45-90



Figures A8.15 Roadworks Partially Obstructing Footpath

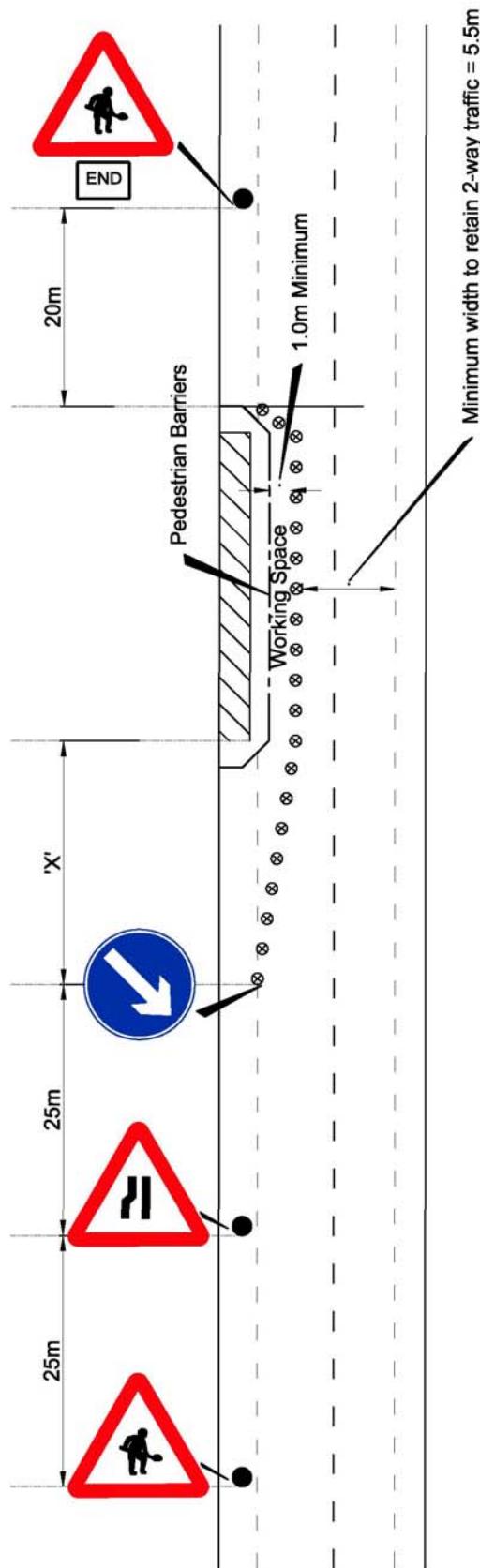
Notes

If Pedestrian passageway is less than 1.0m or is obstructed by lamp standards or other street furniture, footpath should be completely cordoned off and layout as shown in Fig. A8.16.

Length of Taper 'X' depends on width of carriageway obstructed. See Table A8.1.

If working space is not required, no signposting or coning is necessary.

● = Signs; ○ = Barrels; ⊗ = Cones; —— = Pedestrian Barrier.



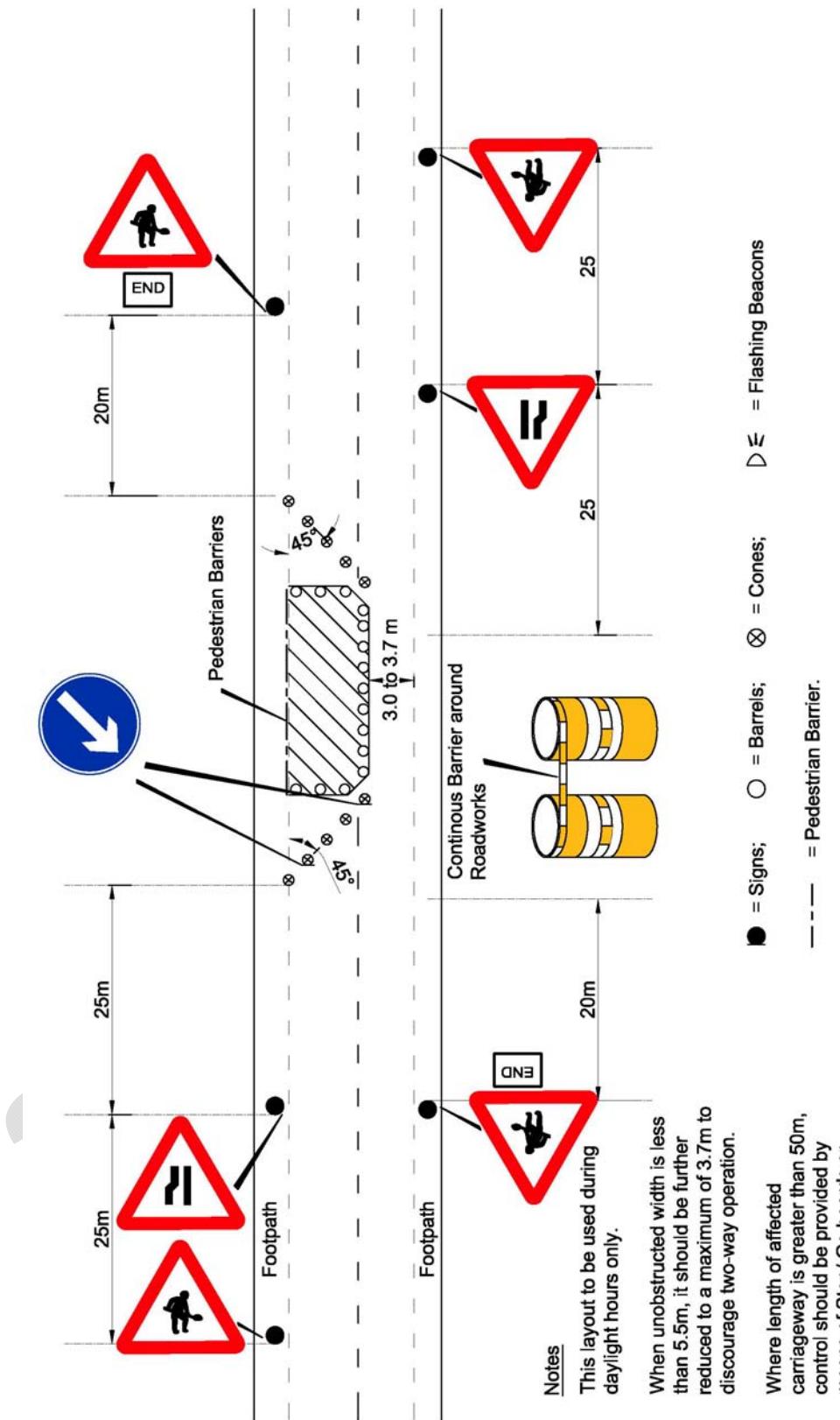
Figures A8.16 Roadworks Totally Obstructing Footpath

Notes

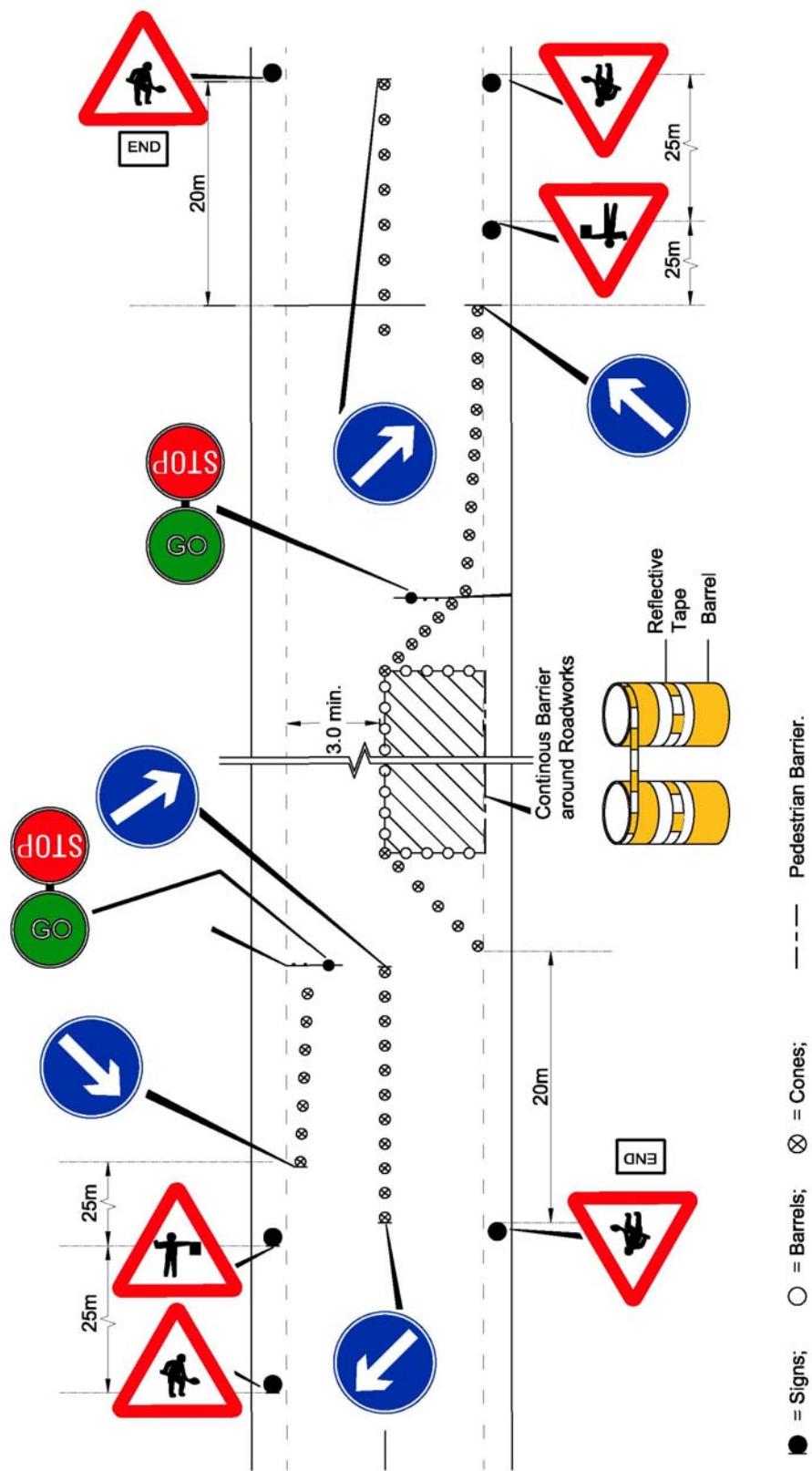
Length of Taper 'X' from Table A8.1.

