GUIDE SIGNS DESIGN AND APPLICATIONS

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Jabatan Kerja Raya
Cawangan Jalan

ATJ 2E/87 (Pindaan 2015) GUIDE SIGNS DESIGN AND APPLICATIONS

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KERAJAAN MALAYSIA

GUIDE SIGNS DESIGN AND APPLICATIONS

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FOREWORD

The purpose of this manual is to establish uniformity in design and application of all traffic signs and control devices in Malaysia for the benefit of road users, road and traffic authorities, and manufacturers of traffic signs.

As practices in road infrastructure change over time, it is imperative for Jabatan Kerja Raya (JKR) to continuously update and improve their standard guidelines. The previous drafts on **Arahan Teknik (Jalan) 2E/87: "Guide Signs Design and Application"** published by JKR in 2011 is superseded by this new **Arahan Teknik (Jalan) 2E/87 (Pindaan 2015)**, hereinafter called **ATJ 2E/87 (Pindaan 2015): "Guide Signs Design and Application"**. This new document covers among others general requirements, principles, classification and latest design layout for guide signs.

It must be noted that the sign's designs and application standards indicated in this Arahan Teknik and those in series 2/85 are to be followed at all times.

The revision of this document is also to incorporate the elements introduced in the *Public Service Delivery Transformation* project executed in Kuantan.

This ATJ will be reviewed and updated from time to time to cater for the changes on policies and current requirements. In this respect any comments and feedback regarding this ATJ should be forwarded to:-

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Bahagian Pembangunan Inovasi & Standard
Pakar Kejuruteraan Jalan & Jambatan
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GUIDE SIGNS DESIGN AND APPLICATION

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PART ONE: GENERAL ON TRAFFIC SIGNS

1.1 Purpose

The purpose of traffic signs is to help ensure the safe and informed operation of every road user on the highway. Traffic signs, are used to regulate, warn, or guide road users. They are essential where special regulations apply at specific times only, or where hazards are not self-evident. They also give information as to highway routes, directions, destinations and places of interest.

1.2 General Principles

The following general principles are the most important requirements to consider in achieving the greatest efficiency of traffic signs:

i. The signs must be designed for the foreseeable traffic condition and speeds on the roads on which they are to be used.

ii. The signs should be conspicuous so that they will attract the attention of drivers at a sufficient distance and should be easily recognizable as traffic signs at that distance.

iii. The signs should contain only essential information and their significance should be clear at a glance so that the driver's attention is not distracted from the task of driving.

iv. The signs should be legible from sufficiently far away to be read without diverting the sight through too great an angle.

v. The signs should be placed so that they are obscured as little as possible by vehicles and other objects.

vi. The signs should be designed so that the driver is left with sufficient time to take any necessary action safely.

vii. The signs should be effective both by night and day. The critical factors in meeting these requirements are colour, shape and size of sign, lettering and symbol sizes used, layout of its face, its position and illumination or reflectorisation.

1.3 Classification

Functionally, traffic signs are generally classified into the following types:

a) Regulatory Signs

b) Warning Signs

c) Temporary Signs

d) Guide Signs

   i. Destination Signs

   ii. Directional Signs

   iii. Distance Signs

   iv. Information Signs

   v. Route Number Markers

   vi. Kilometre Posts

e) Other Traffic Signs

   i. Gantry Signs

This Arahan Teknik only covers the design and application of guide signs. The guidelines for the design and application of regulatory, warning and temporary signs are covered by Arahan Teknik (Jalan) 2A, 2B and 2C/85 respectively.

PART TWO: GENERAL DESIGN CONSIDERATIONS ON TRAFFIC SIGNS

2.1 Colours

Colour plays an important role in distinguishing the nature of one traffic sign from another such that road users may not only recognize the traffic sign as such but may also perceive a general idea of the information before they reach the point at which the message on the sign becomes readable.

Sets of colour combination used for the various types of traffic signs are shown in Table 2.1. The colour codes and coordinates indicated in Appendix E have been established and identified for use on traffic signs.

2.2 Letterings and Borders

The type of letterings used are normal letterings and narrow letterings. For normal letterings, the true font that is equivalent to this standard is 'Transport Heavy' type font. For narrow letterings, the true type font that is equivalent to this standard is 'CcRige' type font. The types of borders used are set-in from the edge and extended. Refer to Figure 2.1 for dimensions and border details.

Standard letterings are shown in Appendix A. The types and sizes of letterings and borders used for the various types of traffic signs are shown in Table 2.2 and Table 2.3.

2.3 Symbols

The two types of symbols used on traffic signs are directional and information symbols. Directional symbols are those that indicate directions while information symbols are those that provide information without the use of word messages.

Sizes and templates of standard symbols used on traffic signs are shown in Appendix A. Types and uses of directional symbols are shown in Table 2.4 and Table 2.5. Information symbols which may in some ways indicate the direction of travel, such as the aeroplane, should be used with caution.

2.4 Post and Mounting

Posts for permanent traffic signs shall comply with B.S. 873 Part 7 (1996). Hot Dip Galvanised Mild Steel (HDGMS) post shall be used in accordance with BS EN ISO 1461:1999. The average galvanising coating for steel above 3 mm shall be 70 microns while for steel above 6 mm shall be 85 microns. The suppliers of HDGMS shall produce galvanising warranty certificate. No painting is required for galvanised steel.

Posts shall be of tubular hollow section steel of not less than 60 mm outside diameter complying with B.S 1387 (1985) / M.S 863 (1983). The back of every traffic sign shall be painted in executive grey and on it a template with the date the sign was manufactured and the name of the manufacturer shall be stated clearly.

Traffic signs exceeding 1.00 m in any dimension shall be stiffened by the attachment of backing frames. Purlins shall be required for those traffic signs exceeding 1.50m in any dimension.

2.5 Materials

2.5.1 Sign Plates

Sign plates shall be made of 10 S.W.G sheets of aluminium alloy HS 30-WP conforming to B.S. 1470 with a minimum thickness of 3 mm or aluminium composite material. A sign plate not exceeding 1.2 m in height and 1.2 m in width shall be made from a single sheet.

Where more than one sheet is used to make up a sign plate, the sheets shall be rectangular, of approximately the same size and shape, and the position of the joints shall be to the approval of the S.O.

2.5.2 Reflective Sheetings

Retro-reflective sheeting is a material consisting of one or more retro-reflective elements embedded within a transparent film having a smooth, flat outer surface. Two types of retro-reflective sheeting that have been established and identified for use on traffic signs are High Intensity Prismatic and Wide Angle Prismatic sheeting. Both these sheeting are available in sheets and rolls using pressure sensitive adhesive. Application of pressure sensitive adhesive sheeting to sign substrates is by using hand squeezed roller applicator.

High Intensity Prismatic sheeting is a retro-reflective sheeting referred to as 'high-intensity' which is typically an unmetalised microprismatic retro-reflective element material complying with D4956-09 and Table 2.6.

Wide Angle Prismatic sheeting is a retro-reflective sheeting which is typically an unmetalised cube corner microprismatic retro-reflective element material complying with ASTM D4956-09 and Table 2.7.

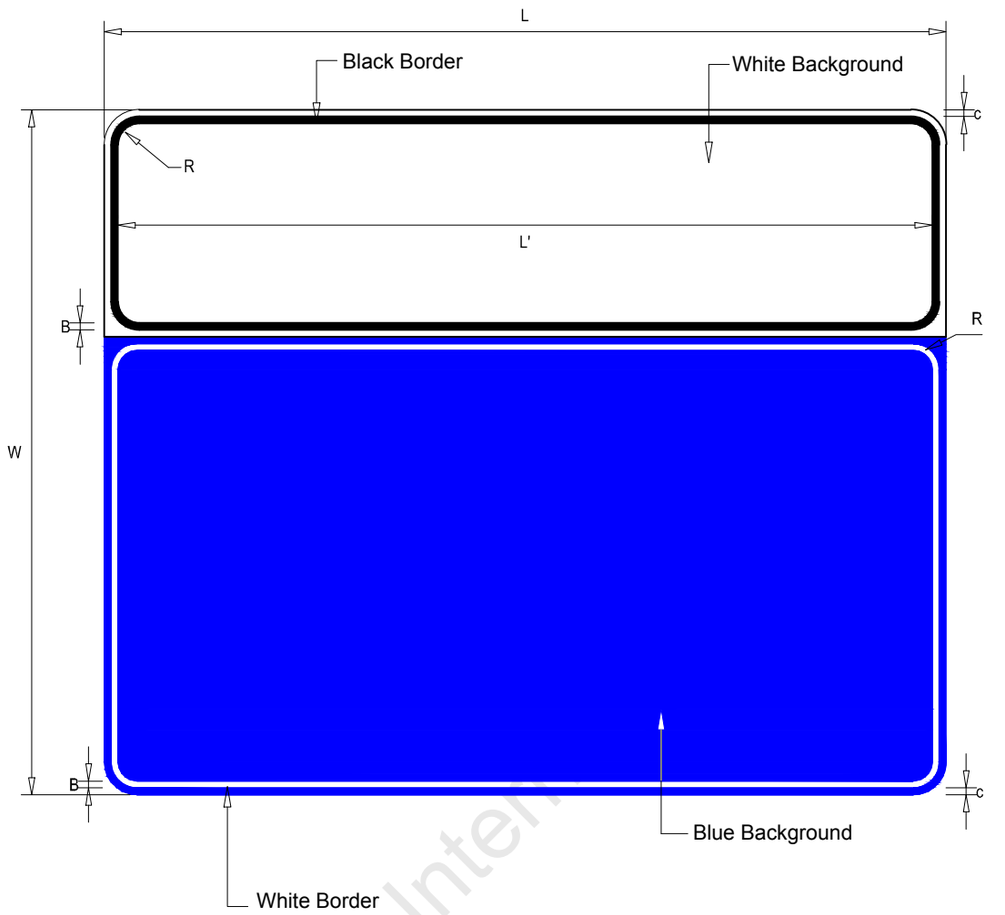
The retro-reflective sheeting shall be applied on non-coated aluminium surface only. Back surface of aluminium plate shall be painted in executive grey.

The colour to be used on the various types of traffic signs are stated in the notes of Table 2.1.

2.5.3 Backing Frames

The angles used for the backing frames shall be made from aluminium alloy HE9-TE conforming to B.S. 1474. Where aluminium composite sign plates are used the backing frame shall be made of Hot Dip Galvanised Mild Steel (HDGMS) angles in accordance with BS EN ISO 1461: 1999 with average galvanizing coating thickness of 70 microns. The suppliers of HDGMS shall produce galvanizing warranty certificate.

FIGURE 2.1: DIMENSION AND BORDER DETAILS



DIMENSIONS	
L = Overall length of sign panel	Varies
L ' = Internal length in between borders	Calculated from letters and spacing
W = Overall height of sign panel	Varies
R = Internal radius of border	2 % x L'
B = Thickness of border	1.5 % x L' or 20mm whichever is greater
C = Distance between edge of sign panel and outer edge of border	0.5 x B

NOTE :

1) For safety reasons, borders and corners of signs should be rounded on a radius approximately 1/18 of lesser side dimensions, but not exceeding 300 mm.

Table 2.1: Colour of Traffic Signs

	TYPES OF TRAFFIC SIGNS	LETTERING/ SYMBOL & BORDER	BACKGROUND	REMARK
I	REGULATORY SIGNS	AS SHOWN IN ARAHAN TEKNIK (JALAN) 2A/85		
II	WARNING SIGNS	AS SHOWN IN ARAHAN TEKNIK (JALAN) 2A/85		
III	TEMPORARY SIGNS	AS SHOWN IN ARAHAN TEKNIK (JALAN) 2C/85		
IV	GUIDE SIGNS a. Destination Signs	WHITE	BLUE	Except on LLM expressways which should be white letters / border on green background.
	b. Directional Signs	WHITE WHITE	BLUE GREEN	Those leading to roads within local council i.e. local streets should have yellow letters for street name. Those leading to or/and on LLM Expressways.
	c. Distance Signs	WHITE	BLUE	Except an LLM expressways (white on green)
	d. Information Signs: i. General Services ii. Recreational/Historical & Cultural Areas/Places of Interest iii. Major Housing Estates iv. River Names v. Towns / Village Names vi. Government Buildings vii. Government Related Premises	 WHITE WHITE BLUE GREEN BLACK YELLOW GREEN	 BLUE BROWN WHITE WHITE WHITE GREEN WHITE	
	e. Route Number Markers	BLACK	FLUORESCENT YELLOW	
	f. Kilometre Posts	AS SHOWN IN ARAHAN TEKNIK (JALAN) 9/86		
V	OTHER TRAFFIC SIGNS a. Gantry Signs	WHITE	BLUE	Applies to all roads except LLM expressways. Local streets should have yellow letters for the street name.

NOTES:

1) Types of retro - reflective sheeting to be used on traffic signs:-

    a. All standard traffic signs are to use High Intensity Prismatic retro-reflective sheeting on their faces. (Refer Table 2.6)

    b. All route number markers are to use Wide Angle Prismatic retro-reflective sheeting. (Refer Table 2.7)

2) LLM means Lembaga Lebuhraya Malaysia.

3) Directional signs to major housing estates may be permitted and shall fulfil the following criteria:

    a) Housing estates/self-contained townships that have facilities like medical centers/hospitals, schools, police station, recreational areas and commercial areas/business centers; and

    b) Population exceeding 30,000 inhabitants; and

    c) Distance from the junction or exit interchange not exceeding 3 km.

4) Places of Interest shall be determined by the relevant road authorities.

Table 2.2: Types and Sizes of Letterings on Traffic Signs

	TYPES OF TRAFFIC SIGNS	TYPE OF LETTERING	LETTER HEIGHT (mm)	TYPE OF BORDER	REMARK
I	REGULATORY SIGNS	AS SHOWN IN ARAHAN TEKNIK (JALAN) 2A/85 AND SEE ALSO APPENDIX F			
II	WARNING SIGNS				
III	TEMPORARY SIGNS	AS SHOWN IN ARAHAN TEKNIK (JALAN) 2C/85			
IV	GUIDE SIGNS a. Destination Signs	Transport Heavy	Refer to Table 2.3	White and set-in	Use Letter Mosaics
	b. Directional Signs				
	c. Distance Signs				
	d. Information Signs i. General Services		150	White and extended	
	ii. Recreational/ Historical & Cultural Areas/Places of Interest		Refer to Table 2.3, Figure 3.15 & 3.16	White and set-in	
	iii. Major Housing Estates		Refer to Table 2.3, Figure 3.17	Blue and set-in	
	iv. River Names		100 Refer to Figure 3.17	Green and set-in	
	v. Town/Village Names		300 Refer to Figure 3.18	Black and set-in	
	vi. Government Buildings		Refer to Table 2.3, Figure 3.19	Yellow and set-in	
	vii. Government Related Premises		Refer to Table 2.3, Figure 3.19	Green and set-in	
	e. Route Number Markers	Refer to Table 3.2	Refer to Table 3.2, Figure 3.11	Black and extended	
	f. Kilometre Posts	AS SHOWN IN ARAHAN TEKNIK (JALAN) 9/86			
V	OTHER TRAFFIC SIGNS a. Gantry Signs	Transport Heavy	Refer to Table 2.3, Figure 3.4	White and set-in	Use Letter Mosaics

NOTES:

1) Places with long names may have the words placed one on top of each other with a vertical spacing of 1/2 of the recommended letter height between them and the first letter of the words of the bottom row indented 3/4 of the recommended letter height away from the first letter of the words on the upper row.

Table 2.3: Letter Height Categories

SPEED LIMIT (km/h)	SINGLE CARRIAGEWAY LETTER HEIGHT, H (mm)	MULTIPLE CARRIAGEWAY/GANTRY LETTER HEIGHT, H (mm)
Speed limit > 90 km/h	400	400
80 km/h < Speed limit ≤ 90 km/h	250	300
60km/h < Speed limit ≤ 80km/h	200	250
Speed limit ≤ 60km/h	150	200

NOTES:

Multiple carriageways shall consist of more than one lane per direction.

Table 2.4: Directional Symbols

TYPE OF DIRECTIONAL SYMBOLS	USES
1. Directional Arrows	a) Used on stack type signs. b) Can be made to paint horizontally, vertically or at 45°. c) If there is more than one arrow, the arrangement shall be in anti-clockwise direction as shown in Table 2.5.
2. Diagrammatic Pointers	a) Used on map type signs. b) Should only be used for roundabouts and other more complicate interchanges.
3. Gantry Arrows	a) Used on overhead signs. b) Can only be used for lane control on high speed multilane highways.

Table 2.5: Arrangement of Directional Arrows in Descending Order

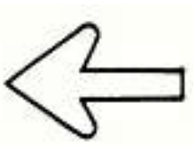
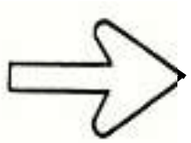
	Should be located on the upper left-hand side of the sign to indicate straight through movement.
	Should be located on the left-hand side of the sign to indicate sharp turning movement to the left.
	Should be located on the lower left-hand side of the sign to indicate right-angle turning movement to the left.
Should be located on the lower right-hand side of the sign to indicate right-angle turning movement to the right.	
Should be located on the right hand side of the sign to indicate sharp turning movement to the right.	

Table 2.6: High Intensity Prismatic Sheeting [A] (For all standard traffic signs)

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown
0.1° [B]	-4°	500	380	200	70	90	42	25
0.1° [B]	+ 30°	240	175	94	32	42	20	12
0.2°	-4°	360	270	145	50	65	30	18
0.2°	+ 30°	170	135	68	25	30	14	8.5
0.5°	-4°	150	110	60	21	27	13	7.5
0.5°	+ 30°	72	54	28	10	13	6	3.5

Table 2.7: Wide Angle Prismatic Sheeting [A] (For all route number markers)

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown	Fluorescent Yellow Green	Fluorescent Yellow	Fluorescent Orange
0.1° [B]	-4°	830	620	290	83	125	37	25	660	500	250
0.1° [B]	+ 30°	325	245	115	33	50	15	10	260	200	100
0.2°	-4°	580	435	200	58	87	26	17	460	350	175
0.2°	+ 30°	220	165	77	22	33	10	7.0	180	130	66
0.5°	-4°	420	315	150	42	63	19	13	340	250	125
0.5°	+ 30°	150	110	53	15	23	7.0	5.0	120	90	45
1.0°	-4°	120	90	42	12	18	5.0	4.0	96	72	36
1.0°	+ 30°	45	34	16	5.0	7.0	2.0	1.0	36	27	14

Notes :

[A] Minimum Coefficient of Retro-reflection (R_A) cd/fc/ft^2 (cd.lx^{-1}.m^{-2}).