When working space is not required, cones and barriers should be moved in, maintaining a pedestrian passageway of not less than 1.0m at all times.

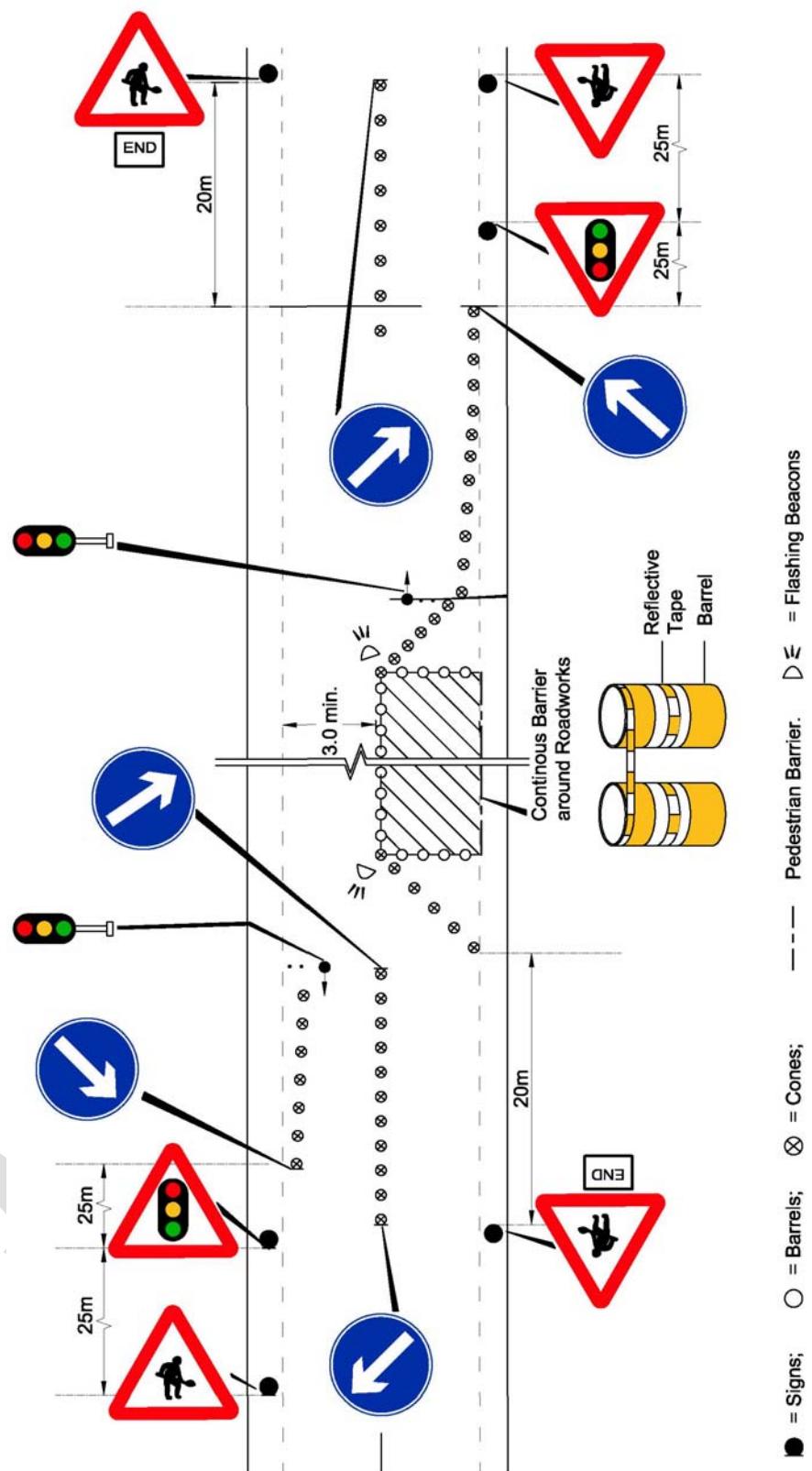
● = Signs; ○ = Barrels; ⊗ = Cones; - - - = Pedestrian Barrier.



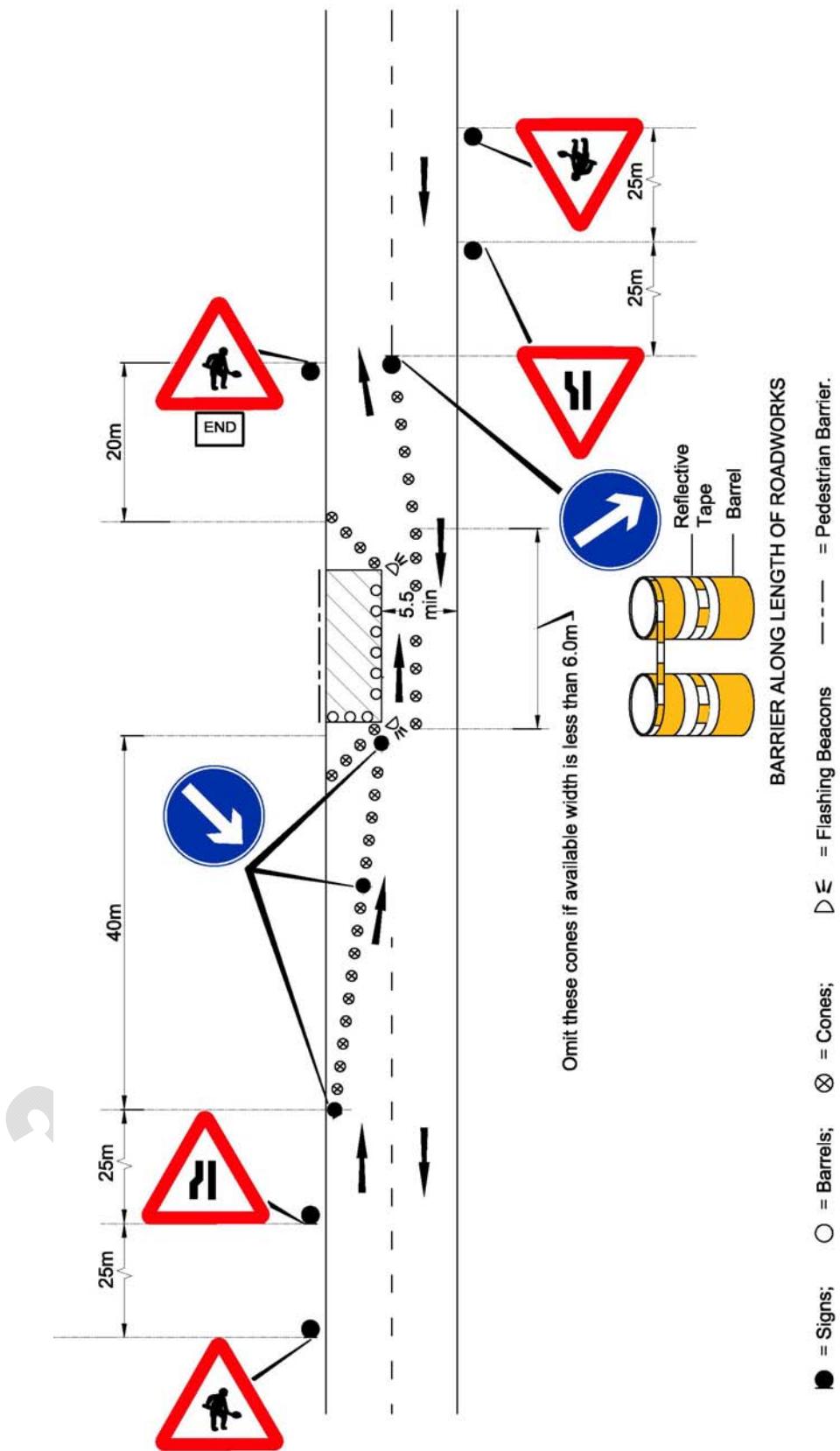
Figures A8.17 “Give and Take” Operation on Lightly Trafficked Minor Roads
(Unobstructed Carriageway Width <5.5m)



Figures A8.18 One-Way shuttle Working Using Flagmen/ Battenmen
(Suitable for Daylight only)



Figures A8.19 One-Way shuttle Working Using Temporary Traffic Signals (Suitable for Daylight and Darkness)



Figures A8.20 Two-Way works Forcing Traffic Over Centre Line

3.