[B] Values for 0.1° observation angle are supplementary requirements that shall apply only when specified by the purchaser in the contract or order.

PART THREE: LAYOUT DESIGN AND APPLICATION OF GUIDE SIGNS

3.1 General

The name of places on all guide signs shall be limited to those in Appendix B only. Except for directional signs within town limits, where the next state capital should be shown, all other guide signs shall show the next immediate place names as indicated in Appendix B.

3.2 Destination Signs

Destination signs are signs which give a road user the information of the route before it reaches a major turning roadway or junction leading to any of the place names listed in Appendix B when travelling on Federal and Major State Roads. The signs should be located at a distance of 1 km and 500 m in advance of the turning roadway or junction.

Layout design and application of destination signs are shown in Figure 3.1 and Appendix D.

FIGURE 3.1: LAYOUT DESIGN OF DESTINATION SIGNS

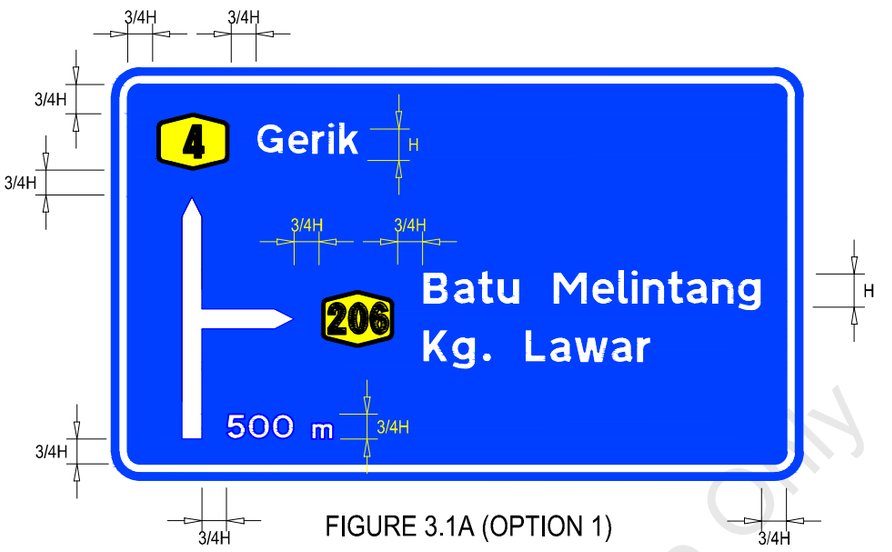


FIGURE 3.1A (OPTION 1)

FIGURE 3.1A (OPTION 2)

LEGEND :

H = Height of capital letter used.
*Maximum size for Exit Number is 400 mm
**Maximum size for Exit Name is 400 mm

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed at the end of arrow.
3) Places of great interest that do not have their names listed in Appendix B such as Taman Negara, Genting Highlands, Desaru e.t.c may also be shown provided the routes to these places coincide with the routes to those listed ones.
4) Sign A, B and C are examples of destination signs at junctions while Sign D is an example of destination signs at interchange.
5) For dimension of arrows, refer to Appendix A.

FIGURE 3.1: LAYOUT DESIGN OF DESTINATION SIGNS

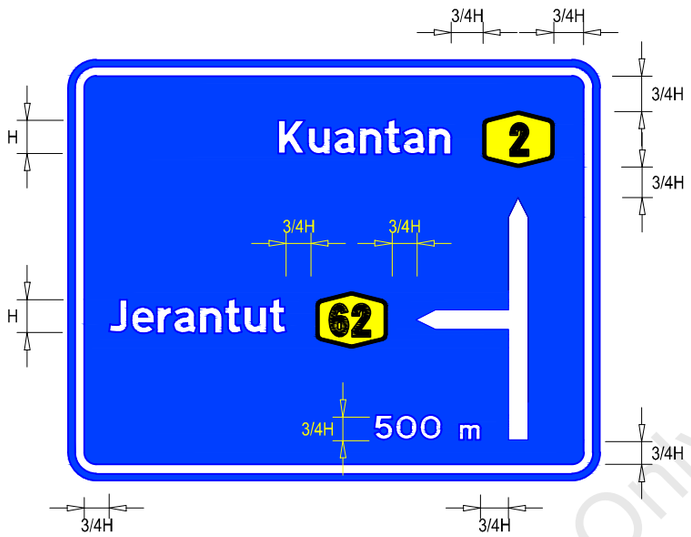


FIGURE 3.1B (OPTION 1)

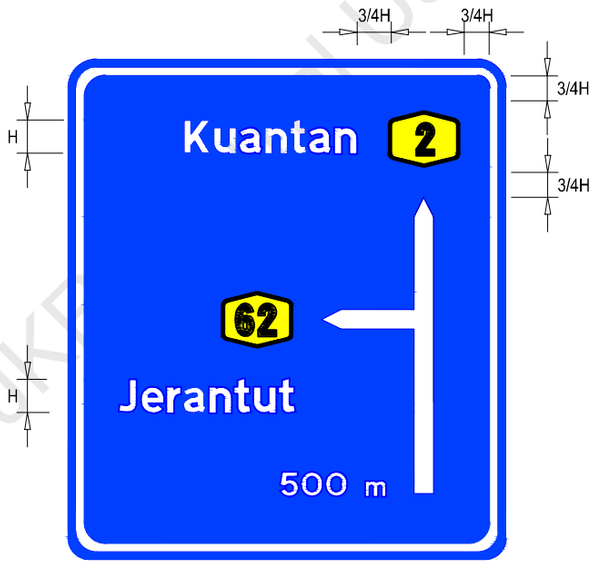


FIGURE 3.1B (OPTION 2)

LEGEND :

H = Height of capital letter used.
*Maximum size for Exit Number is 400 mm
**Maximum size for Exit Name is 400 mm

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed at the end of arrow.
3) Places of great interest that do not have their names listed in Appendix B such as Taman Negara, Genting Highlands, Desaru e.t.c may also be shown provided the routes to these places coincide with the routes to those listed ones.
4) Sign A, B and C are examples of destination signs at junctions while Sign D is an example of destination signs at interchange.
5) For dimension of arrows, refer to Appendix A.

FIGURE. 3.1: LAYOUT DESIGN OF DESTINATION SIGNS

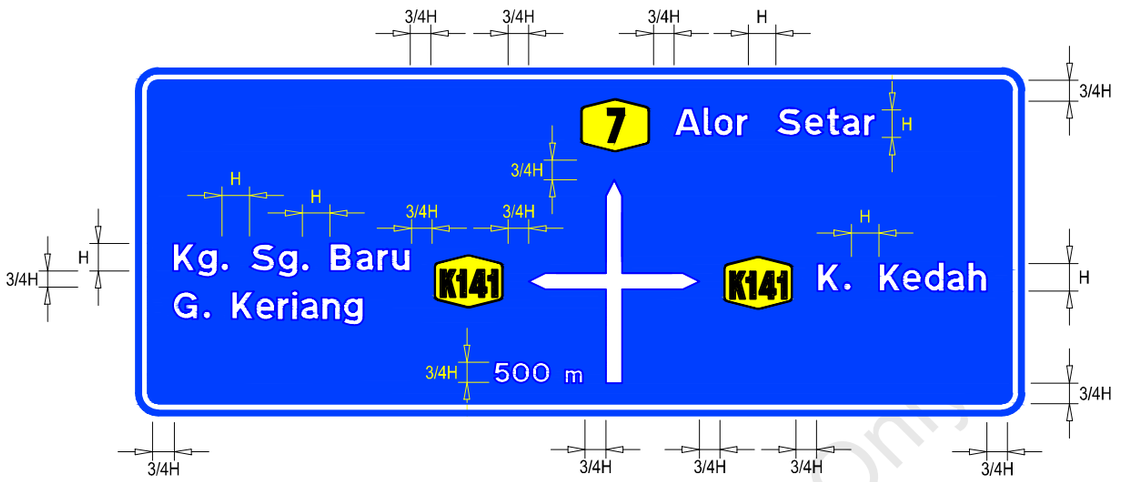


FIGURE 3.1C (OPTION 1)

FIGURE 3.1C (OPTION 2)

LEGEND :

H = Height of capital letter used
*Maximum size for Exit Number is 400 mm
**Maximum size for Exit Name is 400 mm

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed at the end of arrow.
3) Places of great interest that do not have their names listed in Appendix B such as Taman Negara, Genting Highlands, Desaru e.t.c may also be shown provided the routes to these places coincide with the routes to those listed ones.
4) Sign A, B and C are examples of destination signs at junctions while Sign D is an example of destination signs at interchange.
5) For dimension of arrows, refer to Appendix A.

FIGURE. 3.1: LAYOUT DESIGN OF DESTINATION SIGNS

FIGURE 3.1D

LEGEND :

H = Height of capital letter used
*Maximum size for Exit Number is 400 mm
**Maximum size for Exit Name is 400 mm

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed at the end of arrow.
3) Places of great interest that do not have their names listed in Appendix B such as Taman Negara, Genting Highlands, Desaru e.t.c may also be shown provided the routes to these places coincide with the routes to those listed ones.
4) Sign A, B and C are examples of destination signs at junctions while Sign D is an example of destination signs at interchange.
5) For dimension of arrows, refer to Appendix A.

3.3 Directional Signs

Directional signs are signs which give a road user the route information as before reaching a turning roadway or junction. Two types of directional signs are the stack type and the map type signs.

Layout design and application of directional signs are shown in Figure 3.2, 3.3, 3.4, 3.5, 3.6 and Appendix D.

FIGURE 3.2: LAYOUT DESIGN OF DIRECTIONAL SIGNS (MAP TYPE)

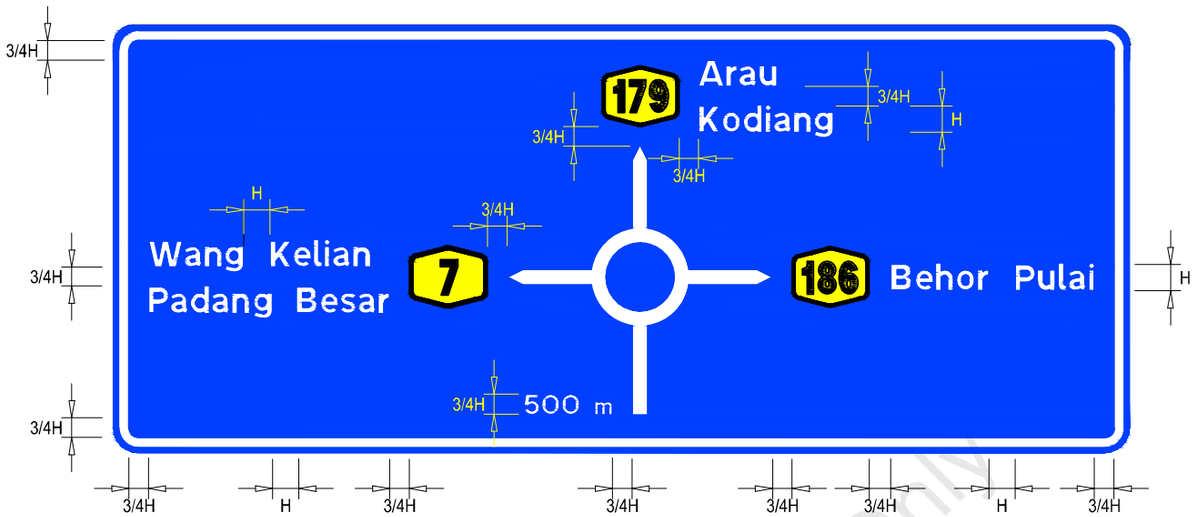


FIGURE 3.2 (OPTION 1)

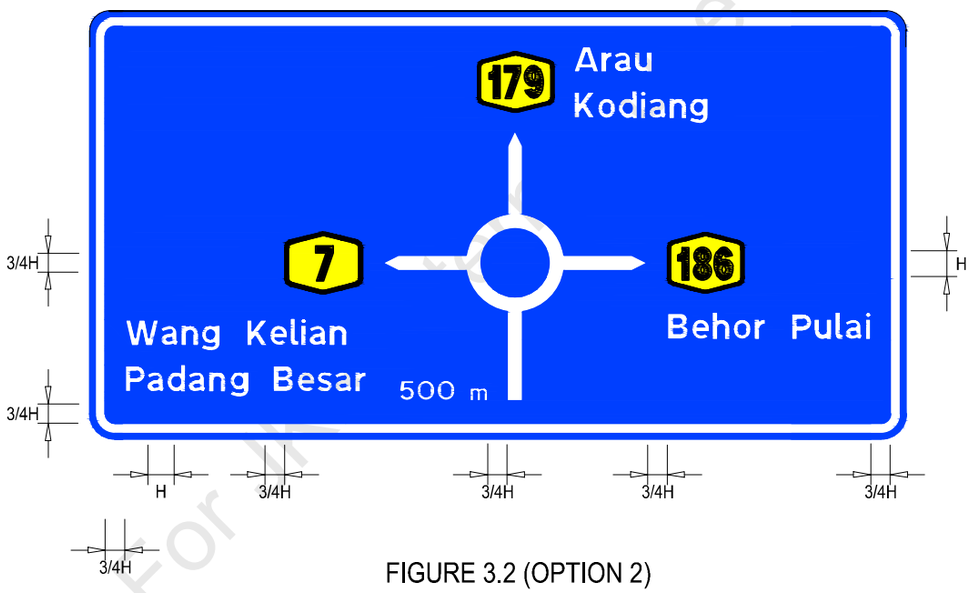


FIGURE 3.2 (OPTION 2)

LEGEND :

H = Height of capital letter used.
c = Distance showing that words or symbols must be centralised.
*Maximum size for Exit Number is 400 mm.
**Maximum size for Exit Name is 400 mm.

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed on the left hand side of destination names for stack type directional signs.
3) Unlike on destination and distance signs, places of great interest that do not have their names listed in Appendix B may also be shown on direction signs. These places should be shown as information signs mounted on the same posts. (See Figure 3.6A and Figure 3.6B)
4) The destination shown per direction should be the next principle destination i.e the next state capital for those within a town limit, rather than a more distant one. If there are two destinations per direction, the nearer one should be placed on top of any other further destination.
5) A place name can only appear once on the same sign.
6) The shape of the roundabout shall not necessarily be circular but shall be according to the actual geometrical shape of the roundabout.

FIGURE 3.3 : LAYOUT DESIGN OF DIRECTIONAL SIGNS

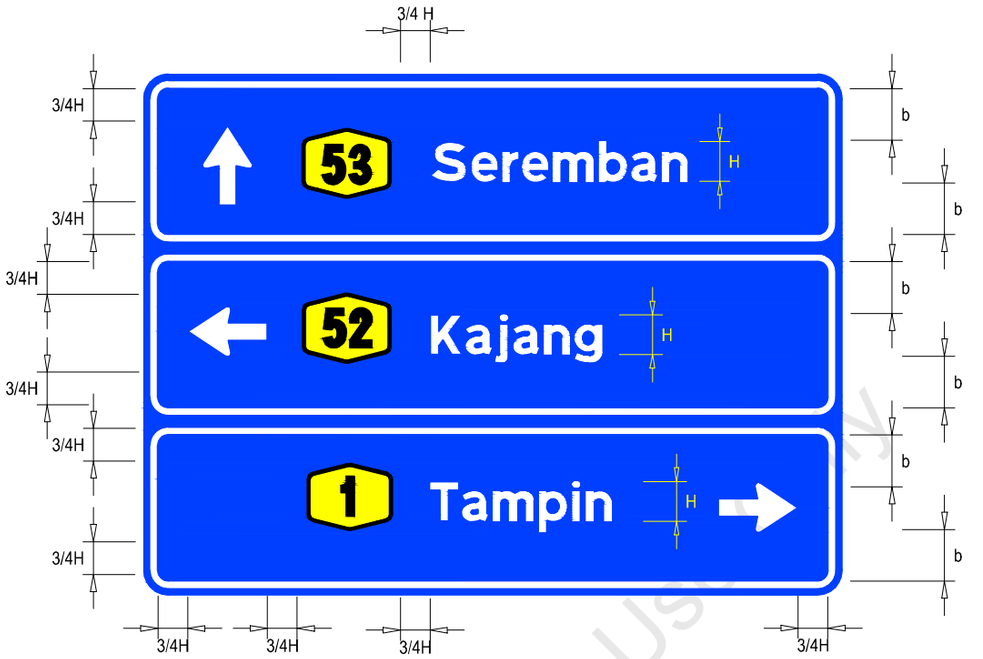


FIGURE 3.3A

FIGURE 3.3B

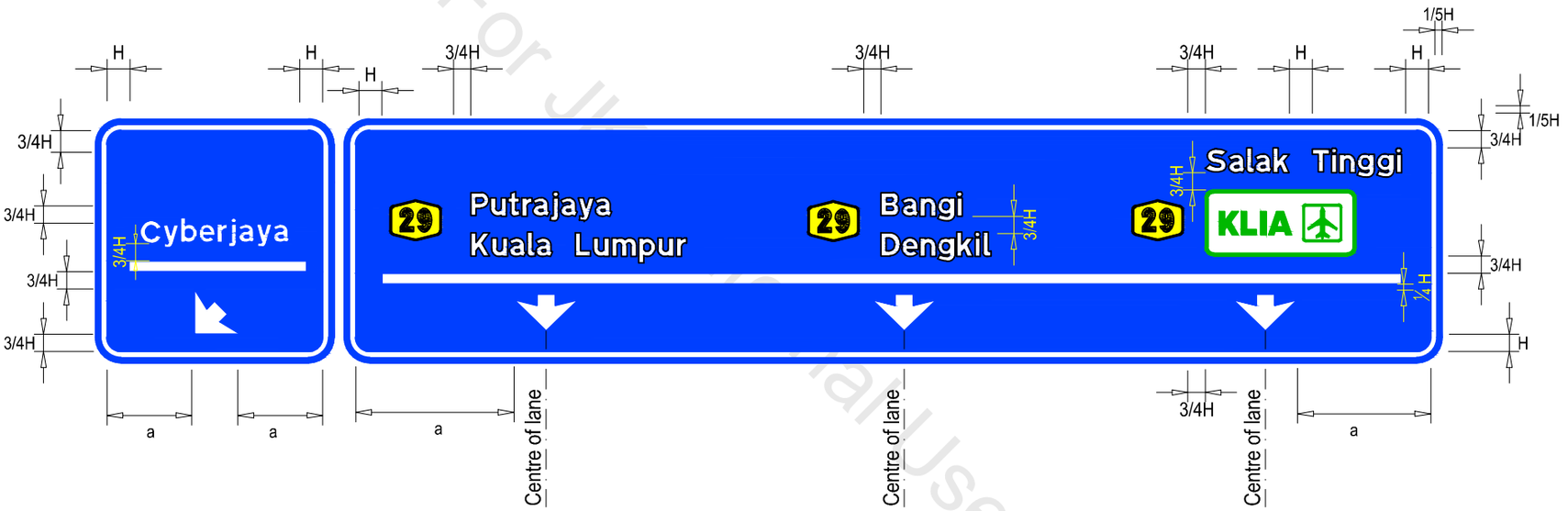
LEGEND :

H = Height of capital letter used
a, b & c = Distance showing that words or symbols must be centralised

NOTE :

1) Not more than 5 names shall be used in combination but only 3 names shall be shown per route or direction.
2) Route numbers shall be placed on the left hand side of destination names for stack type directional signs.
3) Unlike on destination and distance signs, places of great interest that do not have their names listed in Appendix B may also be shown on direction signs. These places should be shown as information signs mounted on the same posts. (See Figure 3.5)
4) The destination shown per direction should be the next principle destination i.e the next state capital for those within a town limit, rather than a more distant one. If there are two destinations per direction, the nearer one should be placed on top of any other further destination.
5) A place name can only appear once on the same sign.
6) All directional signs on JKR roads leading to roads within a local council (local streets with street names) must have yellow letters for the street names, white symbol / borders and blue background as shown in Figure 3.3 B.

FIGURE 3.4 : LAYOUT DESIGN OF DIRECTIONAL SIGNS (GANTRY SIGNS)



LEGEND :

H = Height of capital letter used
a = Distance showing that words or symbols must be centralised

NOTE :

1) A maximum of 3 destination names is allowed on any given column
2) The border size for all boards placed together shall be of the greatest size.

FIGURE 3.5 : EXAMPLE OF DIRECTIONAL SIGN AND INFORMATION SIGN PLACED ON THE SAME PLATE ACCORDING TO DIRECTION

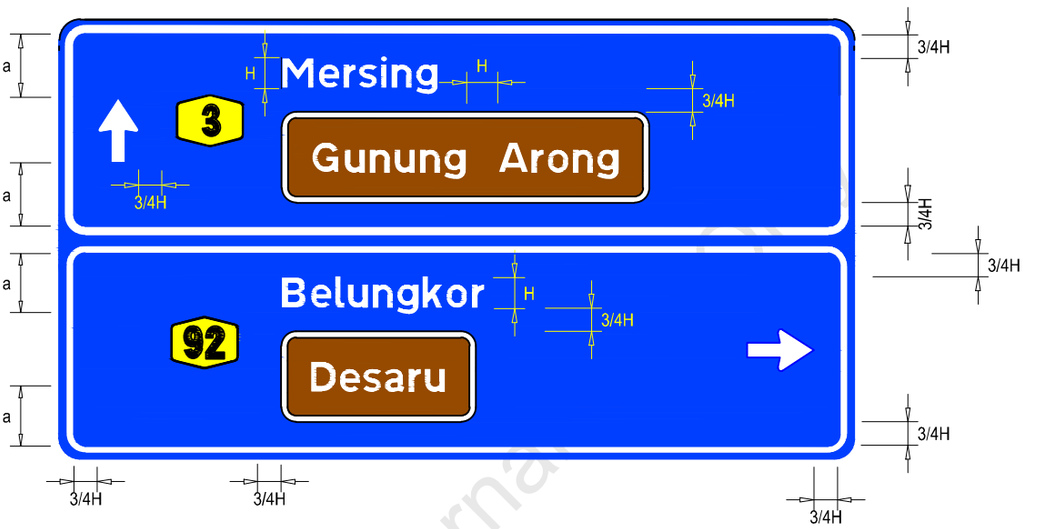


FIGURE 3.5

NOTE :

1) The example above shown a directional sign and an information sign (in this case a recreational area sign) mounted on the same post.
2) Information signs mounted this way must always adhere to the following requirements:
   a) The height of the capital letter used should be equal to that used for the directional sign.
   b) The information sign leading to the same direction must always be placed at the bottom of each panel.

FIGURE 3.6 : EXAMPLE OF FLAG TYPE SIGN

FIGURE 3.6

LEGEND :

H = Height of capital letter used.
a = 1.0 x H
b = 0.75 x H
c = 0.25 x H

3.4 Distance Signs

Distance signs are signs which give a road user the route confirmation and distance information after leaving a city or municipality, and after manoeuvring into a turning roadway or junction heading to any of the place names listed in Appendix B when travelling on Federal and Major State Roads. Distance signs should be located at the following location:

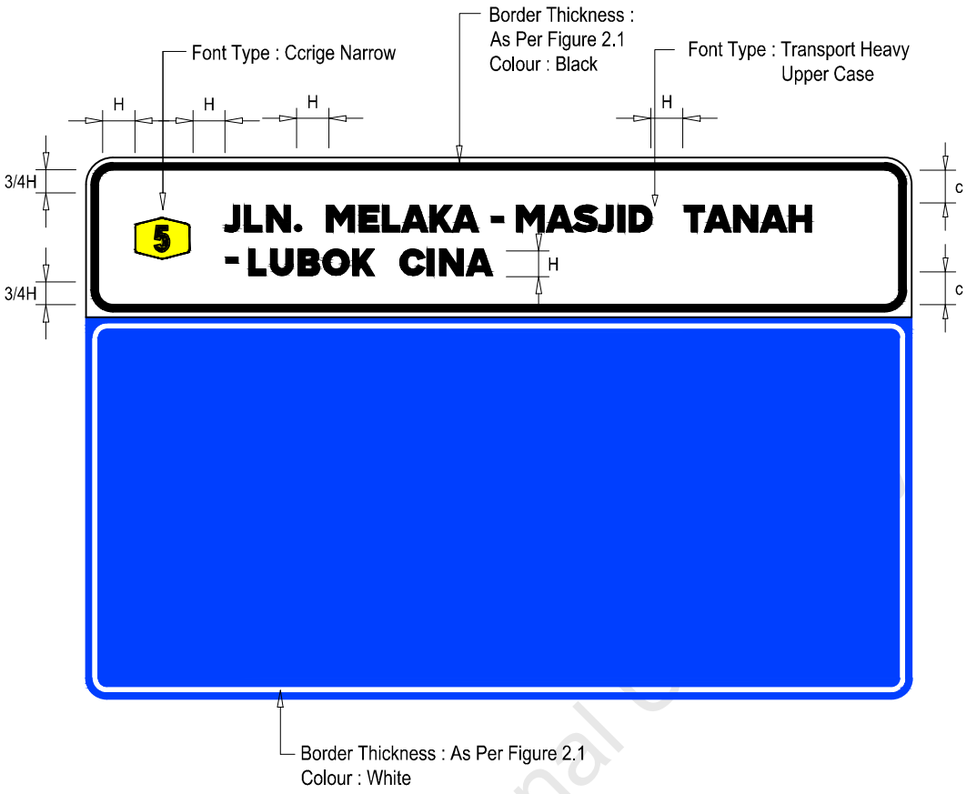
a) 200 m from a turning roadway or 150 m beyond an acceleration lane.

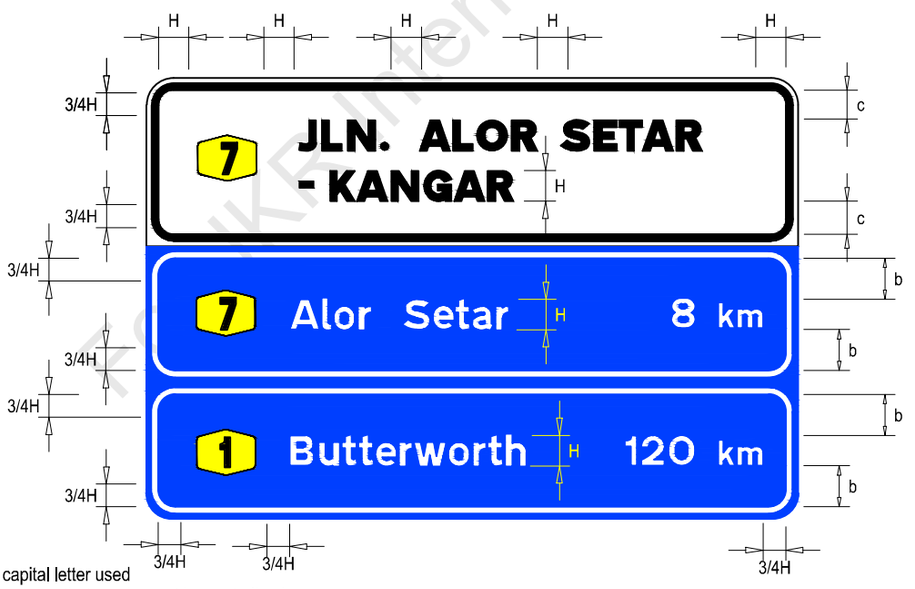
b) 100 m outside the city or municipality limits or at the edge of the built-up districts.

c) 20 km intervals along the route, if there is no junction.

Layout design and application of distance signs are shown in Figure 3.7 and Appendix D respectively.

FIGURE 3.7 : LAYOUT DESIGN OF DISTANCE SIGN WITH ROUTE NUMBERS AND NAMES





LEGEND :

H = Height of capital letter used
b & c = Distance showing that words must be centralised
*Maximum size for Route Number is 400 mm
**Maximum size for Route Name is 400 mm

NOTE :

1) Not more than 5 names should be used in combination but only 3 names shall be shown per route or direction.
2) Distance should be shown at the right side of place names.
3) The route number marker shall be displayed on the left hand side of the route name.
4) The nearer on-the-route destination should be placed as top of any on-the-route destination further away.
5) Destination(s) with the nearer off-the-route junction should be placed on top of any destination with the off-the-route junction further away.
6) Places of great interest that do not have their name listed in Appendix B such as Taman Negara, Genting Highlands, Desaru etc. may also be shown provided the routes to these places coincide with the routes to those listed ones.

3.5 Route Names

Route names shall be displayed on the distance signs. The route number (See Figure 3.10) shall be placed on the left hand side of the route name.

The route name to be displayed on the distance sign shall have been gazetted.

3.6 Route Number Markers

Route Number Markers are markers which identify and mark all numbered roads.

They are used for identification of roads, for route confirmation and for guidance and reassurance along the road. On State roads, the route number markers should be initiated with the same alphabet designated on car registration numbers which has already been assigned for that particular state.

Unlike other guide signs, route markers are ordinarily incorporated in the shape of JKR logo, for Federal and State roads, and due to their application, have two fixed sizes. The relationship between sizes and other details of route markers is shown in Table 3.2. Layout design and application of route markers are shown in Figure 3.8 for Local Authority, Figure 3.10 and Figure 3.11 for JKR and Appendix D respectively.

The Route Number Marker (See Figure 3.11) shall be located at the following location of minor road or where destination sign are not applicable:

a) Distance 200 m from a turning roadway or 150 m beyond an acceleration lane.

b) 20 km intervals along the route if there are no junctions.

The details of route numbering system and route marker number for local authority roads are described in sub-section 3.3 shall be refer to MS1987 : 2007 (Route Numbering System and Guide Signs).

3.6.1 Route administered by local authority

The route numbering system for local authority road consists of three alphabetical codes followed by the route number. The shape of the route number shall be oval and see Table 2.1 for the colour codes.

Each local authority is given a unique alphabetical code as follows.

a) The first alphabet indicates the state or territory where the local authority is situated.

b) The following alphabets in the code represent the alphabets that make up the name of local authorities. See Appendix F for the alphabetical codes of the local authorities.

Note: Alphabet I, O and Z should not be used to avoid confusion.

The local authority should identify the route number up to a maximum of 3 numerals.

Figure 3.8 shows the example of route numbering system for local authority of Subang Jaya and Table 3.1 shows the size requirement for local authority route number markers.

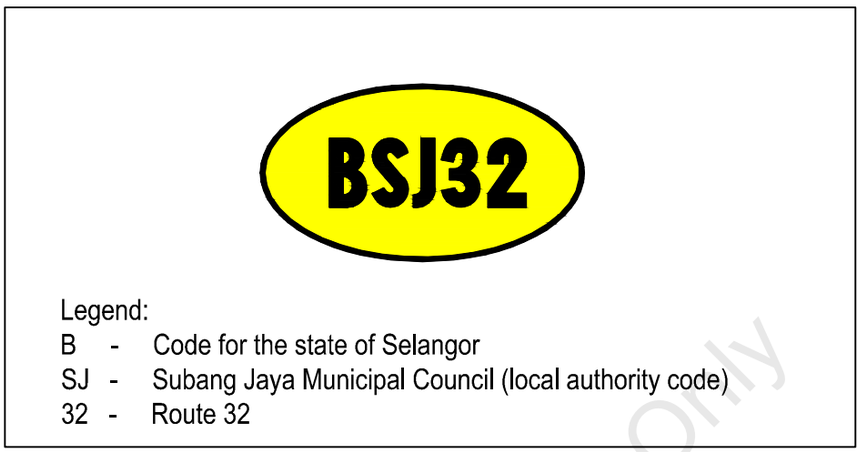


Figure 3.8A : Route Numbering System For Local Authority

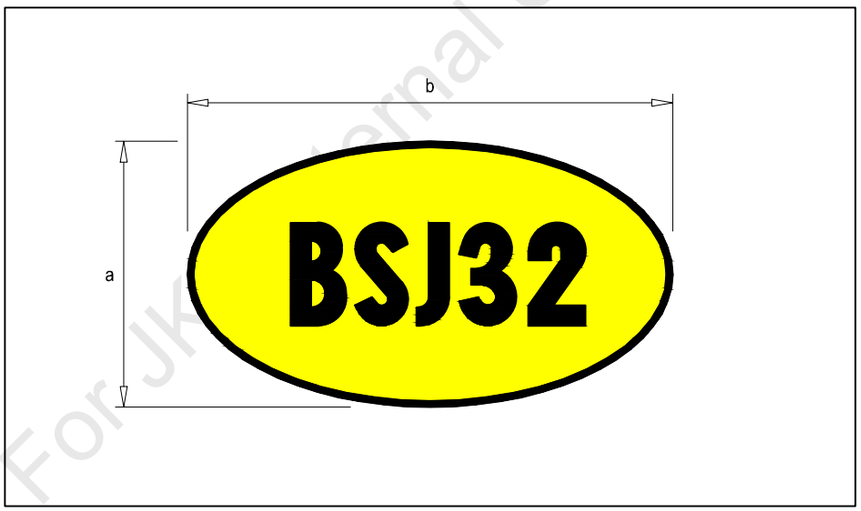


Figure 3.8B : Local Authority Route Number Markers

Table 3.1 : Specifications For Local Authority Route Number Markers

Height of letter (mm)	a (mm)	b (mm)
100	250	422
150	375	633
200	500	844
250	575	1055

3.6.2 Implementation of route numbering for local authority

Route numbering for local authority may be incorporated on guide signs. It may be used on destination sign, route marker and kilometre post.

Figure 3.9 and 3.10 show the examples of route numbering for local authority.

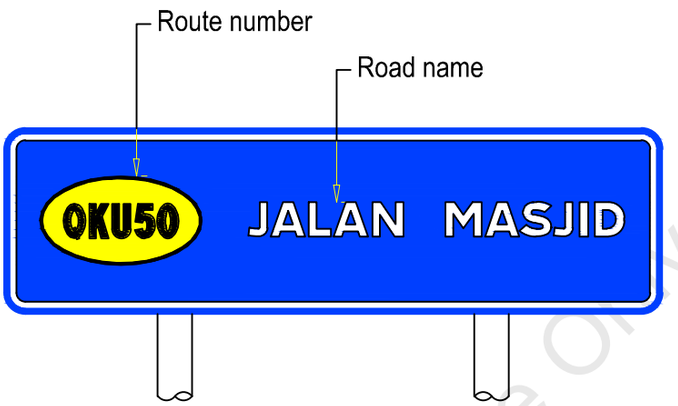


Figure 3.9 Route Numbering System For Local Authority On Guide Sign

Figure 3.9 shows the guide sign for 'Jalan Masjid' which is part of route QKU 50 where,

Q is for Sarawak;

KU is for Kuching Utara local authority; and

50 is for route number 50.