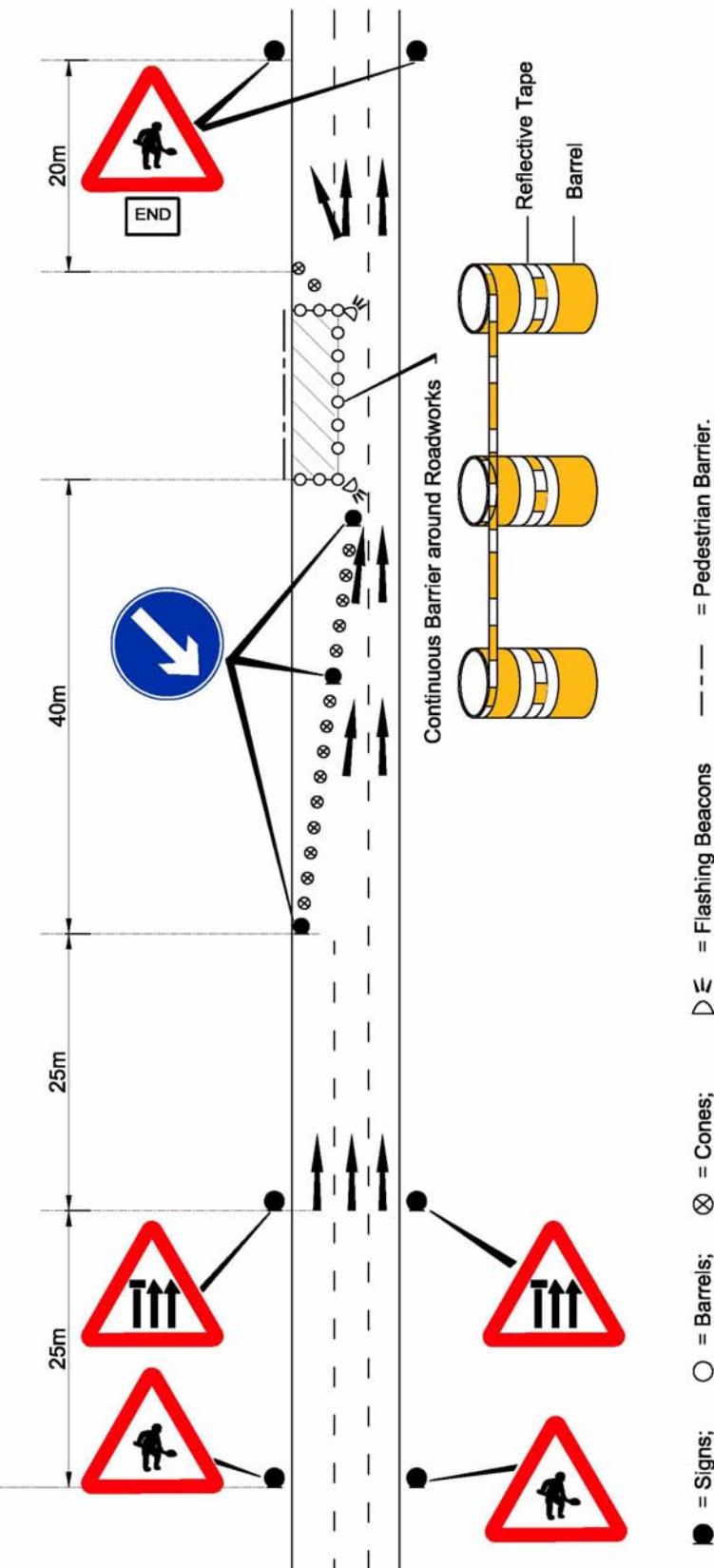
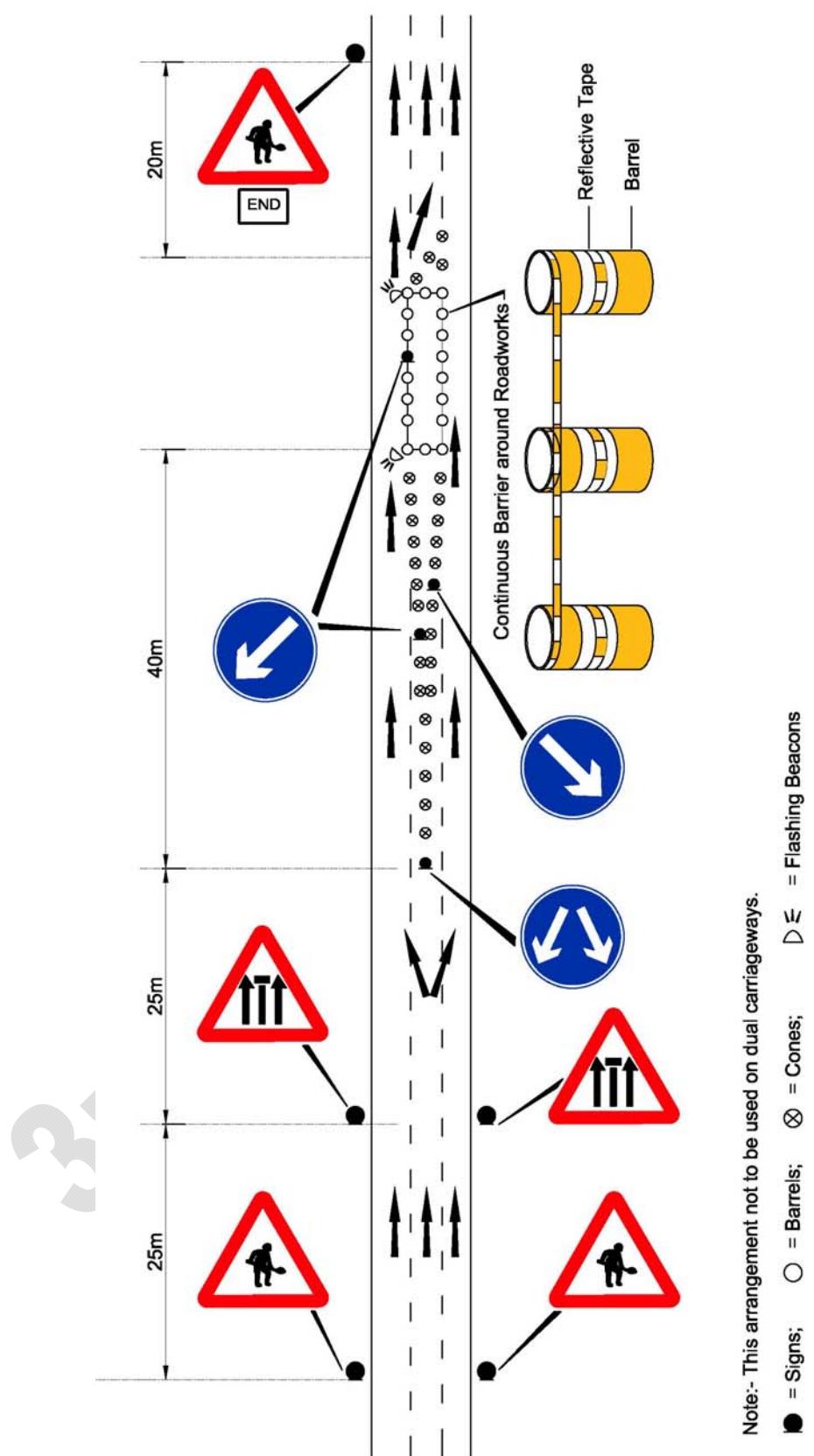


Figure A8.21 Three Lane One-way Street, Works Inside Lane



Note:- This arrangement not to be used on dual carriageways.