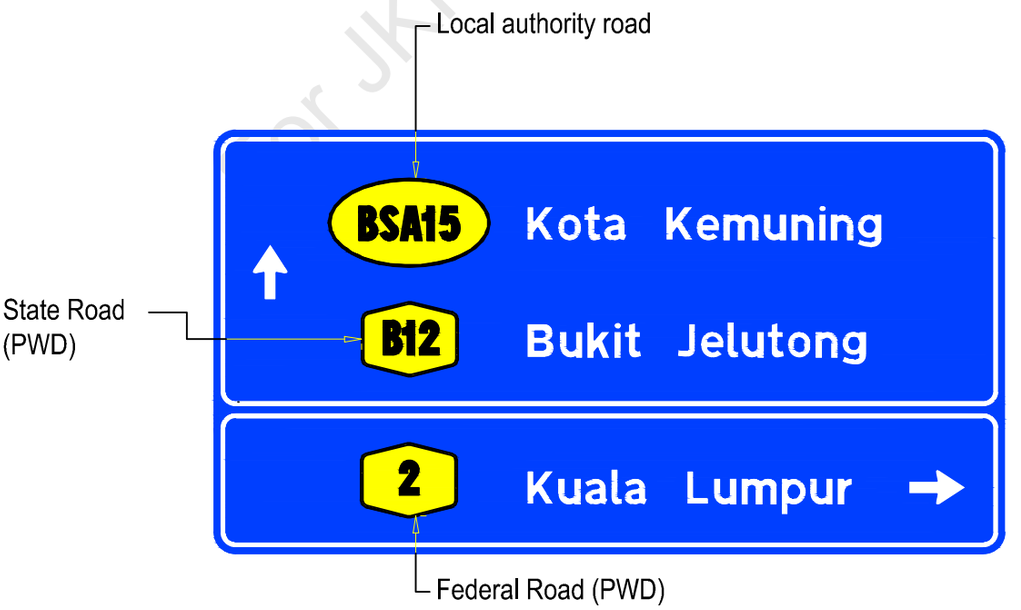


Figure 3.10 Route Numbering System For Local Authority On Destination Sign

Table 3.2: Details Of Route Number Markers

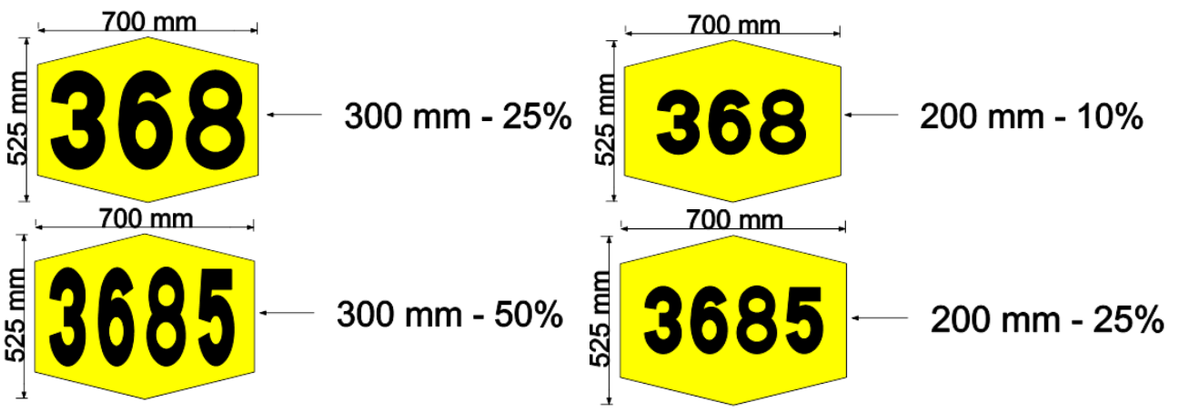
Size of Route Marker (D x W x D2)	Single Carriageway Letter Height, H (mm)	Multiple Carriageway/ Gantry Letter Height, H (mm)	No. Of Numeral & Alphabet	H, Route Number Height
525 x 700 x 350	250	300	1 to 2 3 4	300 300[3] 300[5]
525 x 700 x 350	200	250	1 to 2 3 4	250 250 250
525 x 700 x 350	150	200	1 to 2 3 4	200 200 200[3]
450 x 600 x 300	150	-	1 to 2 3 4	150 150[2] 150[3]

NOTES:

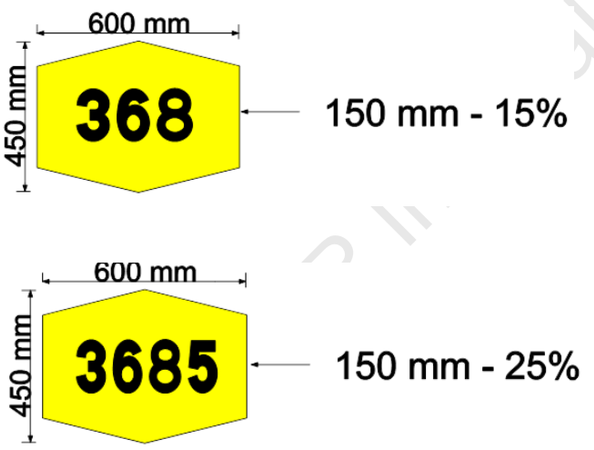
1) 5% reduction in lettering width.
2) 15% reduction in lettering width.
3) 25% reduction in lettering width.
4) 30% reduction in lettering width.
5) 50% reduction in lettering width.

FIGURE 3.11: SIZES OF ROUTE NUMBER MARKERS

525mm x 700mm x 350mm



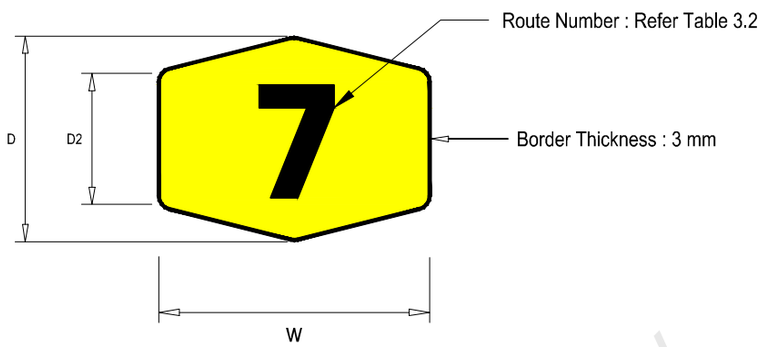
450mm x 600mm x 300mm



Note:

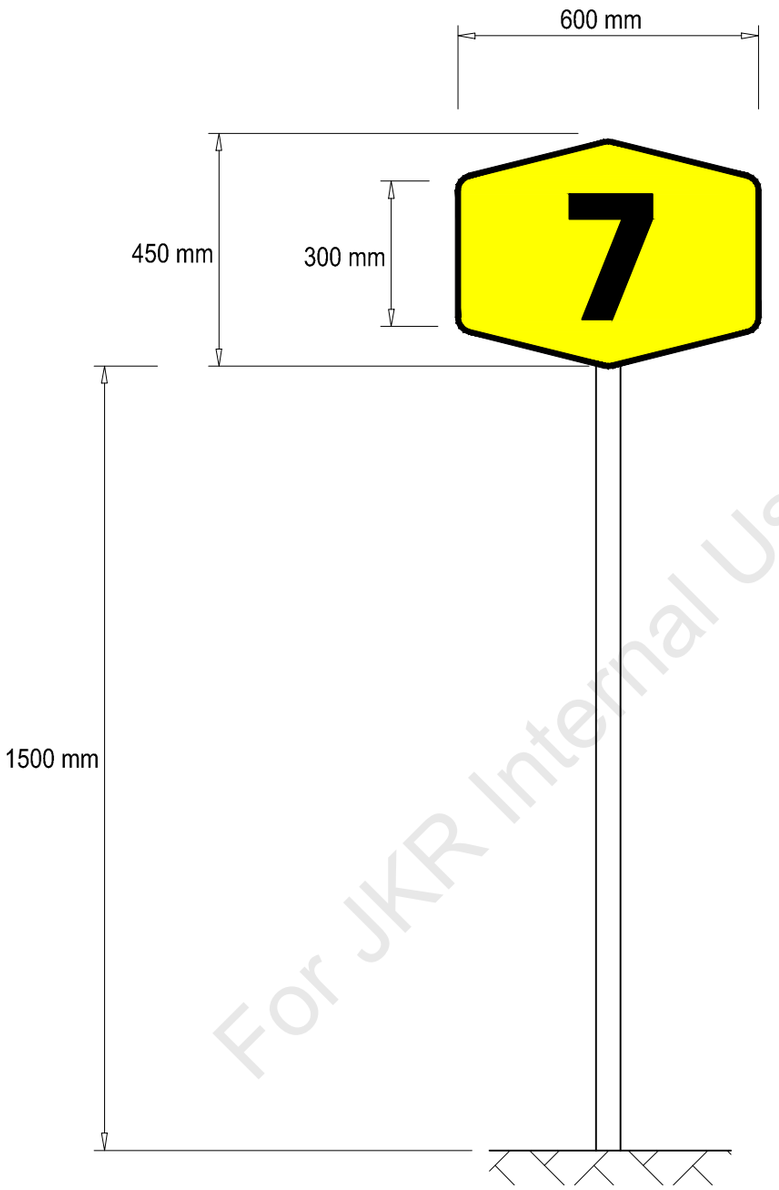
1. *The usage of crown sizes shall be according to the letter height. A suitable crown size which neither is space consuming nor indiscernible be selected.*
2. *The reductions depicted here are recommendations.*

FIGURE 3.12 : LAYOUT DESIGN OF ROUTE NUMBER MARKERS



SPECIFICATION			
	COLOUR	MATERIAL	LETTERING
LETTER / SYMBOL AND BORDER	Black	Wide Angle Prismatic retro reflective sheeting or as otherwise required	Refer Table 3.2
BACKGROUND	Fluorescent Yellow		

FIGURE 3.13 : LAYOUT DESIGN OF ROUTE NUMBER MARKERS FOR MINOR ROAD



NOTE :

The post shall be of tubular hollow section steel of 50 mm outside diameter and made of galvanised steel.

3.7 Information Signs

Information signs are signs which inform road users of the names of towns and villages, recreational and historical/cultural places, the availability of facilities or services, and remind them of road etiquettes, road boarders and etc. That have very little or no relation to giving route information.

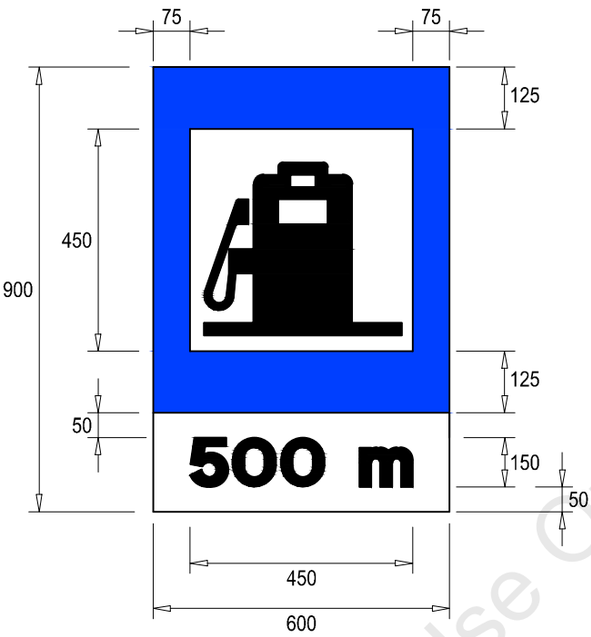
Information signs may be either symbols or word messages, and shall be erected according to the nature of the information to be given. Types and uses of information signs are shown in Figure 3.15 to Figure 3.25.

Table 3.3: Information Signs

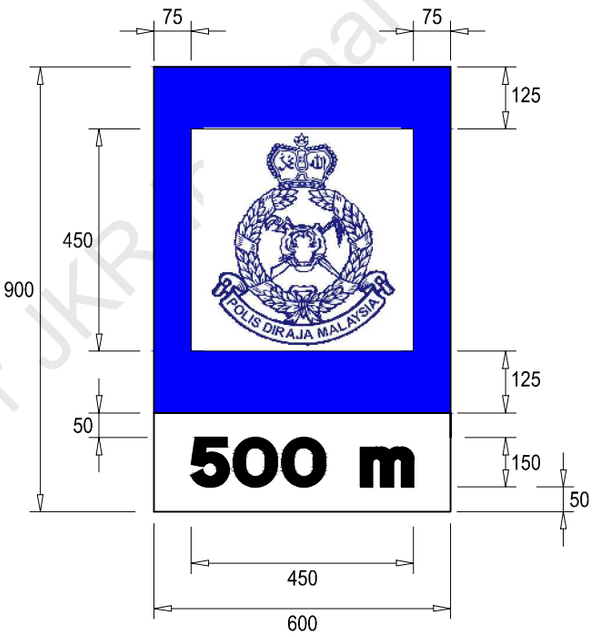
Types	Uses
1. General Services Signs	Inform road users of the availability of facilities or services such as petrol, telephone, etc.
2. Recreational/Historical and Cultural Areas/Places of Interest Signs	Inform road users of the names and directions to these places.
3. Major Housing Estates	Inform road users of the names and road directions to major housing estates. (Refer to note no.3, page 2-6)
4. River Name Signs	Inform road users of the name of rivers.
5. Town or Village Name Signs	Inform road users of the names of towns/villages.
6. Government Building Signs	Inform road users of the names and directions to these buildings such as Sri Perdana, Kementerian Kerja Raya, etc.
7. Government Related Premises	Inform road users of the names of road directions to government related premises such as Terminal Bersepadu Selatan, KLIA, etc.

FIGURE 3.14 : LAYOUT DESIGN OF INFORMATION SIGNS

1) GENERAL SERVICE SIGN



(A) PETROL STATION



(B) POLICE STATION

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	As Shown in Figure 3.14 (A) & (B)	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Height: 150mm	To be located where ever necessary
BACKGROUND				

FIGURE 3.15 : LAYOUT DESIGN OF INFORMATION SIGNS

2) RECREATIONAL / HISTORICAL AND CULTURAL AREAS / PLACES OF INTEREST SIGN

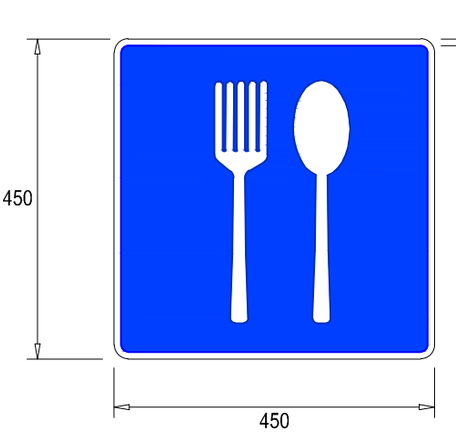
LEGEND : H = Height of capital letter used

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Sign A : White Sign 1, 2, 3 & 4 : White (recreational signs) Sign 5, 6, 7 & 8 : White (service signs)	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Height: Refer to Table 2.3	To be located where ever necessary as Figure D.14
BACKGROUND	Sign A : Brown Sign 1, 2, 3 & 4 : Brown (recreational signs) Sign 5, 6, 7 & 8 : Blue (service signs)			

Note : Places with long names may have the words placed one on top of each other with a vertical spacing of 1/2 of the recommend height between them and the first letter of the words of the bottom row intended 3/4 of the recommended letter height away from the first letter of the words on the upper row.

FIGURE 3.16 : LAYOUT DESIGN OF INFORMATION SIGNS

2 (a) SERVICE SIGN

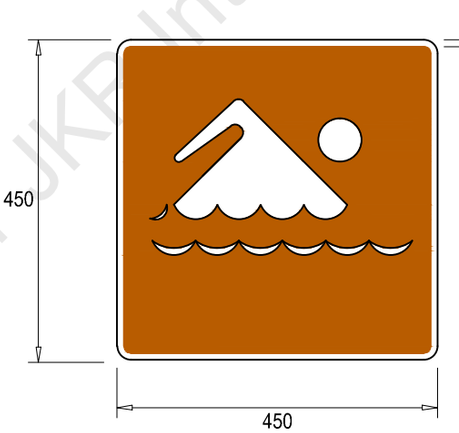


NOTE:

Template for symbols on service signs are shown in Appendix A

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	White	High Intensity Prismatic retro reflective sheeting or as otherwise required		To be located with recreational or historical and cultural interest area signs only
BACKGROUND	Blue			

2 (b) RECREATIONAL SIGN



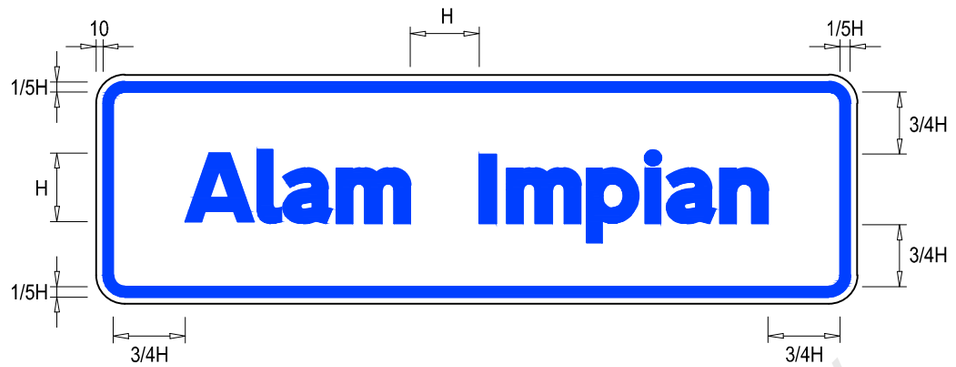
NOTE:

Template for symbols on recreational signs are shown in Appendix A

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	White	High Intensity Prismatic retro reflective sheeting or as otherwise required		To be located with recreational or historical and cultural interest area signs only
BACKGROUND	Brown			

FIGURE 3.17 : LAYOUT DESIGN OF INFORMATION SIGNS

3) MAJOR HOUSING ESTATES SIGN



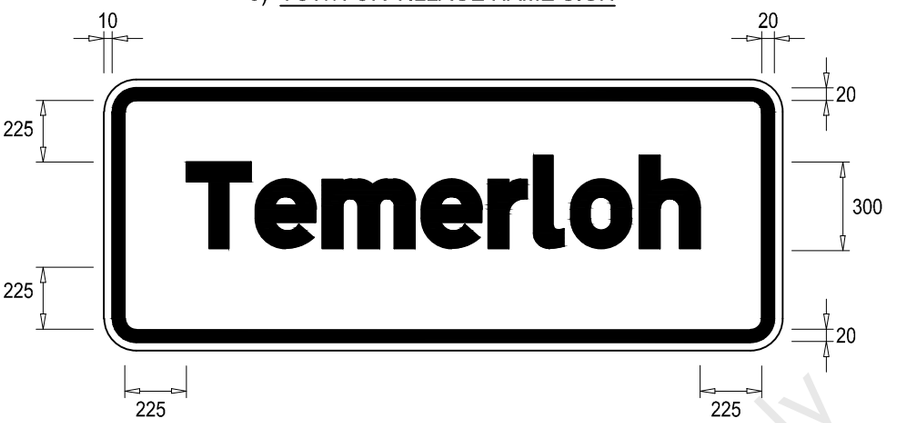
SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Blue	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: Refer to table 2.3	To be located where ever necessary
BACKGROUND	White			