● = Signs; ○ = Cones; ⊗ = Barrels; ▷ = Flashing Beacons

Figure A8.22 Three Lane One-Way Street, Works in Centre Lane

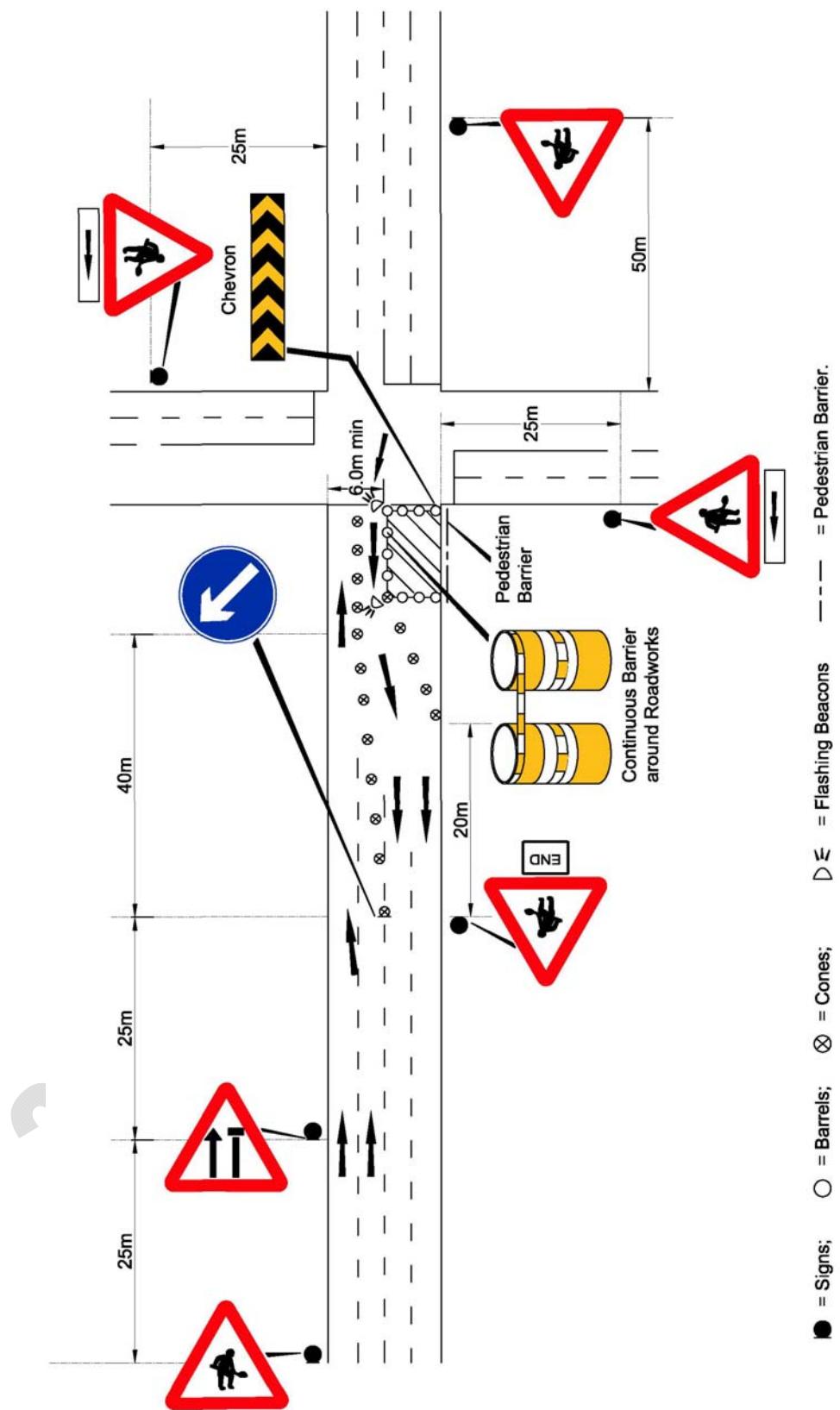


Figure 8.23 Four Lane Street, Works in two Lanes at Junction

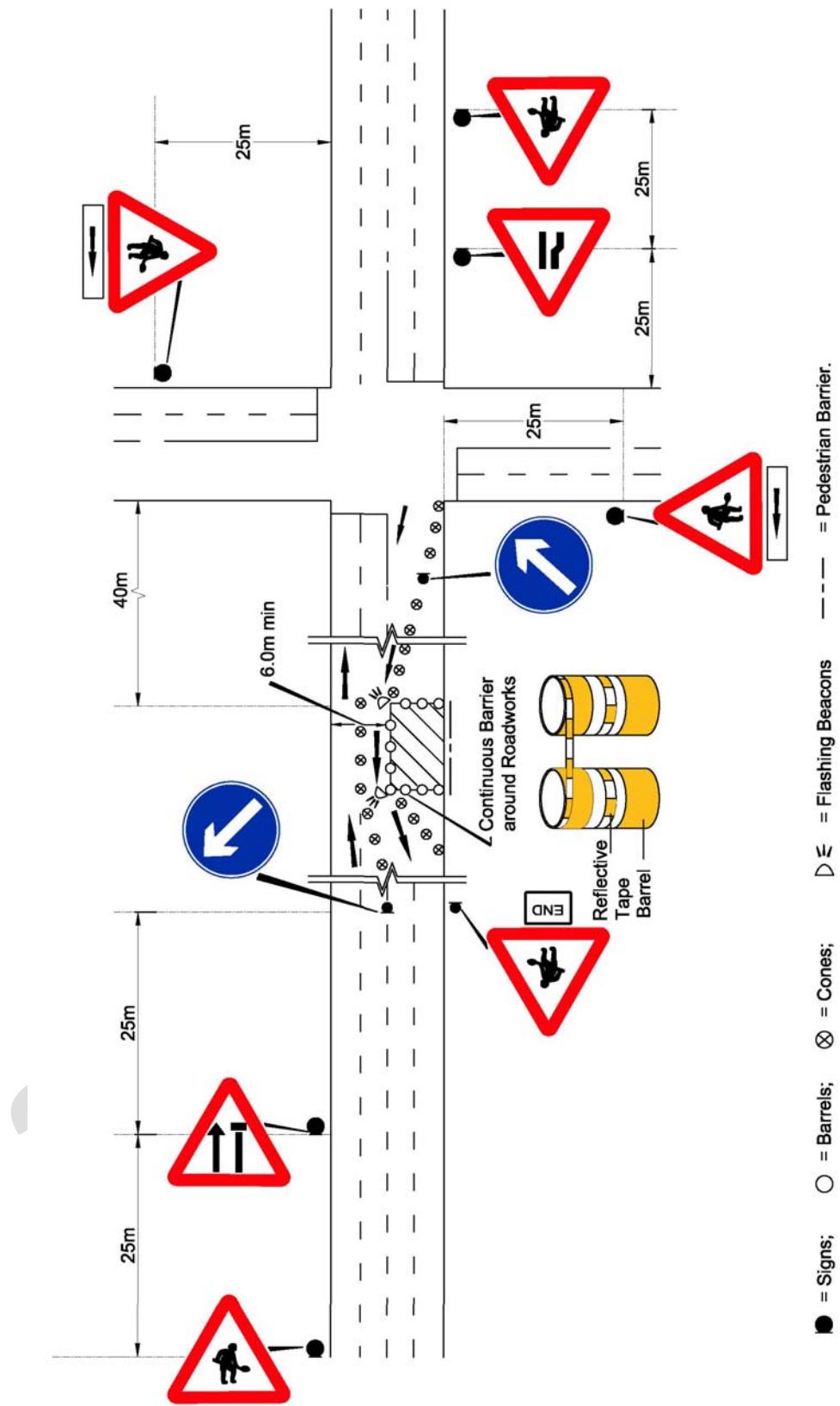


Figure A8.24 Four Lane Street, Works In Two Lanes Near Junction

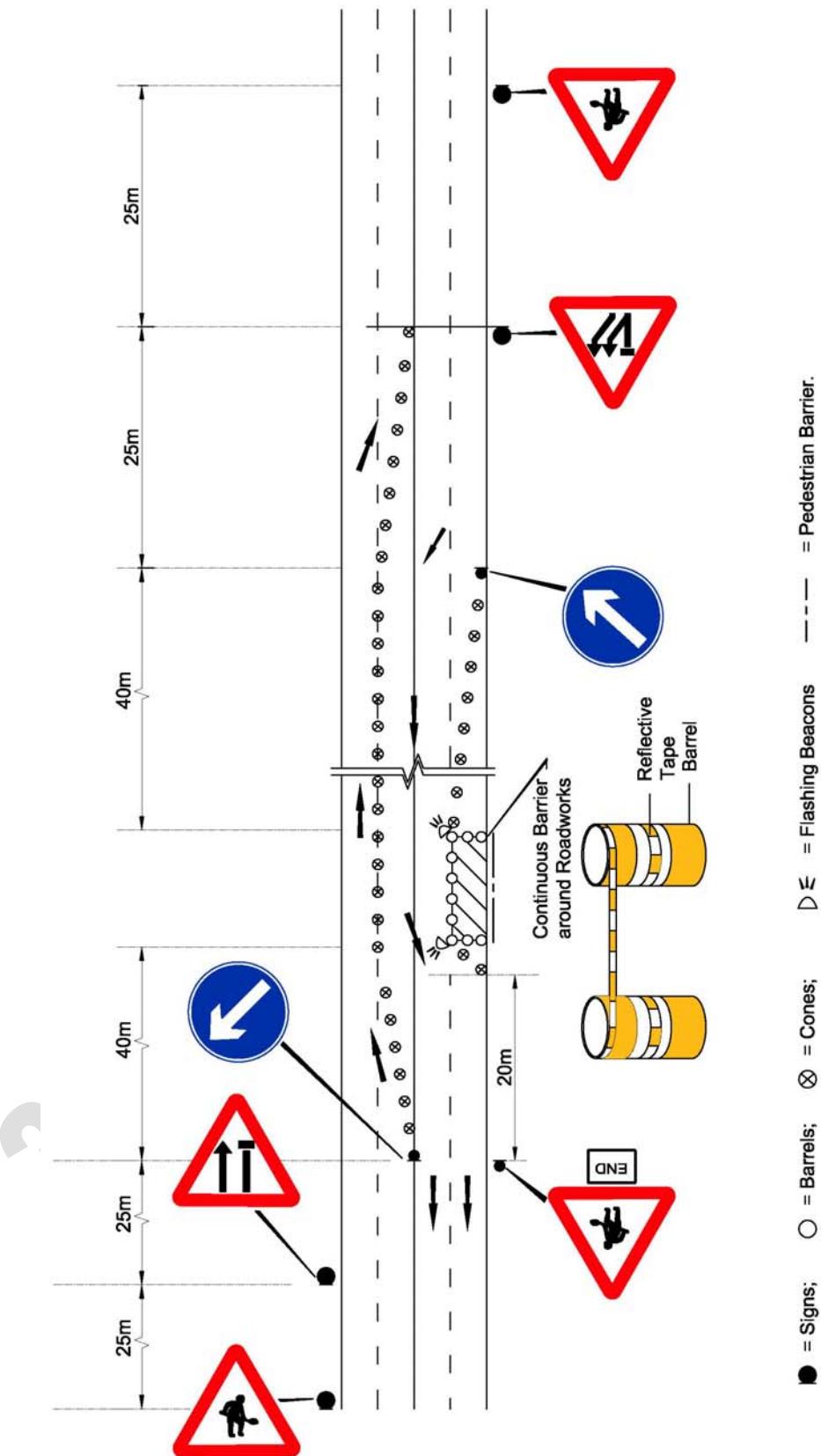


Figure A8.25 Four Lane Street, Works In Inner City bound Lane, Morning Peak

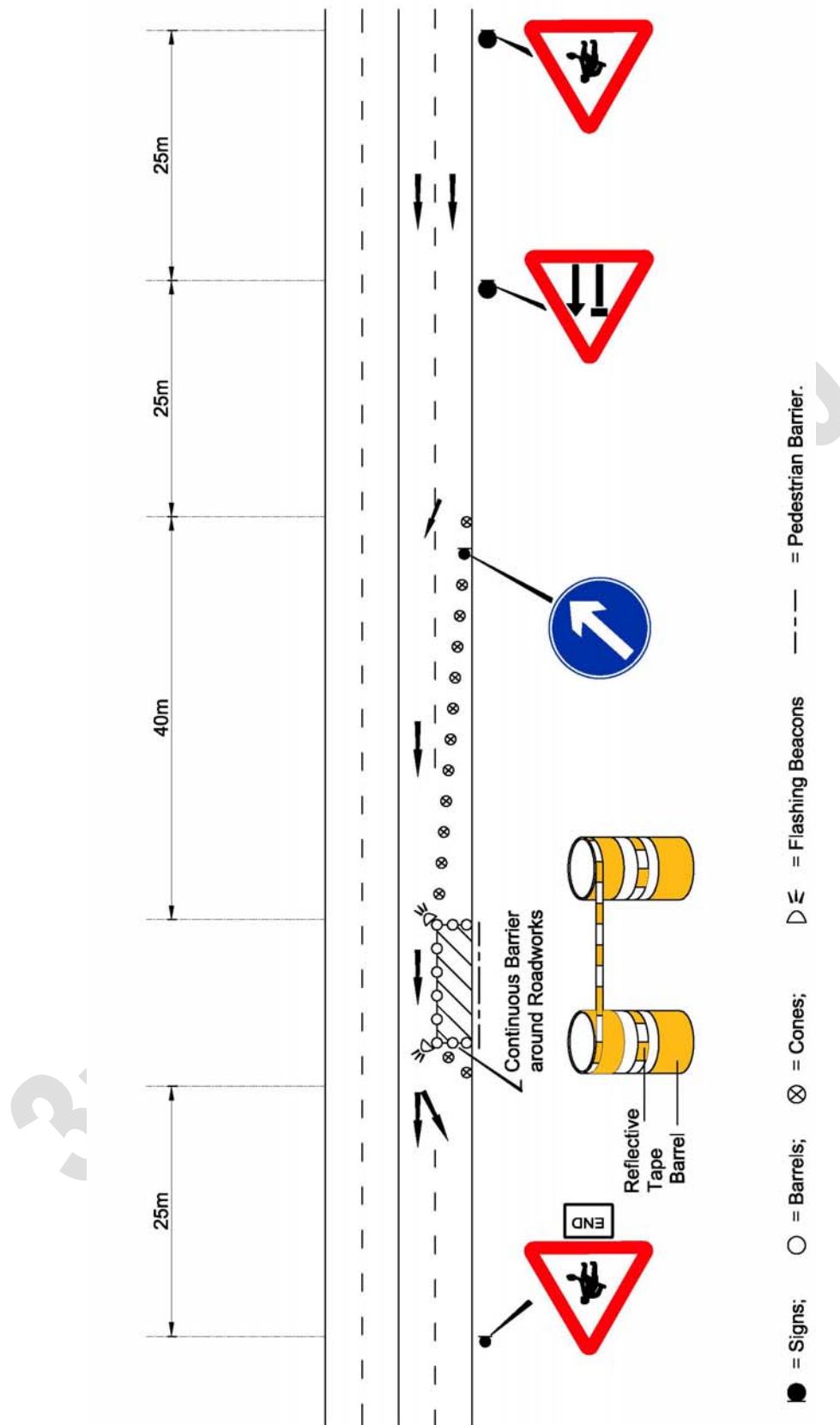


Figure A8.26 Four Lane Street, Works In Inner City bound Lane, Off Peak and Evening Peak

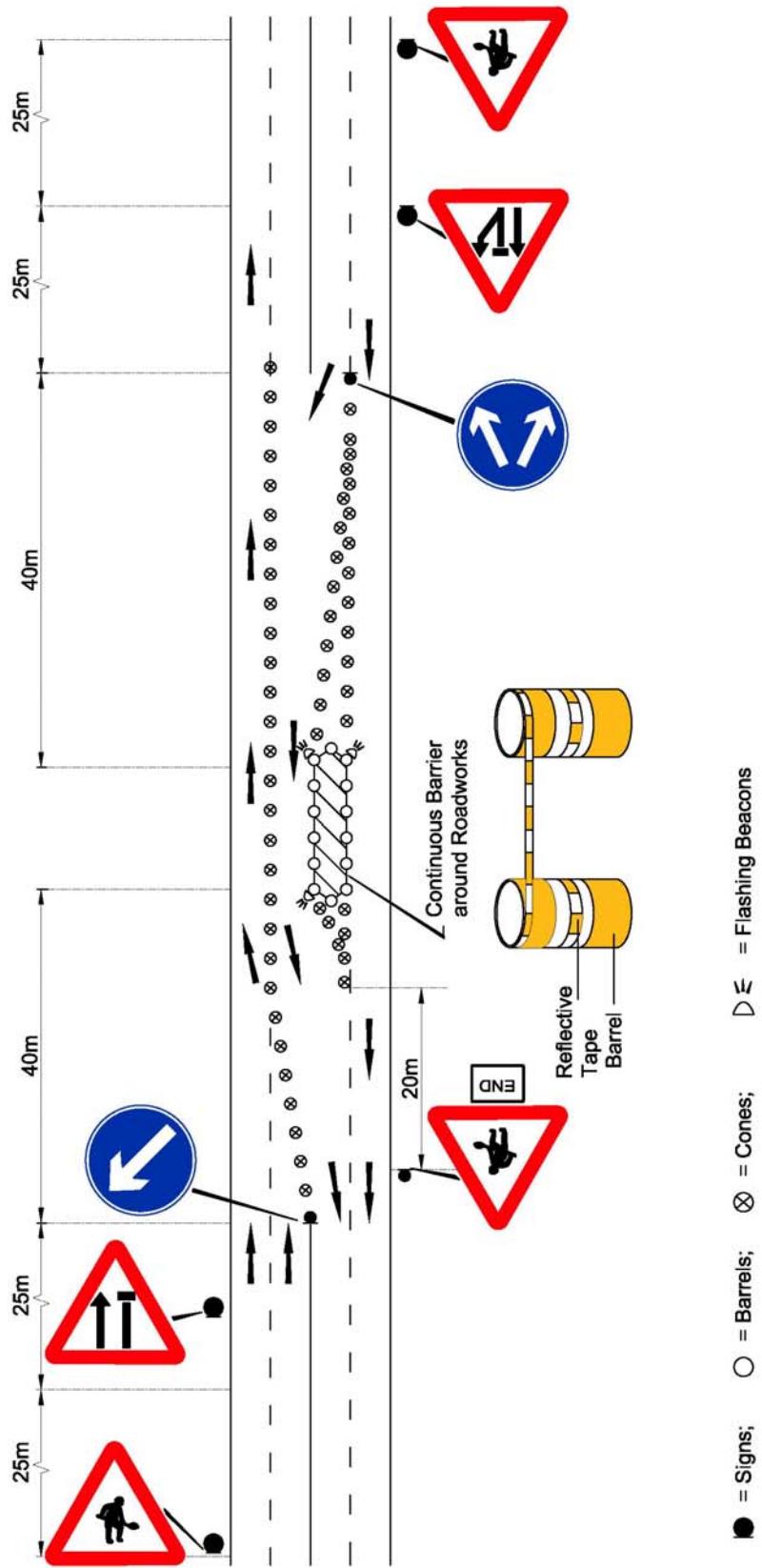


Figure A8.27 Four Lane Street, Works In Outer City bound Lane, Morning Peak

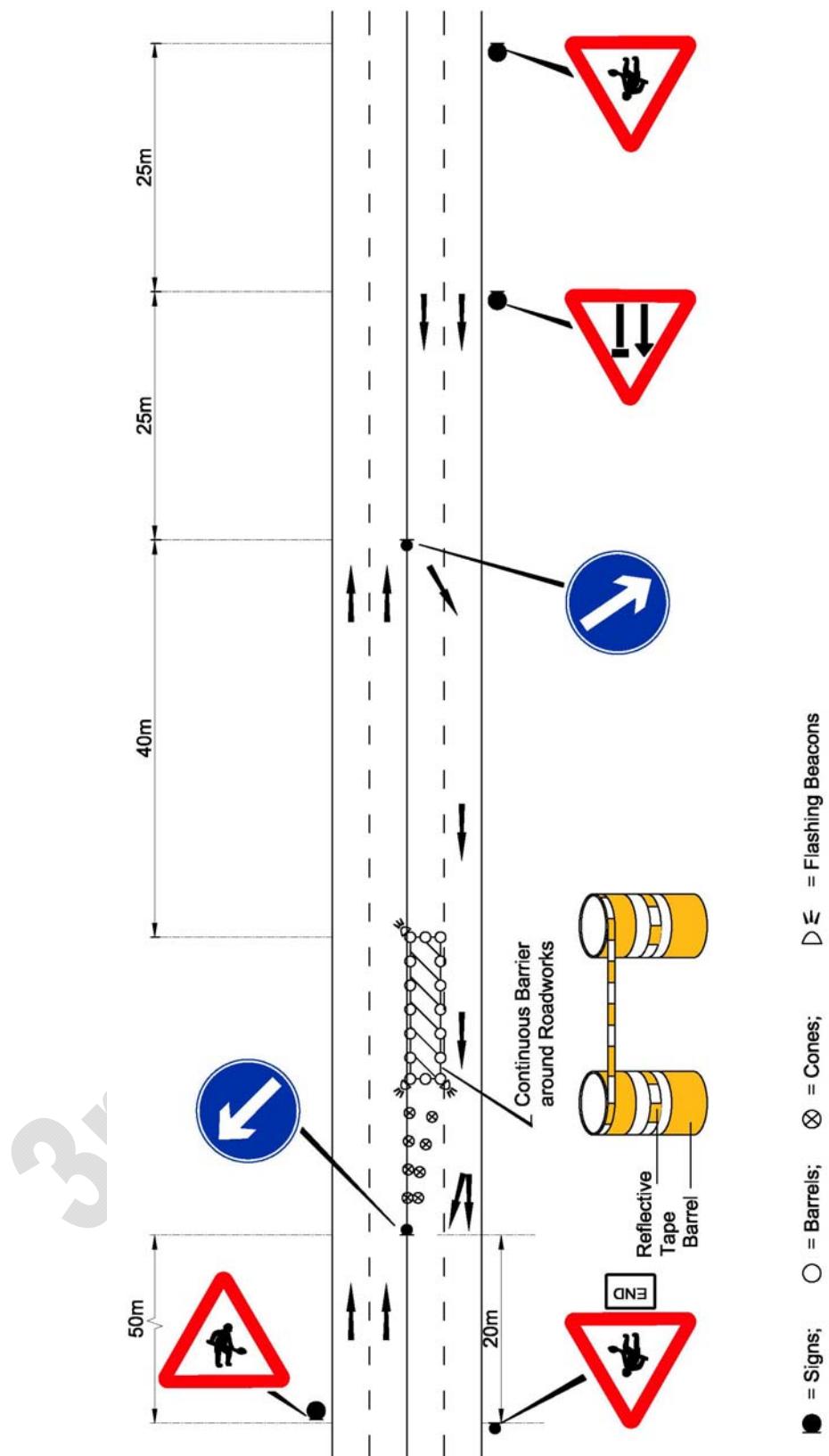


Figure A8.28 Four Lane Street, Works In Outer City bound Lane, Off Peak and Evening Peak