4) RIVER NAME SIGN

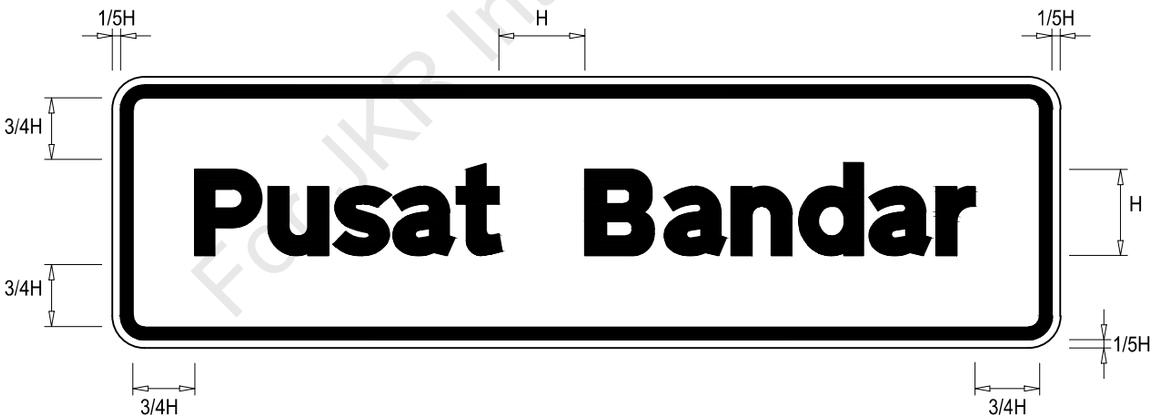
SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Green	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: 100mm	To be located where ever necessary (Stand alone)
BACKGROUND	White			

FIGURE 3.18 : LAYOUT DESIGN OF INFORMATION SIGNS

5) TOWN OR VILLAGE NAME SIGN



SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Black	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: 300mm	To be located where ever necessary (Stand alone)
BACKGROUND	White			



SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Black	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: Refer to table 2.3	To be located where ever necessary
BACKGROUND	White			

FIGURE 3.19 : LAYOUT DESIGN OF INFORMATION SIGNS

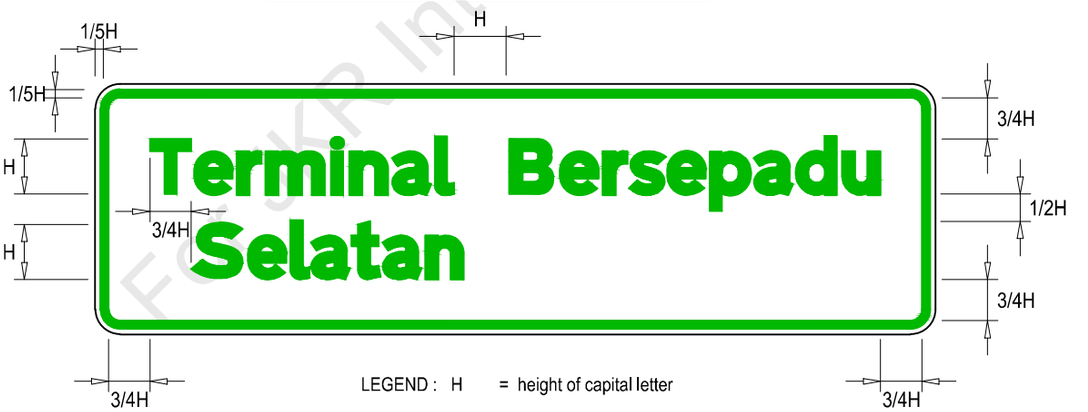
6) GOVERNMENT BUILDING SIGN

LEGEND : H = height of capital letter

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Yellow	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: refer to Table 2.3	To be located where ever necessary
BACKGROUND	Green			

Note : Places with long names may have the words placed one on top of each other with a vertical spacing of 1/2 of the recommend height between them and the first letter of the words of the bottom row intended 3/4 of the recommended letter height away from the first letter of the words on the upper row.

7) GOVERNMENT RELATED PREMISES SIGN



LEGEND : H = height of capital letter

SPECIFICATION				
	COLOUR	MATERIAL	LETTERING	PLACEMENT
LETTER / SYMBOL AND BORDER	Green	High Intensity Prismatic retro reflective sheeting or as otherwise required	Transport Heavy Capital Letter Height: refer to Table 2.3	To be located where ever necessary
BACKGROUND	White			

Note : Places with long names may have the words placed one on top of each other with a vertical spacing of 1/2 of the recommend height between them and the first letter of the words of the bottom row intended 3/4 of the recommended letter height away from the first letter of the words on the upper row.

APPENDIX A

Standard Letterings and Symbols

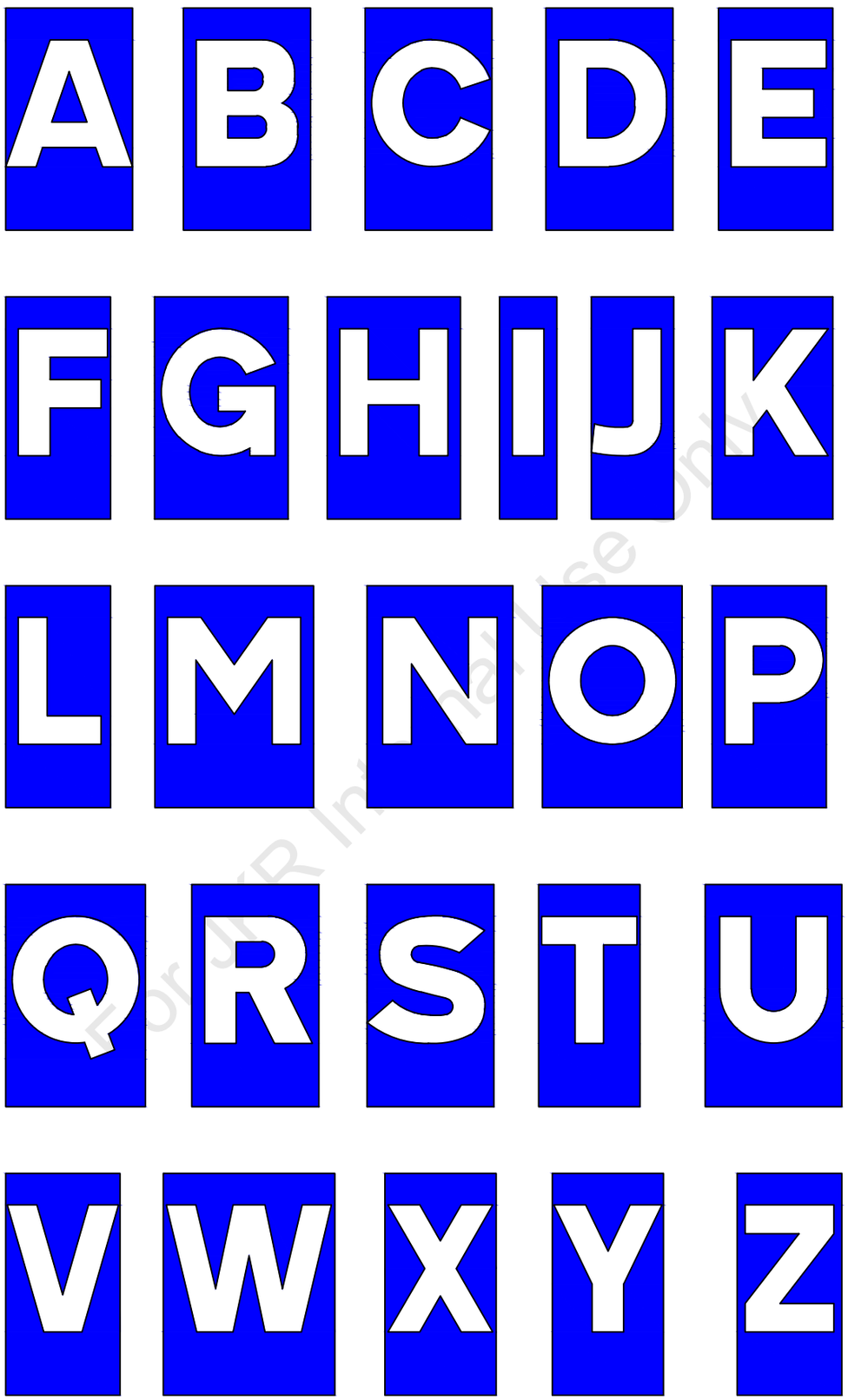


Figure A.1 : Letterings For Traffic Signs (Transport Heavy Normal Upper Case)

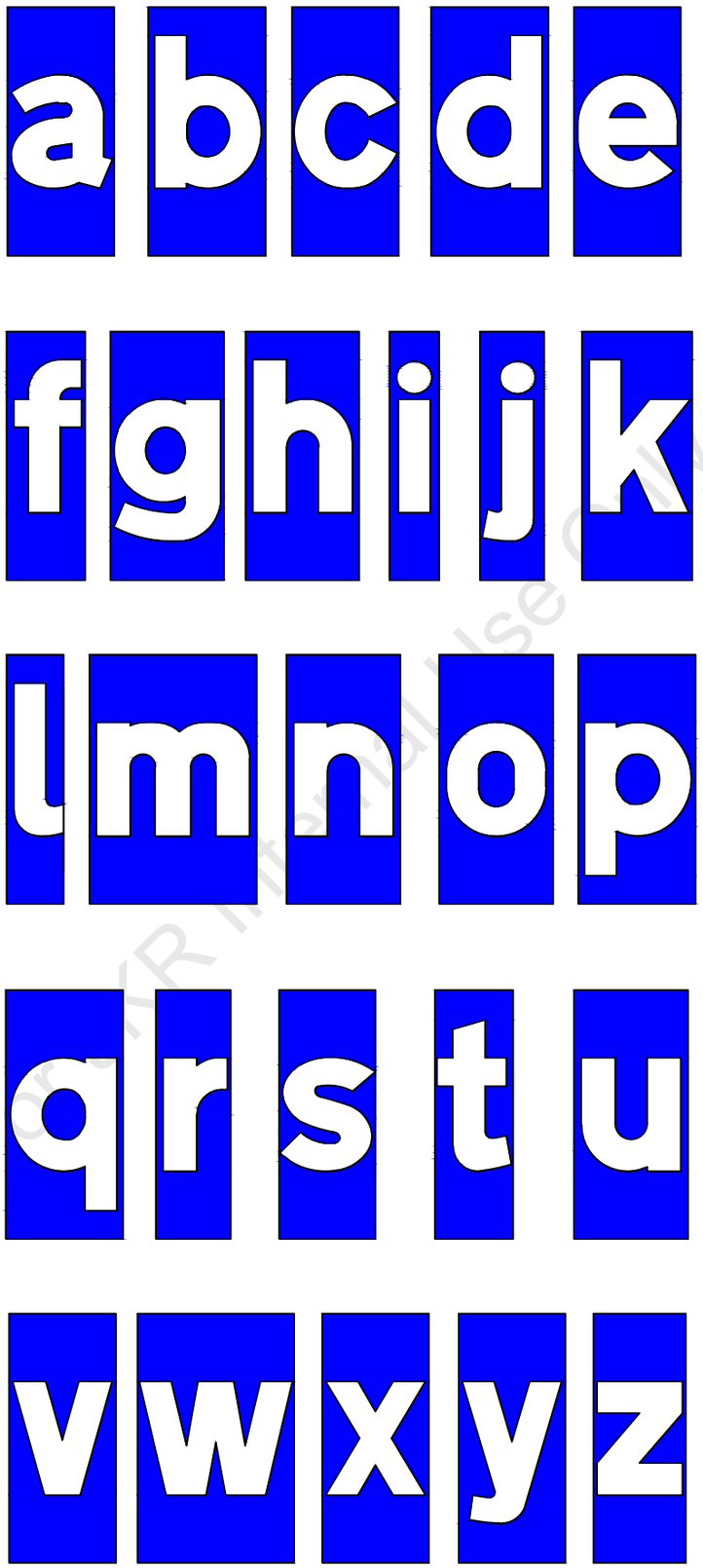


Figure A.2 : Letterings For Traffic Signs (Transport Heavy Normal Lower Case)

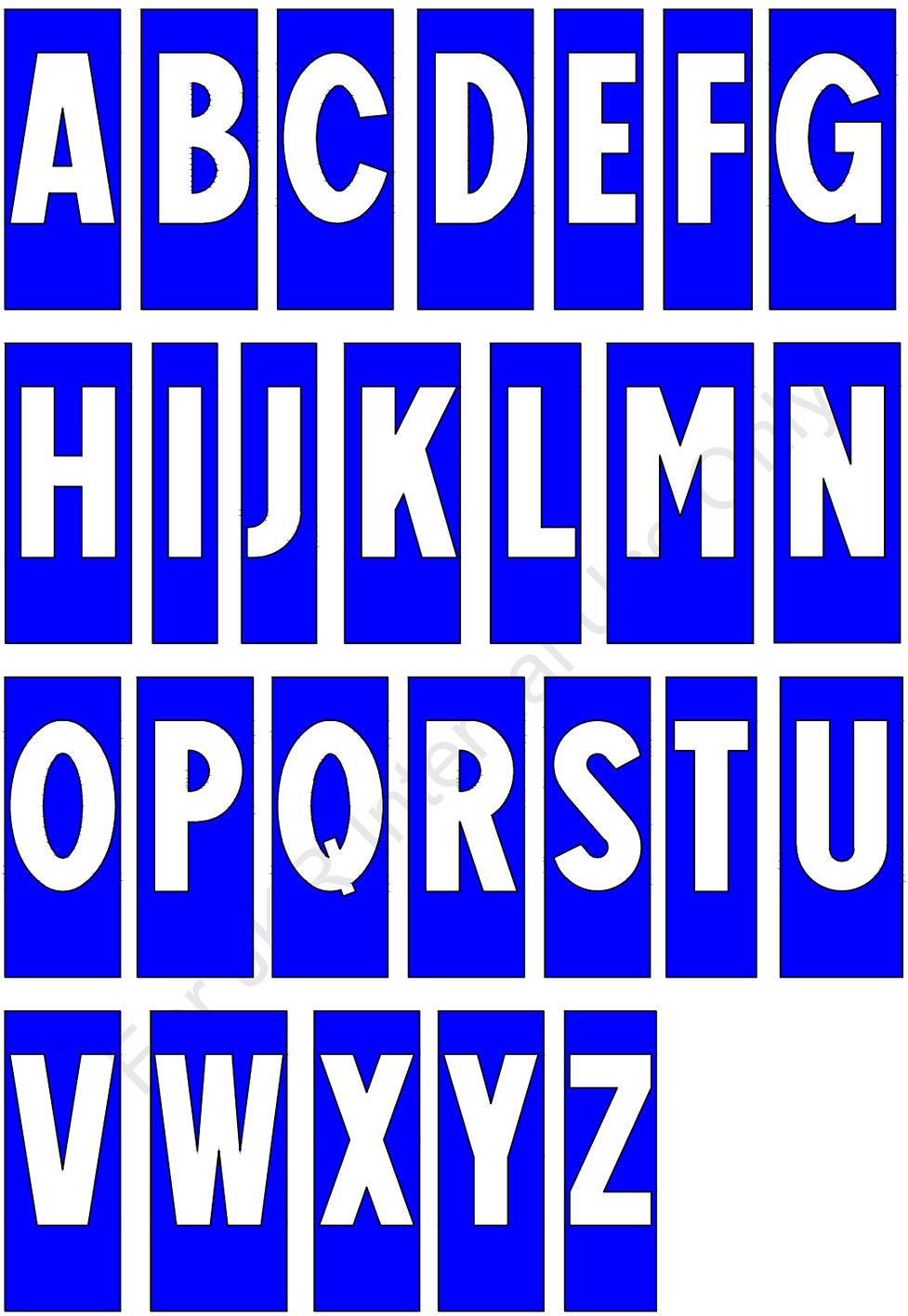


Figure A.3 : Letterings For Traffic Signs (Ccrige Narrow Upper Case)

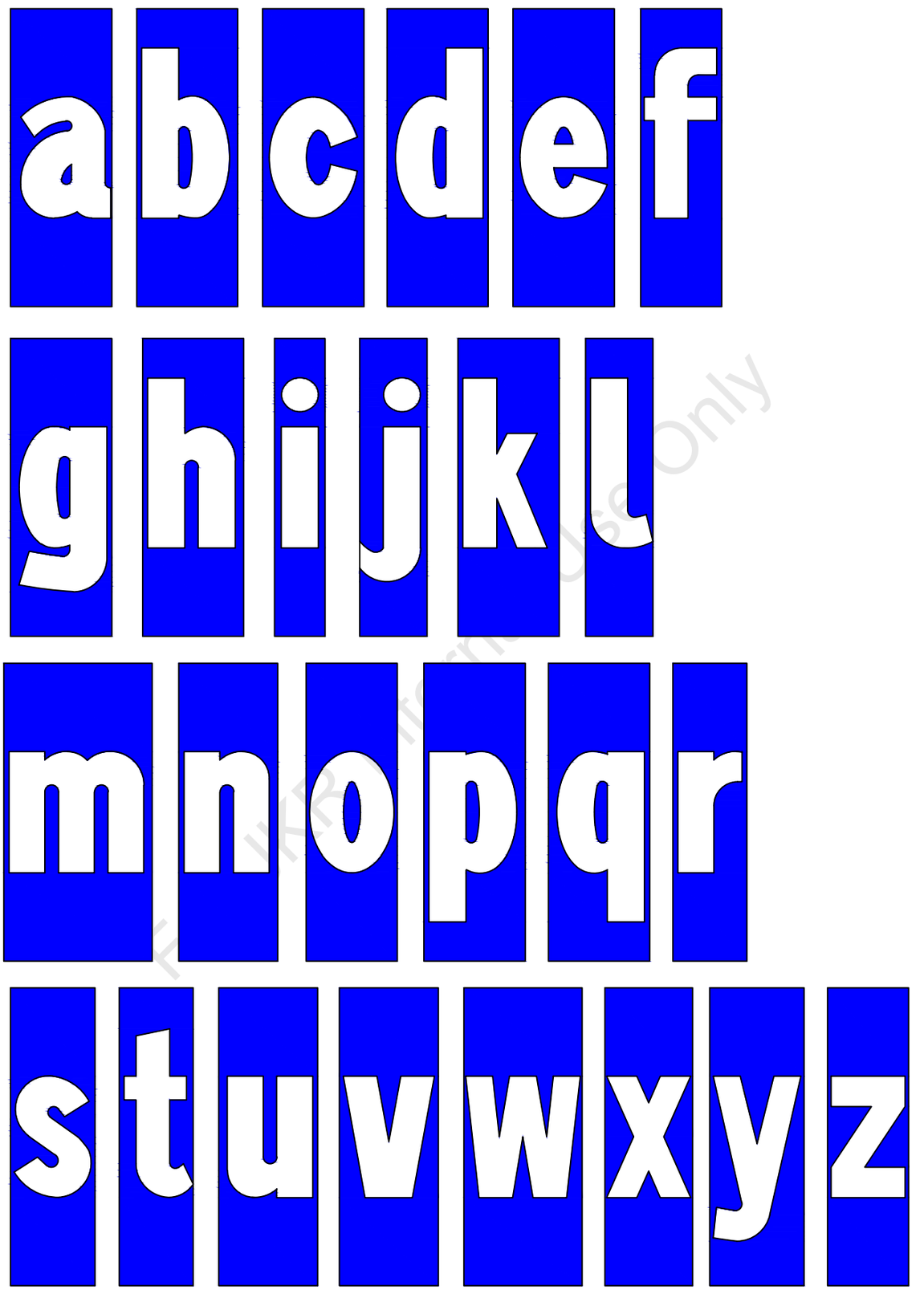
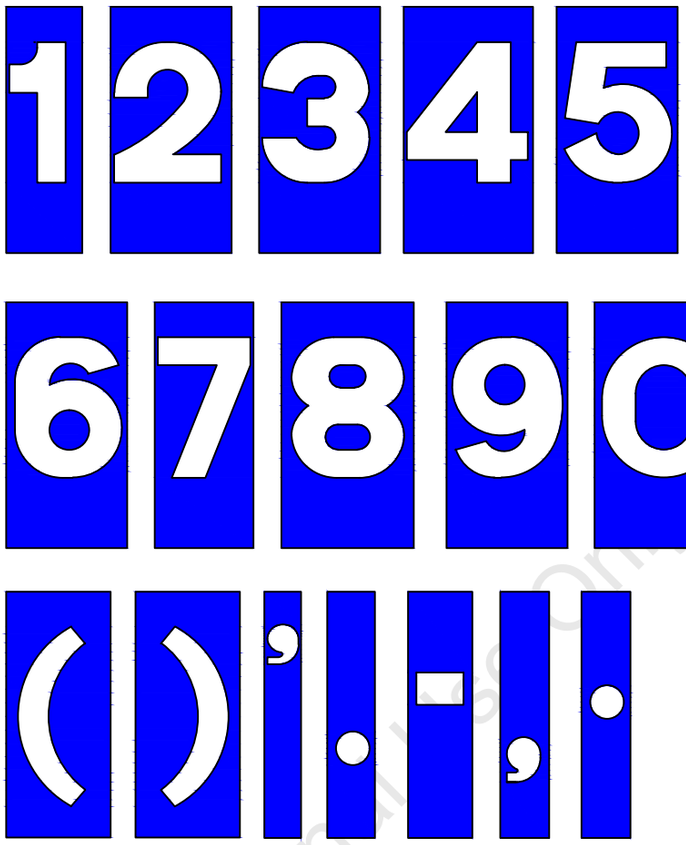
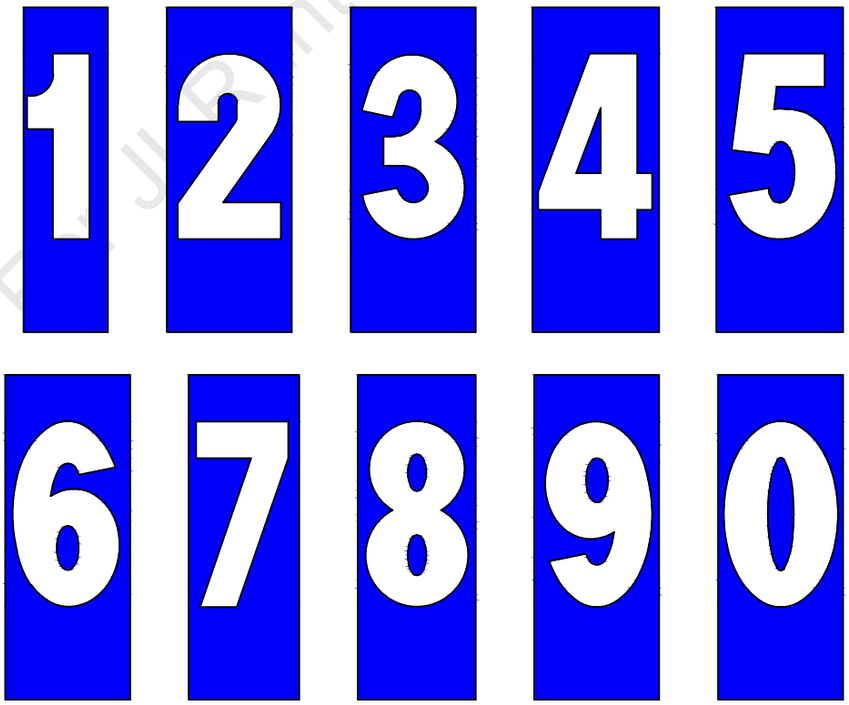


Figure A.4 : Letterings For Traffic Signs (Ccrige Narrow Lower Case)



Transport Heavy Normal Numbers



Ccrige Narrow Numbers

Figure A.5 : Numerals for Traffic Signs

TABLE A.1 : UNIT LETTER HEIGHTS/LETTER WIDTHS, SPACING CONSTANTS, MOSAIC SIZES (TRANSPORT HEAVY NORMAL LETTERS)

ALPHABET	k_1	k_2	w_1	W	ALPHABET	k_1	k_2	w_1	W
A	0.048	0.048	0.921	1.018	a	0.061	0.061	0.673	0.794
B	0.164	0.097	0.782	1.042	b	0.097	0.073	0.685	0.861
C	0.091	0.073	0.909	1.073	c	0.055	0.061	0.655	0.770
D	0.164	0.079	0.824	1.067	d	0.048	0.121	0.685	0.855
E	0.164	0.115	0.691	0.970	e	0.061	0.085	0.655	0.800
F	0.170	0.036	0.655	0.861	f	0.036	0.036	0.485	0.558
G	0.085	0.133	0.885	1.103	g	0.048	0.115	0.667	0.830
H	0.164	0.164	0.800	1.127	h	0.091	0.121	0.636	0.848
I	0.164	0.164	0.200	0.527	i	0.082	0.106	0.200	0.388
J	0.006	0.152	0.515	0.673	j	0.030	0.115	0.358	0.503
K	0.164	0.018	0.806	0.988	k	0.097	0.042	0.667	0.806
L	0.170	0.030	0.648	0.848	l	0.079	0.036	0.339	0.455
M	0.164	0.164	1.006	1.333	m	0.091	0.115	1.024	1.230
N	0.164	0.164	0.879	1.206	n	0.091	0.121	0.630	0.842
O	0.091	0.091	0.939	1.121	o	0.048	0.079	0.691	0.818
P	0.164	0.061	0.733	0.958	p	0.097	0.073	0.691	0.861
Q	0.091	0.091	0.964	1.145	q	0.055	0.115	0.679	0.848
R	0.158	0.097	0.788	1.042	r	0.109	0.055	0.418	0.582
S	0.073	0.115	0.855	1.042	s	0.036	0.067	0.618	0.721
T	0.027	0.027	0.782	0.836	t	0.055	0.055	0.497	0.606
U	0.139	0.139	0.824	1.103	u	0.091	0.121	0.636	0.848
V	0.058	0.058	0.836	0.952	v	0.036	0.042	0.679	0.758
W	0.079	0.079	1.236	1.394	w	0.055	0.055	1.030	1.139
X	0.030	0.030	0.861	0.921	x	0.036	0.036	0.709	0.782
Y	0.027	0.027	0.848	0.903	y	0.030	0.055	0.667	0.752
Z	0.061	0.079	0.709	0.848	z	0.055	0.061	0.552	0.667

k_1 & k_2 = SPACING CONSTANT

w_1 = LETTER WIDTH

W = MOSAIC WIDTH

TABLE A.2 : UNIT LETTER HEIGHTS/LETTER WIDTHS, SPACING CONSTANTS, MOSAIC SIZES (CCRIGE NARROW LETTERS)

ALPHABET	k_1	k_2	w_1	W	ALPHABET	k_1	k_2	w_1	W
A	0.061	0.061	0.594	0.715	a	0.048	0.061	0.509	0.618
B	0.133	0.085	0.521	0.739	b	0.091	0.061	0.455	0.606
C	0.073	0.061	0.582	0.715	c	0.055	0.055	0.448	0.558
D	0.133	0.073	0.564	0.770	d	0.048	0.109	0.448	0.606
E	0.121	0.067	0.442	0.630	e	0.048	0.061	0.473	0.582
F	0.133	0.048	0.394	0.576	f	0.042	0.024	0.418	0.485
G	0.073	0.115	0.576	0.764	g	0.061	0.103	0.455	0.618
H	0.127	0.127	0.533	0.788	h	0.085	0.085	0.485	0.655
I	0.121	0.121	0.200	0.442	i	0.085	0.085	0.194	0.364
J	0.030	0.121	0.321	0.473	j	0.024	0.097	0.339	0.461
K	0.133	0.048	0.545	0.727	k	0.097	0.024	0.473	0.594
L	0.127	0.048	0.370	0.545	l	0.097	0.024	0.303	0.424
M	0.121	0.121	0.642	0.885	m	0.091	0.091	0.776	0.958
N	0.121	0.121	0.539	0.782	n	0.097	0.097	0.461	0.655
O	0.067	0.067	0.600	0.733	o	0.048	0.048	0.485	0.582
P	0.121	0.048	0.515	0.685	p	0.091	0.048	0.467	0.606
Q	0.061	0.067	0.600	0.727	q	0.048	0.103	0.455	0.606
R	0.121	0.048	0.558	0.727	r	0.091	0.042	0.339	0.473
S	0.061	0.073	0.521	0.655	s	0.048	0.048	0.448	0.545
T	0.036	0.036	0.424	0.497	t	0.033	0.024	0.430	0.487
U	0.121	0.121	0.521	0.764	u	0.097	0.091	0.467	0.655
V	0.048	0.061	0.594	0.703	v	0.048	0.048	0.509	0.606
W	0.048	0.061	0.776	0.885	w	0.048	0.048	0.667	0.764
X	0.061	0.061	0.545	0.667	x	0.048	0.048	0.467	0.564
Y	0.061	0.061	0.594	0.715	y	0.048	0.042	0.503	0.594
Z	0.061	0.061	0.461	0.582	z	0.048	0.048	0.412	0.509

k_1 & k_2 = SPACING CONSTANT

w_1 = LETTER WIDTH

W = MOSAIC WIDTH

TABLE A.3 : UNIT NUMERAL WIDTH, SPACING CONSTANTS, MOSAIC SIZE (NORMAL AND NARROW NUMBERS)

TRANSPORT HEAVY NORMAL NUMBERS				
NUMERAL	k_1	k_2	w_1	W
1	0.061	0.158	0.364	0.582
2	0.036	0.091	0.721	0.848
3	0.061	0.121	0.752	0.933
4	0.012	0.085	0.861	0.958
5	0.103	0.073	0.733	0.909
6	0.073	0.073	0.739	0.885
7	0.012	0.036	0.691	0.739
8	0.109	0.109	0.739	0.958
9	0.073	0.085	0.752	0.909
0	0.085	0.085	0.824	0.994
(	0.103	0.206	0.479	0.788
)	0.206	0.103	0.479	0.788
( )	0.048	0.012	0.218	0.279
(-)	0.061	0.109	0.315	0.485
'	0.036	0.133	0.218	0.388
·	0.073	0.121	0.182	0.376

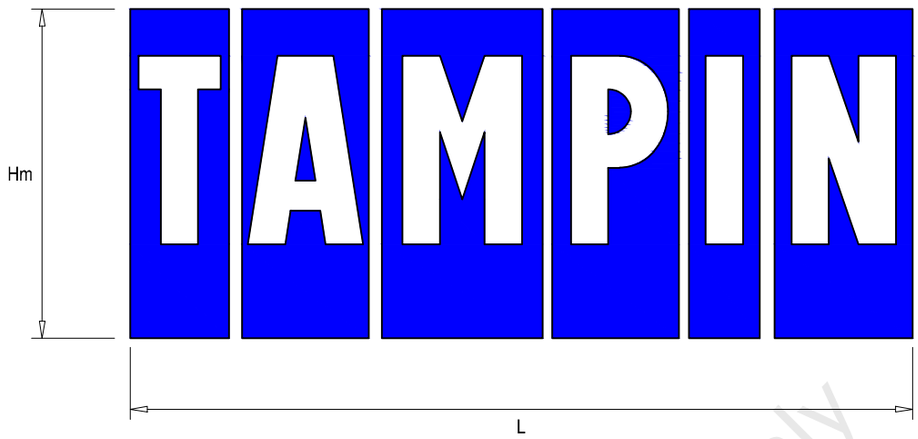
CCRIGE NARROW NUMBERS				
NUMERAL	k_1	k_2	w_1	W
1	0.061	0.133	0.303	0.497
2	0.091	0.091	0.515	0.657
3	0.061	0.109	0.545	0.715
4	0.042	0.091	0.594	0.727
5	0.079	0.091	0.570	0.739
6	0.073	0.103	0.552	0.727
7	0.061	0.073	0.455	0.588
8	0.079	0.079	0.545	0.703
9	0.073	0.085	0.558	0.715
0	0.073	0.073	0.594	0.739

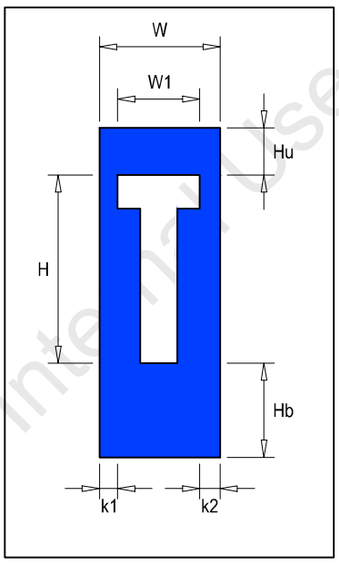
k_1 & k_2 = SPACING CONSTANT

w_1 = LETTER WIDTH

W = MOSAIC WIDTH

FIGURE A.6 : TYPICAL WORD FORMATIONS AND SAMPLE CALCULATION
(CCRIGE NARROW LETTERINGS)





LETTER TYPE - NARROW

HEIGHT OF LETTER : H = 250 mm

The above calculation is as follows:-

From formulae:-

$L = \{ S W - (k1 + k2) \} H$

Where SW = $WT + WA + WM + \ldots\ldots\ldots\ldots W_N$

k1 = Constant for first letter 'T'

k2 = Constant for last letter 'N'

L = {(0.497 + 0.715 + 0.885 + 0.685 + 0.442 + 0.782) - (0.036+ 0.121)} x 250

= {(4.006 - 0.157)} x 250

= 3.849 x 250

= 962.25 say 965 mm

To calculate height of mosaic (Hm) :-

Hu = 0.085 H

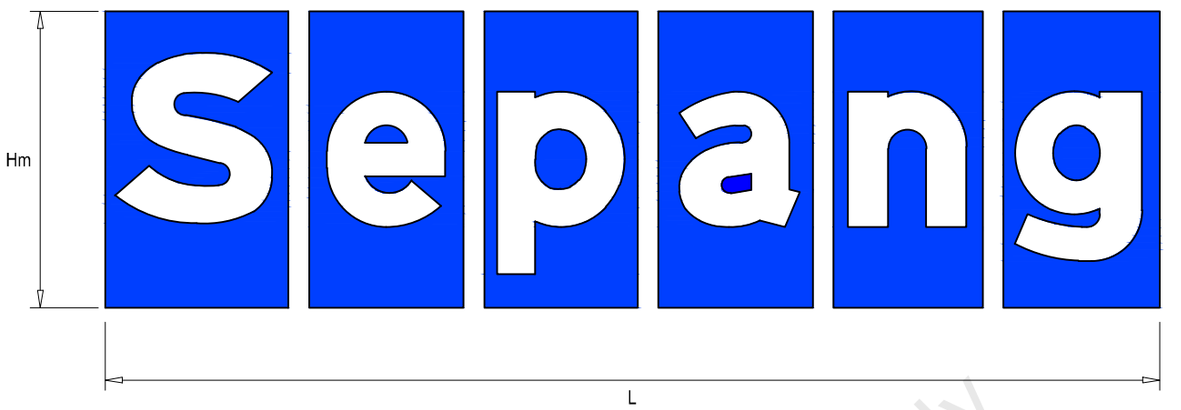
Hb = 0.364 H

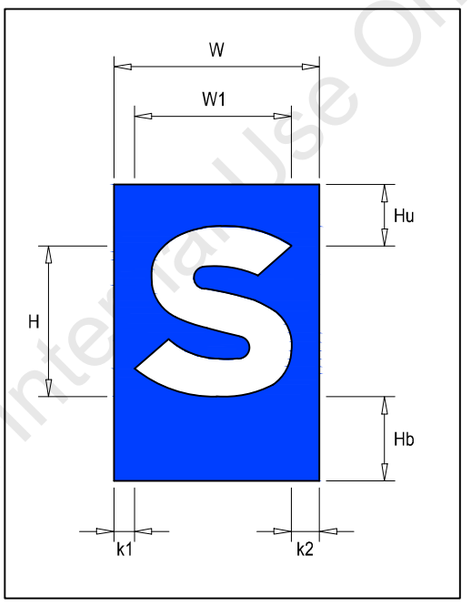
Hm = Hu + H + Hb

= 0.085 (250) + 250 + 0.364 (250)

= 362.3 say 365 mm

FIGURE A.7 : TYPICAL WORD FORMATIONS AND SAMPLE CALCULATION
(NORMAL LETTERINGS)