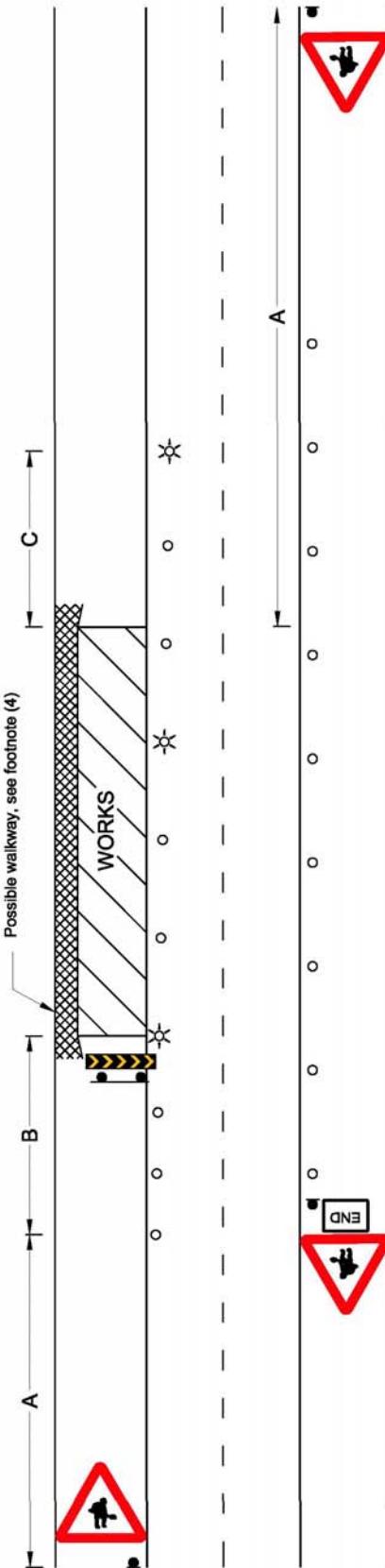


Figure A8.29 Two-Way Traffic Works in Margin/Shoulder/Footpath Only

NOTES

- (1) Placement of first sign in advance of works 'A' from table A8.4
- (2) Length of lead-in taper 'B' from table A8.5
- (3) Placement of 'End' sign after works 'C' from table A8.6
- (4) Where a footpath is closed, and alternative of atleast 1.2m is required.
- (5) Where all activity takes place off the carriageway, less stringent standards may be applied.
- (6) 'Do-not-pass' sign may be used where active works are in progress.

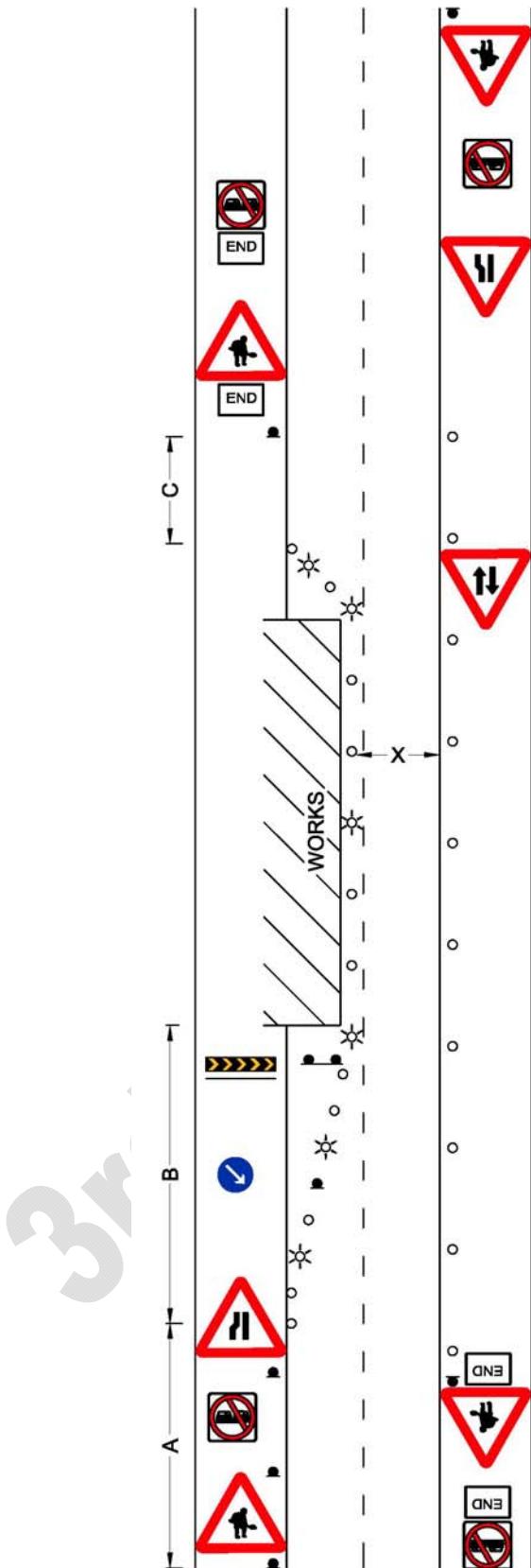


Figure A8.30 Two-Way Traffic Carriageway Encroachments

NOTES

- (1) Placement of first sign in advance of works 'A' from table A8.4
- (2) Length of lead-in taper 'B' from table A8.5
- (3) Placement of 'End' sign after works 'C' from table A8.6
- (4) Min. road width 'X' of 5m to retain two-way traffic.
- (5) Signs within area 'A' to be at approximately equal spacings.
- (6) 'Do-not-pass' sign may be duplicated on the right-hand-side on more heavily trafficked roads.

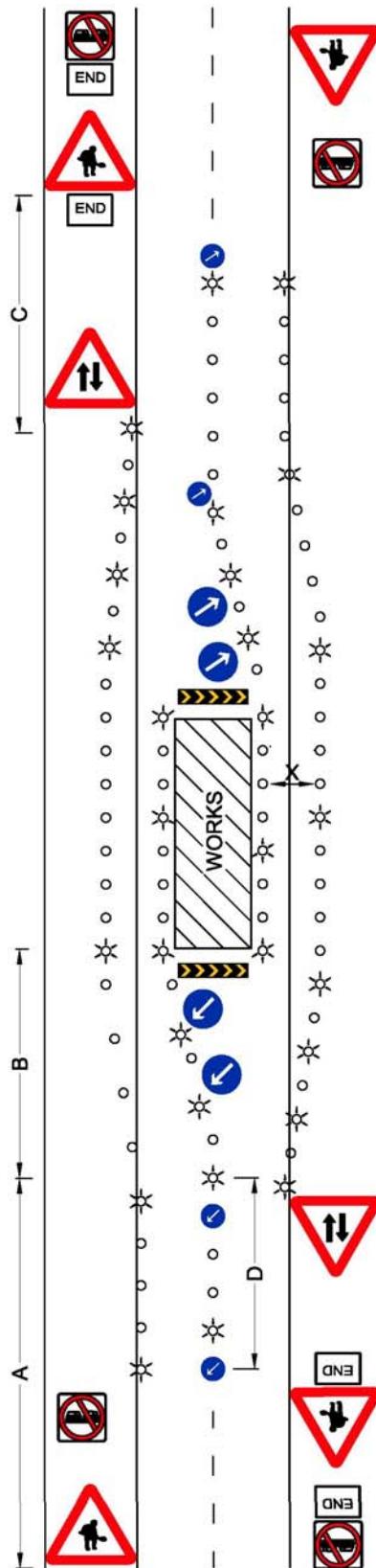


Figure A8.31 Use of Road Shoulder by Traffic

- NOTES
- (1) Placement of first sign in advance of works 'A' from table A8.4
 - (2) Length of lead-in taper 'B' from table A8.5
 - (3) Placement of 'End' sign after works 'C' from table A8.6
 - (4) Minimum road width 'X' equals 3m.
 - (5) Length of centreline coming 'D' should vary with alignment.