LETTER TYPE - NORMAL

HEIGHT OF LETTER : H = 250 mm

The above calculation is as follows:-

From formulae:-

$L = \{ S W - (k_1 + k_2) \} H$

Where $SW = W_S + W_E + W_P + \ldots\ldots\ldots\ldots W_G$

k_1 = Constant for first letter 'S'

k_2 = Constant for last letter 'G'

$L = \{(1.042 + 0.800 + 0.861 + 0.794 + 0.842 + 0.830) - (0.073 + 0.115)\} \times 250$

$= \{(5.169) - (0.188)\} \times 250$

$= 4.981 \times 250$

$= 1245.3$ say 1250 mm

To calculate height of mosaic (Hm)

$Hu = 0.085 H$

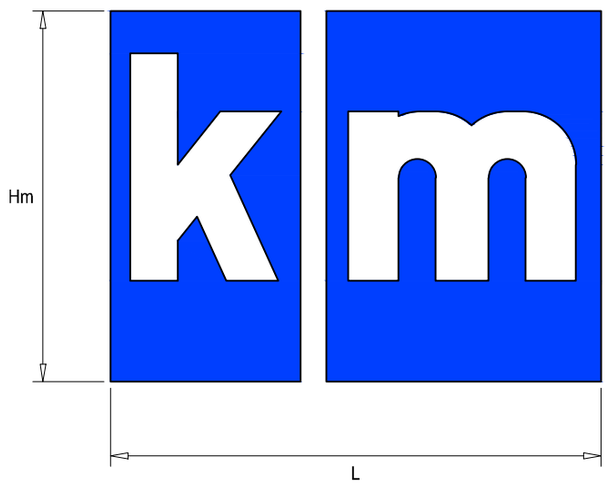
$Hb = 0.364 H$

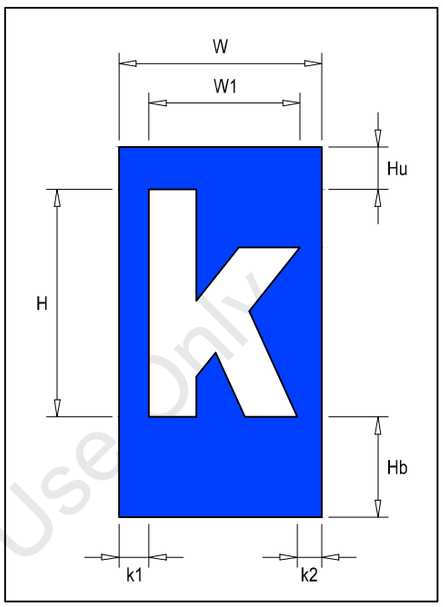
$Hm = Hu + H + Hb$

$= 0.085 (250) + 250 + 0.364 (250)$

$= 362.3$ say 365 mm

FIGURE A.8 : TYPICAL WORD ARRANGEMENTS AND SAMPLE CALCULATION
(NORMAL LETTERINGS)





LETTER TYPE - NORMAL

Height of upper case letter : H = 250 mm

The above calculation is as follows:-

From formulae:-

$L = \{ S W - (k_1 + k_2) \} H$

Where $SW = W_k + W_m$

k_1 = Constant for first letter `k'

k_2 = Constant for last letter `m'

$L = \{ (0.806 + 1.230) - (0.097 + 0.115) \} \times 250$

$= (2.036 - 0.212) \times 250$

$= (1.824) \times 250$

$= 456$ say 460 mm

To calculate height of mosaic (Hm)

$Hu = 0.085 H$

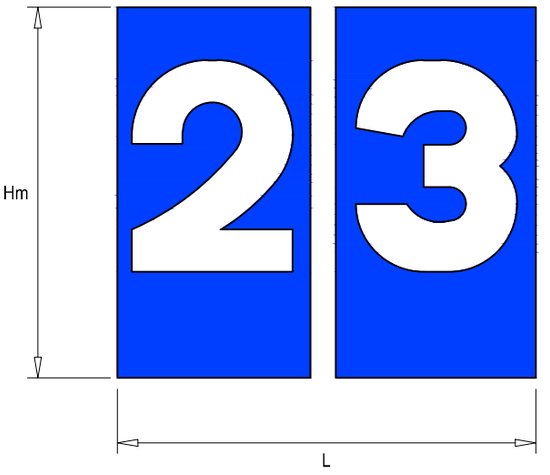
$Hb = 0.364 H$

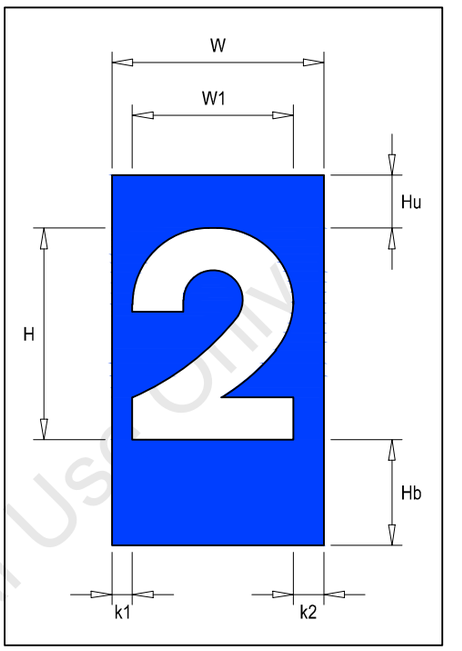
$Hm = Hu + H + Hb$

$= 0.085 (250) + 250 + 0.364 (250)$

$= 362.3$ say 365 mm

FIGURE A.9 : TYPICAL NUMBER FORMATIONS AND SAMPLE CALCULATION
(NORMAL LETTERINGS)





LETTER TYPE - NORMAL
HEIGHT OF LETTER : H = 250 mm

The above calculation is as follows:-
From formulae:-

$L = \{ S W - (k_1 + k_2) \} H$

Where SW = $W_2 + W_3$

k_1 = Constant for first letter '2'

k_2 = Constant for last letter '3'

L = {(0.848 + 0.933) - (0.036 + 0.121)} x 250

= {(1.781) - (0.157)} x 250

= 1.624 x 250

= 406 say 410 mm

To calculate height of mosaic (Hm)

Hu = 0.085 H

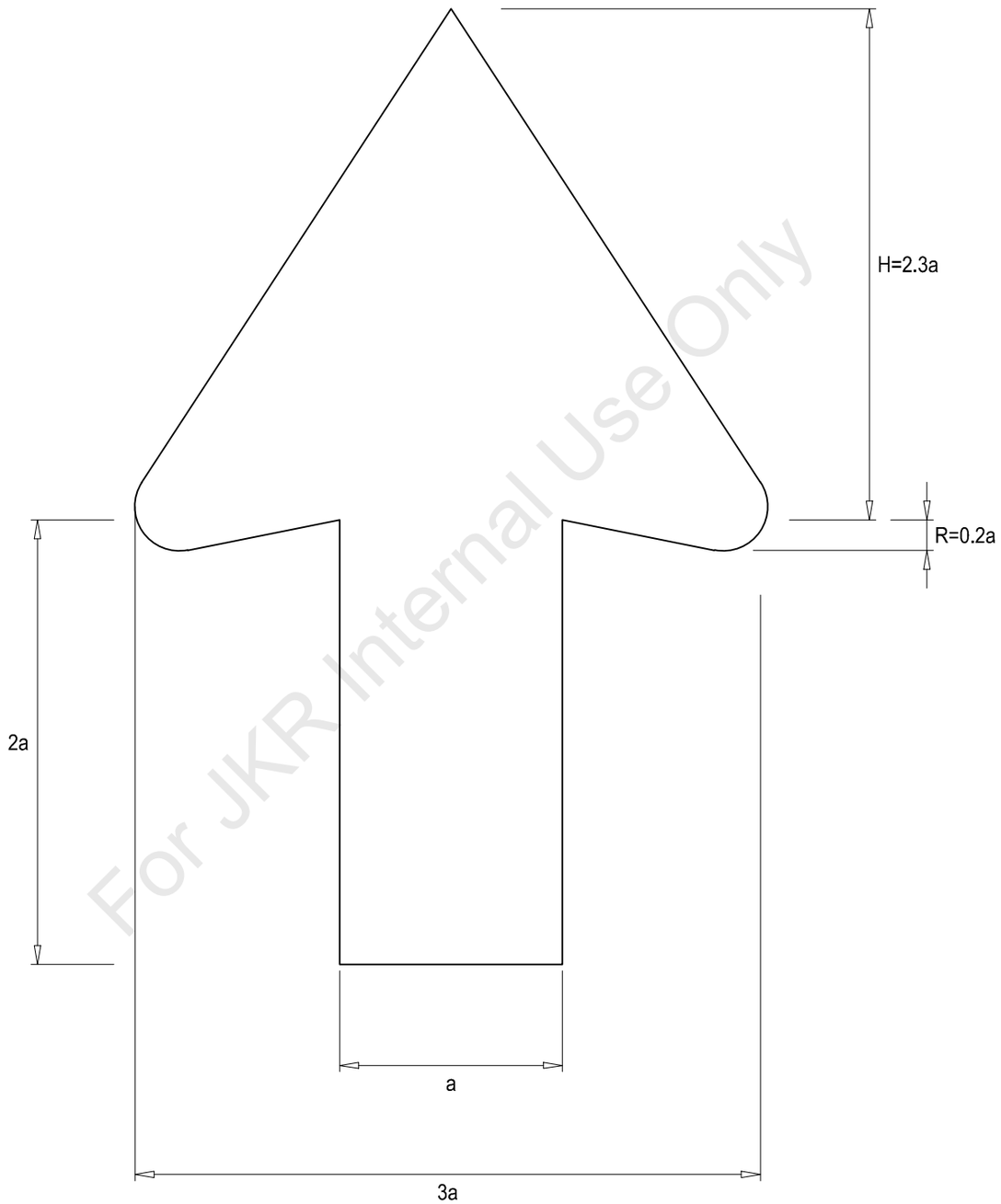
Hb = 0.364 H

Hm= Hu + H + Hb

= 0.085 (250) + 250 + 0.364 (250)

= 362.3 say 365 mm

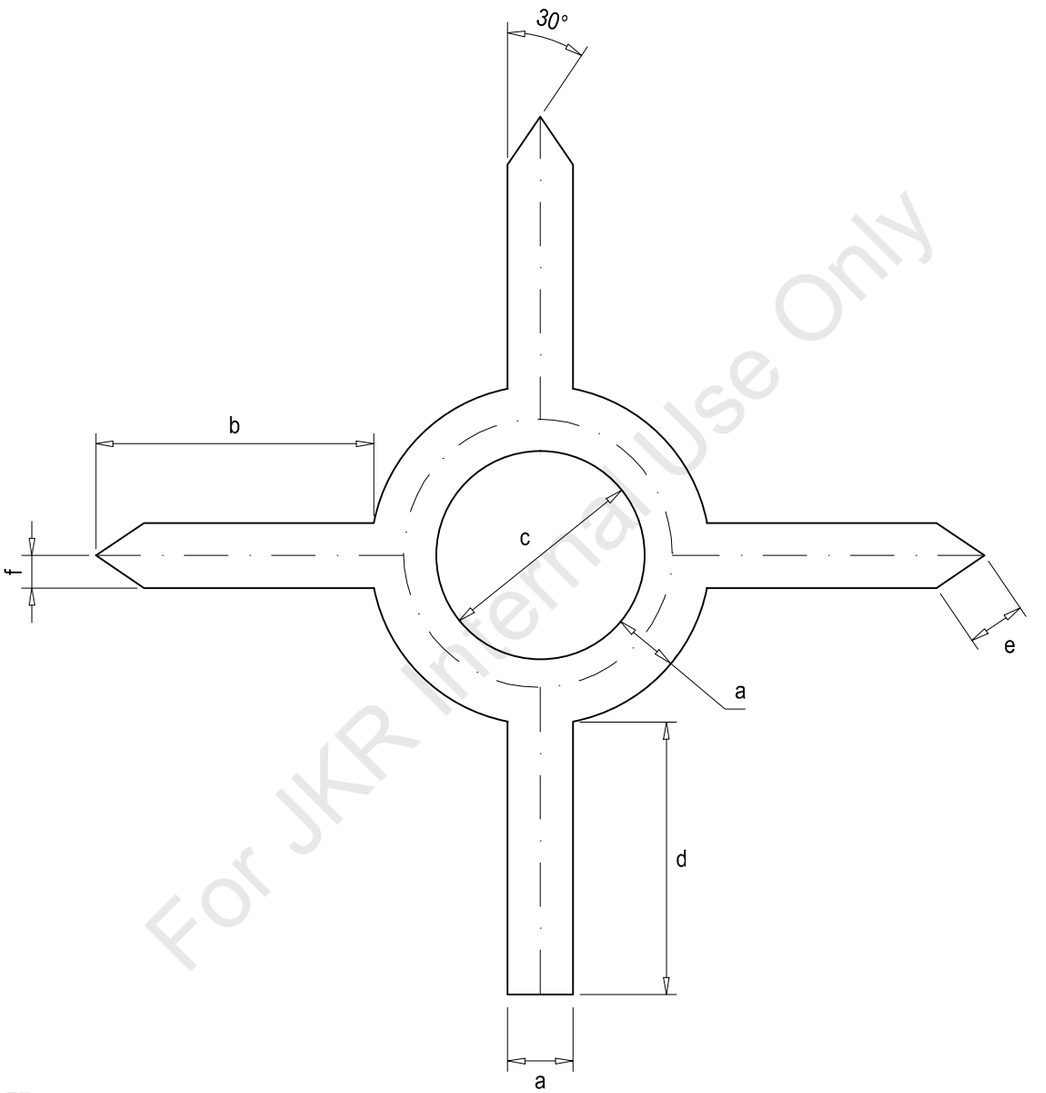
FIGURE A.10 : DIRECTIONAL ARROW DIMENSIONS



NOTE :

a = 15/32 Height of capital letter used

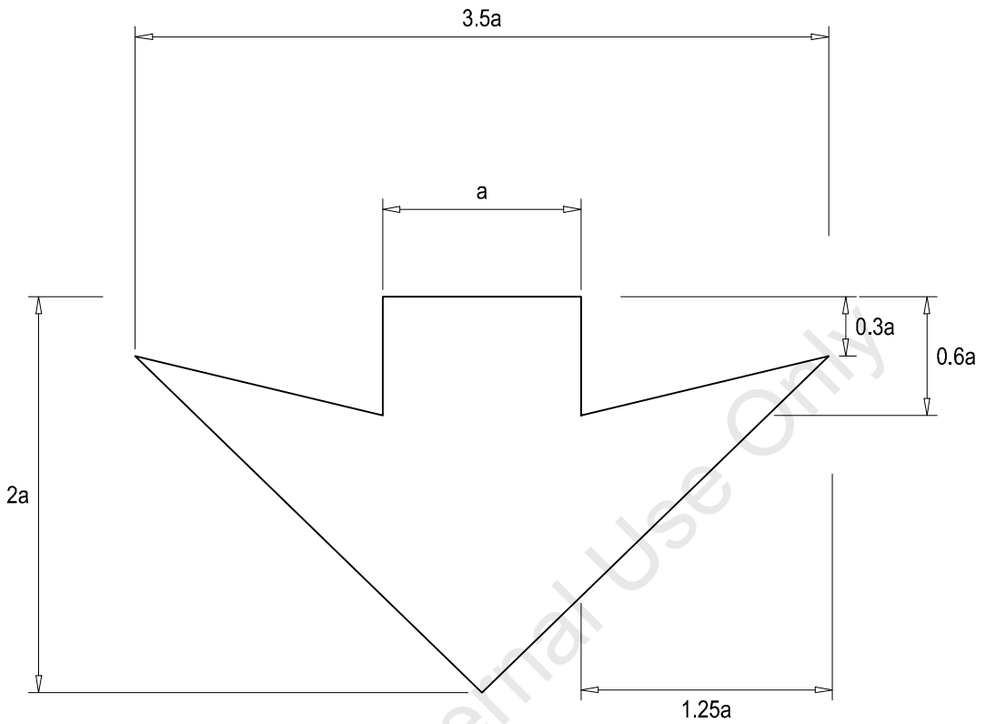
FIGURE A.11 : MAP TYPE DIAGRAM (ROUNDABOUT) DIMENSIONS



NOTE :

a - 3 times stroke width
b - 16 times stroke width
c - 15 times stroke width
d - 17 times stroke width
e - 3 times stroke width
f - 1.5 times stroke width
Stroke width = 1/5 height of capital letter used