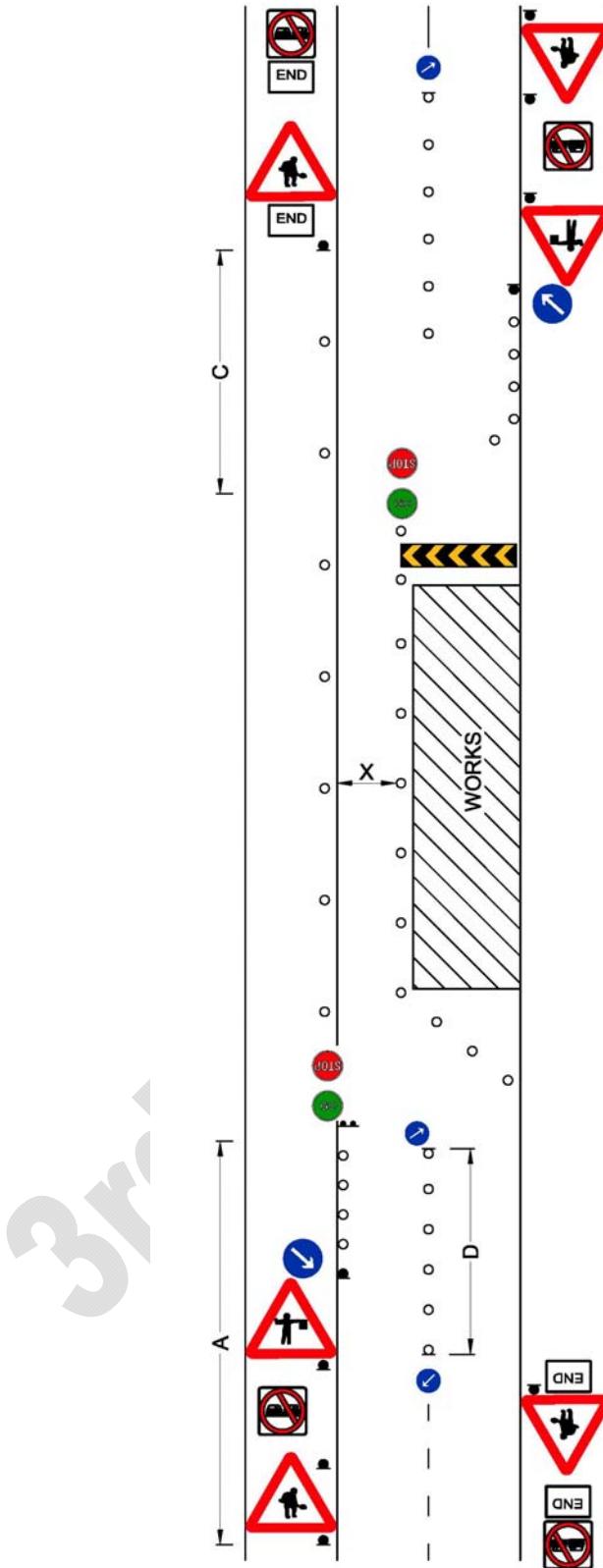
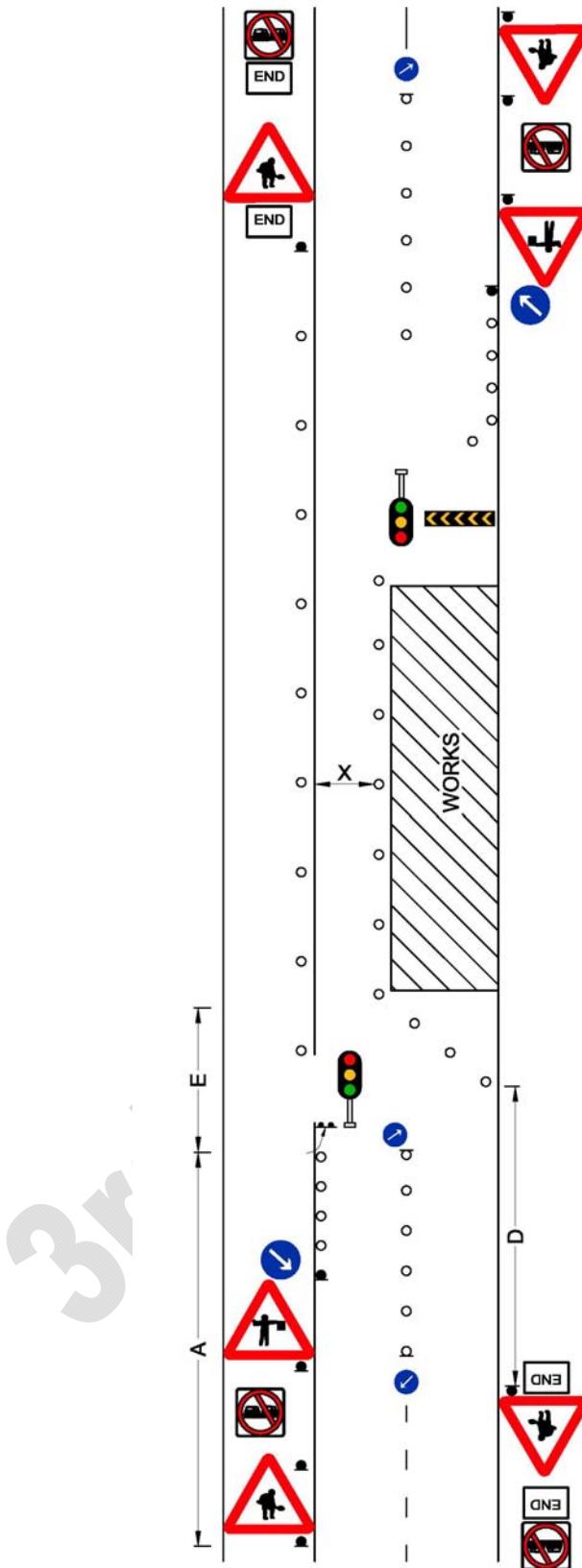


Figure A8.32 One-way Shuttle Working Using Flagmen/ Batten men
(Suitable for Daylight Only)

NOTES

- (1) Placement of first sign in advance of works 'A' from table A8.4
- (2) Placement of 'End' sign after works 'C' from table A8.6
- (3) Minimum road width 'X' equals 3m.
- (4) Length of centreline coning 'D' should vary with alignment.



- NOTES**
- (1) Placement of first sign in advance of works 'A' from table A8.4
 - (2) Placement of 'End' sign after works 'C' from table A8.6
 - (3) Minimum road width 'X' equals 3m.
 - (4) Length of centreline coning should vary with alignment.
 - (5) Length 'E' should be sufficient to give commercial vehicles easy room to manoeuvre.

Figure A8.33 One-way Shuttle Working Using Temporary Traffic Signals
(Suitable for Daylight and Darkness)

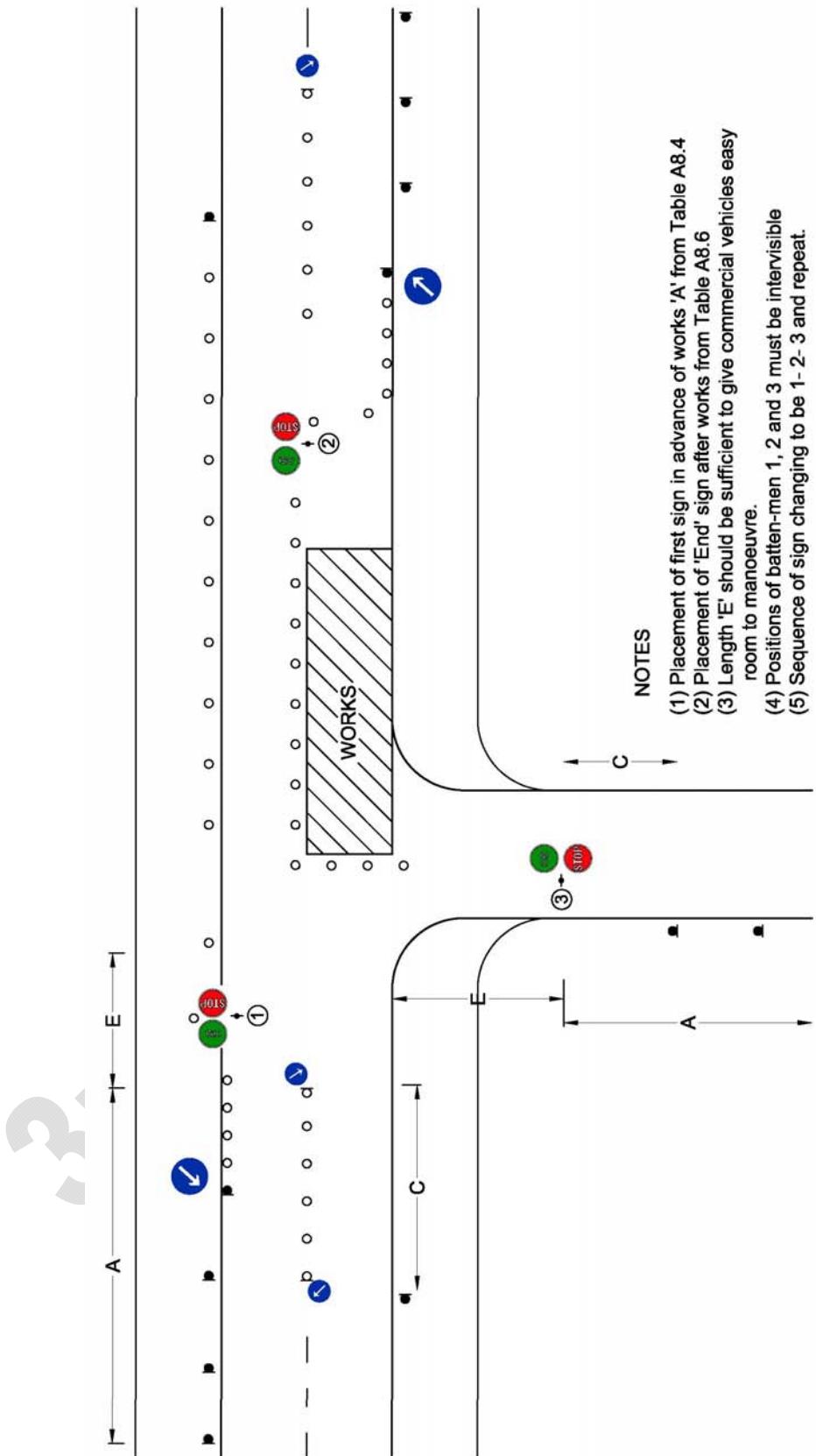


Figure A8.34 One-way Shuttle Working at a "T" Junction

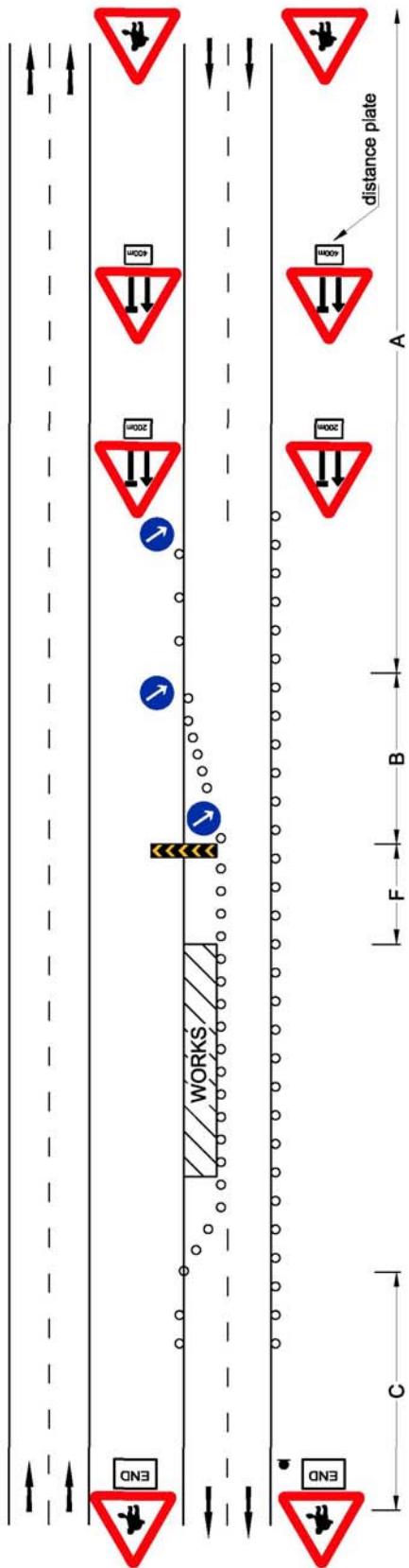


Figure A8.35 Dual Carriageway, Works in Fast Lane

- NOTES
- (1) Placement of first sign in advance of works 'A' from table A8.4
 - (2) Length of lead-in taper 'B' from Table A8.5.
 - (3) Placement of 'End' sign after works from Table A8.6.
 - (4) Length of buffer zone 'F' could vary; suitable length 'B' to '2B'.
 - (5) The use of distance plates, is optional.

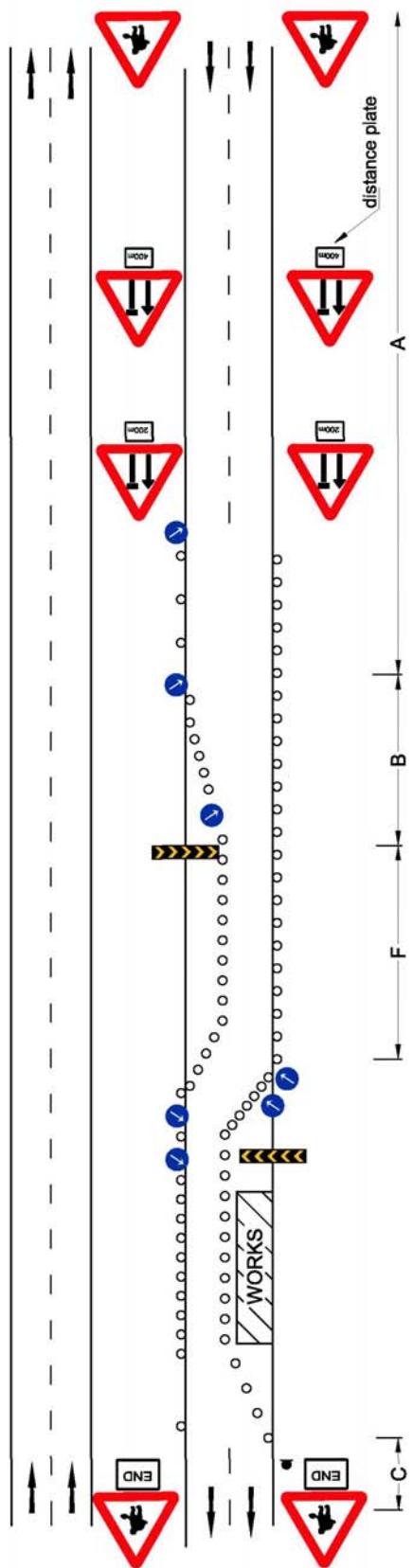


Figure A8.36 Dual Carriageway, Works in Slow Lane

- NOTES
- (1) Placement of first sign in advance of works 'A' from table A8.4
 - (2) Length of lead-in taper 'B' from Table A8.5.
 - (3) Placement of 'End' sign after works from Table A8.6.
 - (4) Length of buffer zone 'F' could vary; suitable length 'B' to '2B'.
 - (5) The use of distance plates is optional.

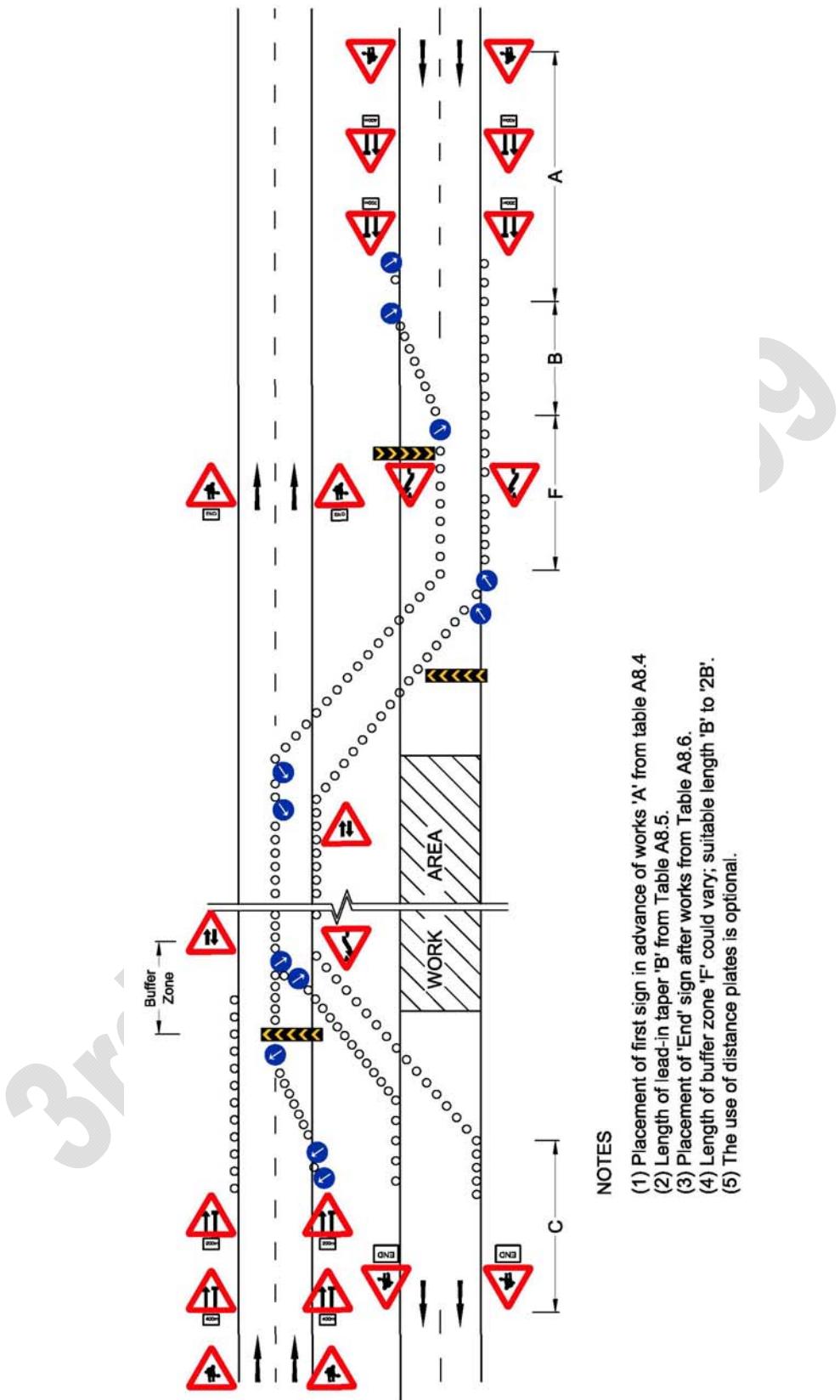


Figure A8.37 Dual Carriageway, One Carriageway Closed

- NOTES
- (1) Placement of first sign in advance of works 'A' from table A8.4.
 - (2) Length of lead-in taper 'B' from Table A8.5.
 - (3) Placement of 'End' sign after works from Table A8.6.
 - (4) Length of buffer zone 'F' could vary; suitable length 'B' to '2B'.
 - (5) The use of distance plates is optional.

3rd Draft . Dec 09