FIGURE A.12 : GANTRY ARROW DIMENSIONS

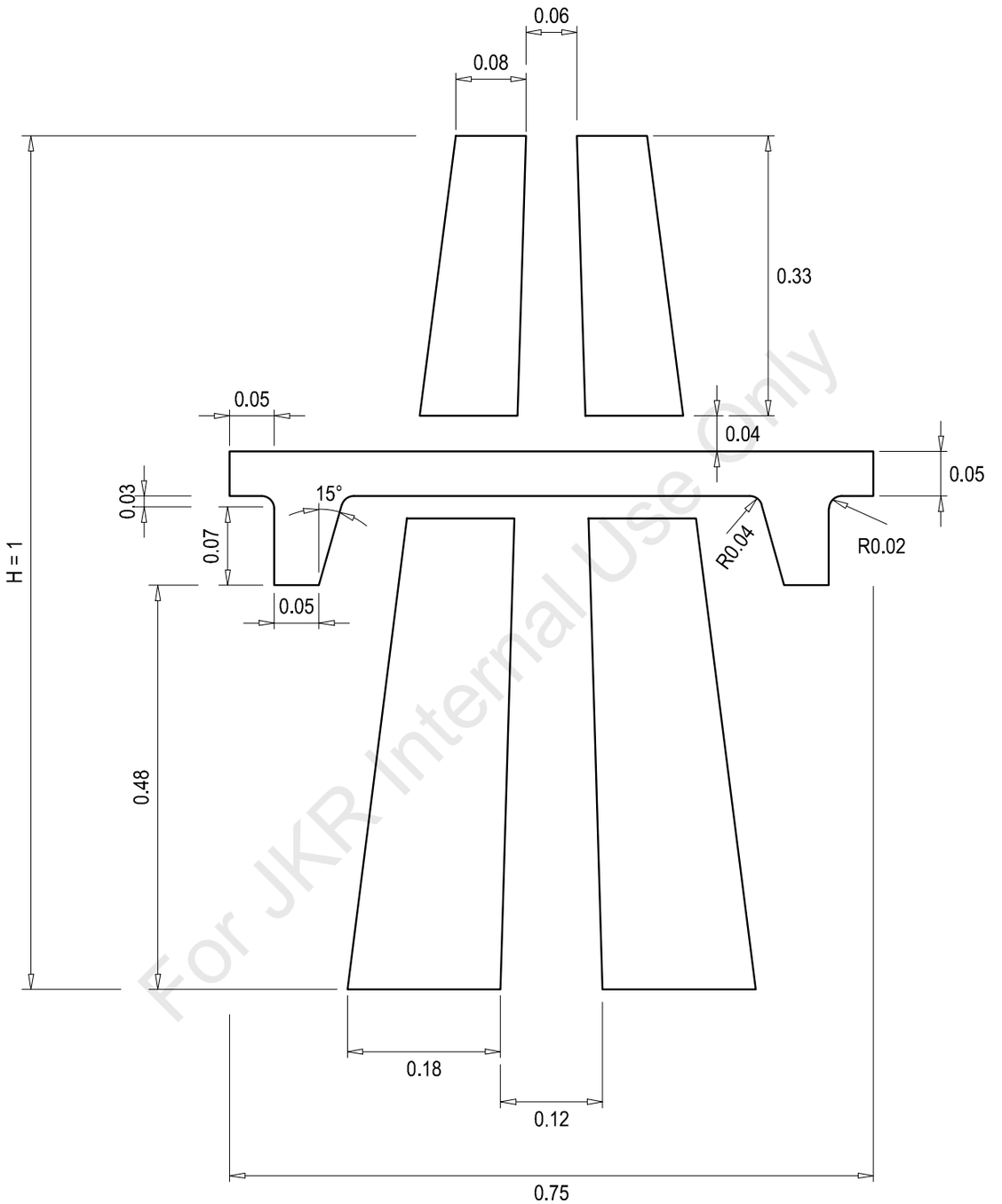


NOTE :

a = 4/5 Height of capital letter used

All dimensions in milimeter

FIGURE A.13 : EXPRESSWAY LOGO DIMENSIONS

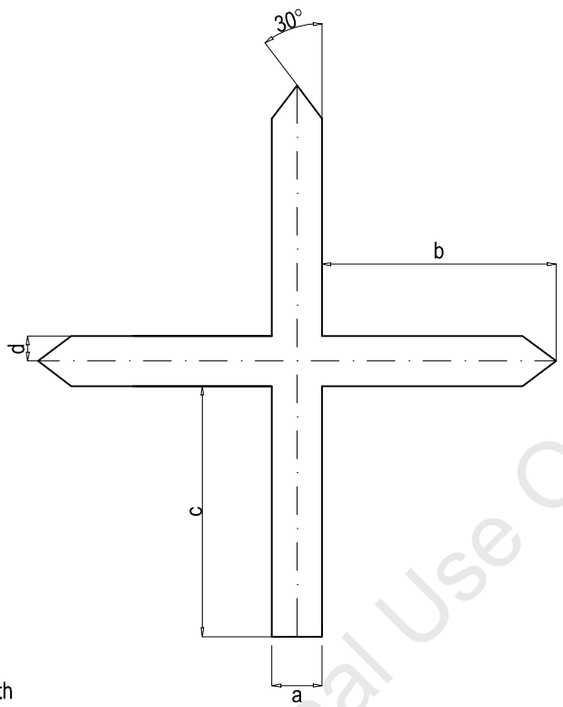


NOTES :

Actual size of Logo depends on value of H.

2H - For 2 text lines
2.5H - For 3 or more text lines
H - Height of Uppercase letter used

FIGURE A.14 : MAP TYPE DIAGRAM (CROSS JUNCTION) DIMENSIONS



NOTE :

a - 3 times stroke width
b - 14 times stroke width
c - 15 times stroke width
d - 1.5 times stroke width
Stroke width = 1/5 height of capital letter used

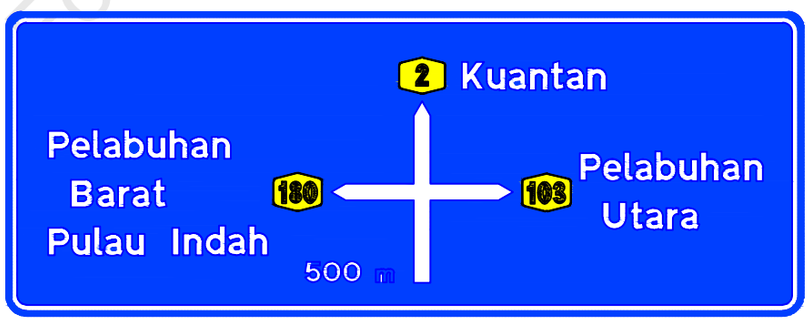
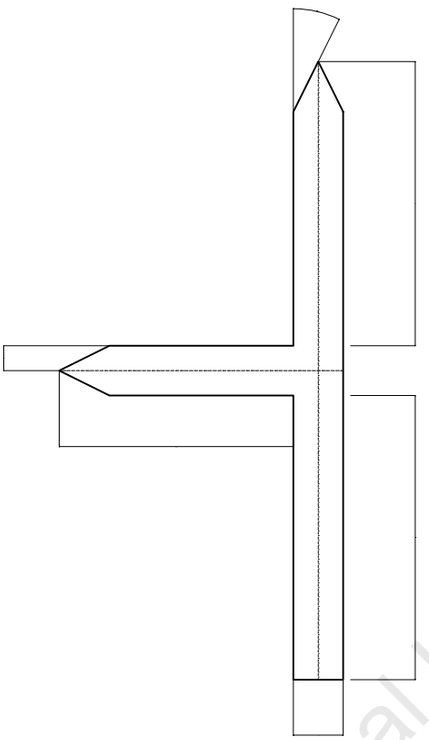


FIGURE A.15 : MAP TYPE DIAGRAM (ROAD JUNCTION) DIMENSIONS



NOTE :

a - 3 times stroke width

b - 14 times stroke width

c - 17 times stroke width

Stroke width = 1/5 height of capital letter used

The figure given is only a guidance. Adjustment shall be made base on design condition.

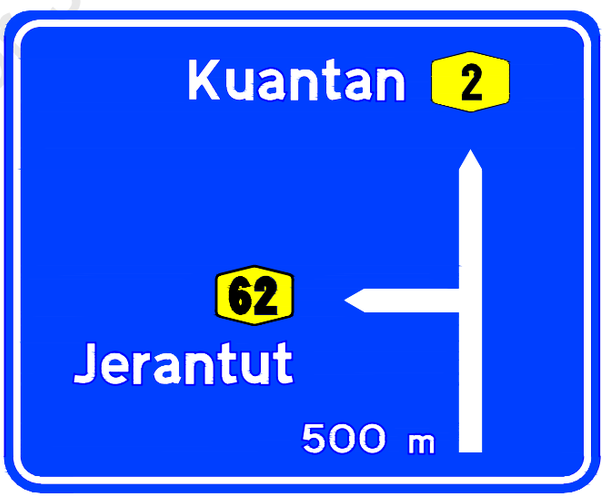
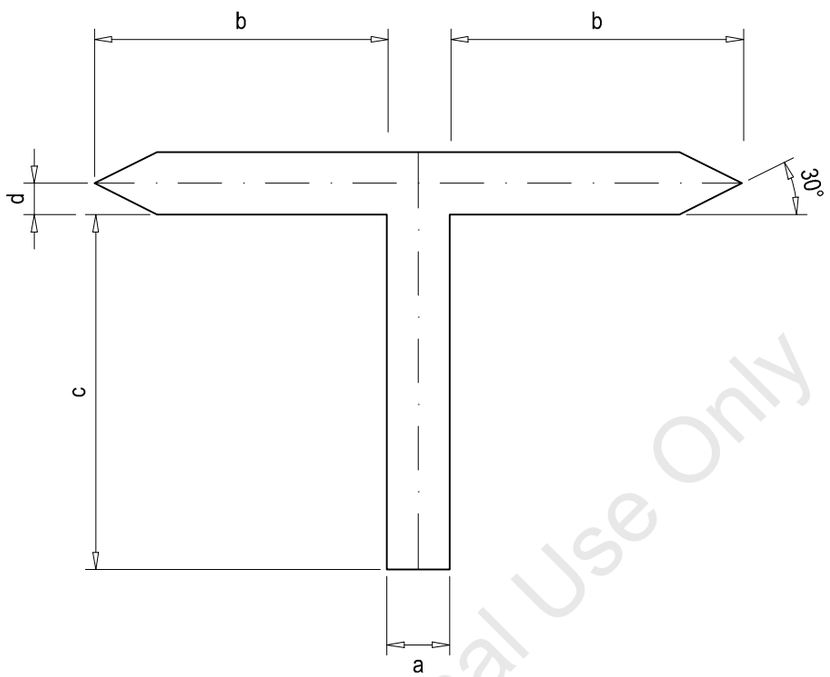


FIGURE A.16 : MAP TYPE DIAGRAM (T- JUNCTION) DIMENSIONS



NOTE :

a - 3 times stroke width

b - 14 times stroke width

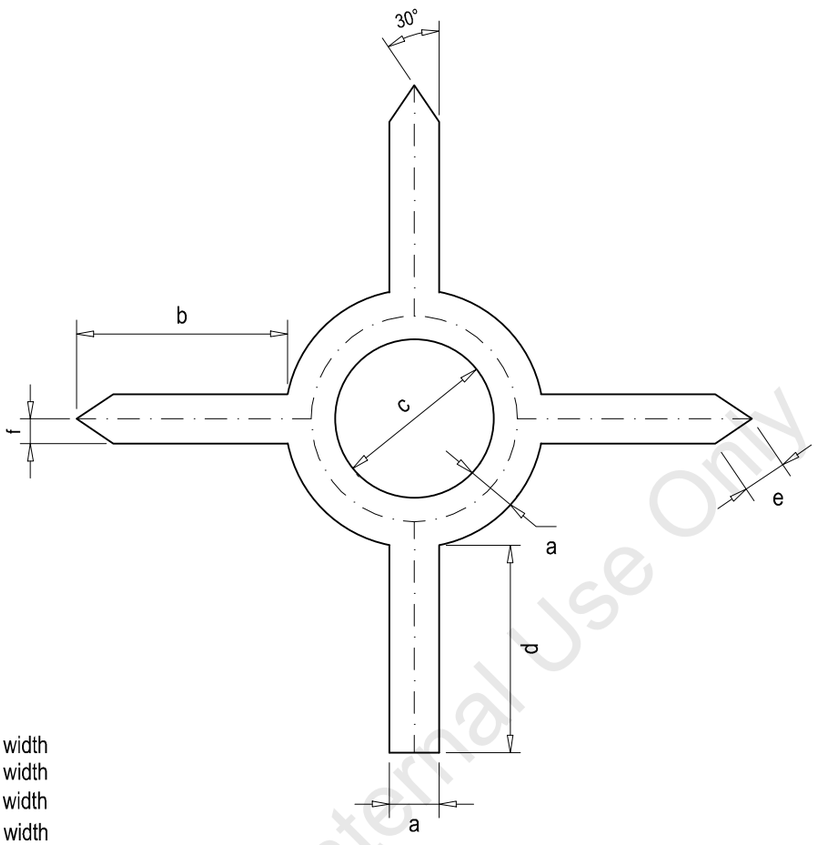
c - 17 times stroke width

d - 1.5 times stroke width

Stroke width = 1/5 height of capital letter used

The figure given is only a guidance. Adjustment shall be made base on design condition.

FIGURE A.17 : MAP TYPE DIAGRAM (ROUNDABOUT) DIMENSIONS



NOTE :

a - 3 times stroke width
b - 16 times stroke width
c - 15 times stroke width
d - 17 times stroke width
e - 3 times stroke width
f - 1.5 times stroke width

Stroke width = 1/5 height of capital letter used

The figure given is only a guidance. Adjustment shall be made base on design condition.

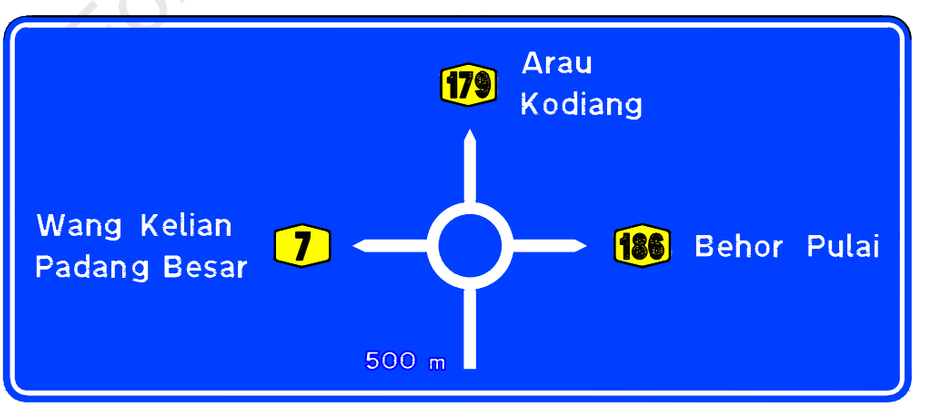
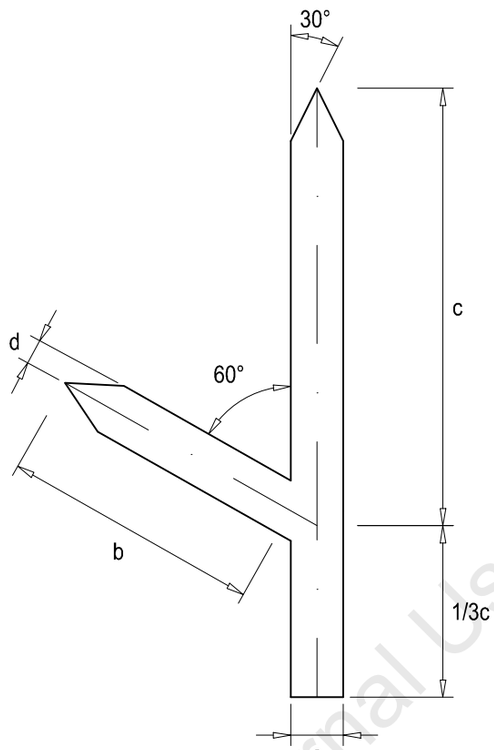


FIGURE A.18 : MAP TYPE DIAGRAM (INTERCHANGE) DIMENSIONS



NOTE :

a - 3 times stroke width

b - 14 times stroke width

c - 22 times stroke width

d - 1.5 times stroke width

Stroke width = 1/5 height of capital letter used

The figure given is only a guidance. Adjustment shall be made base on design condition.

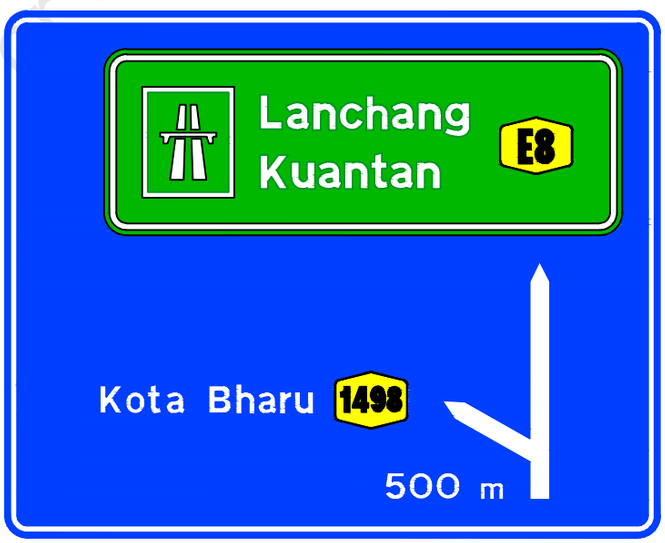
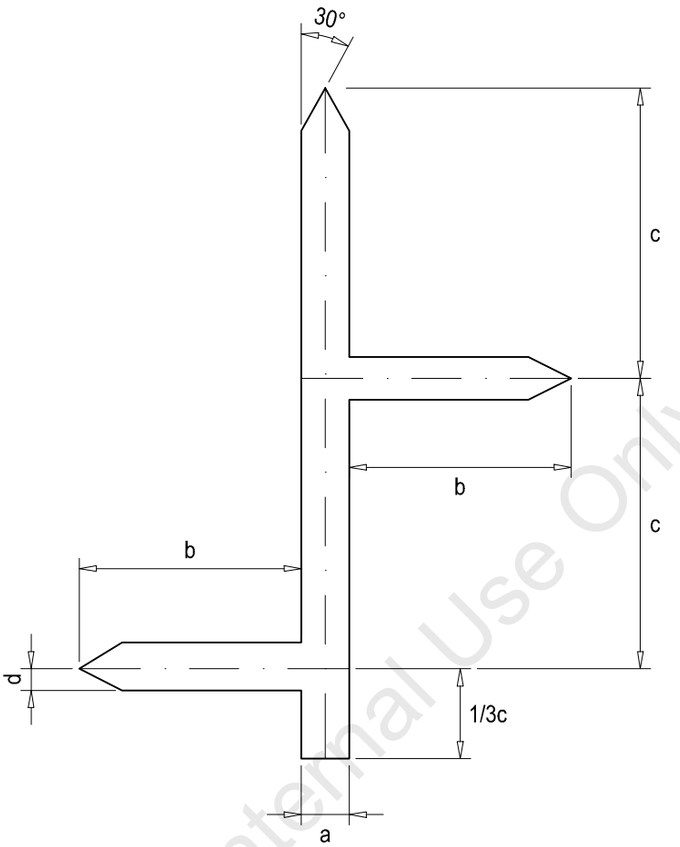


FIGURE A.19 : MAP TYPE DIAGRAM (STAGGERED JUNCTION) DIMENSIONS (TYPE 1)



NOTE :

a - 3 times stroke width

b - 14 times stroke width

c - 17 times stroke width

d - 1.5 times stroke width

Stroke width = 1/5 height of capital letter used

The figure given is only a guidance. Adjustment shall be made base on design condition.

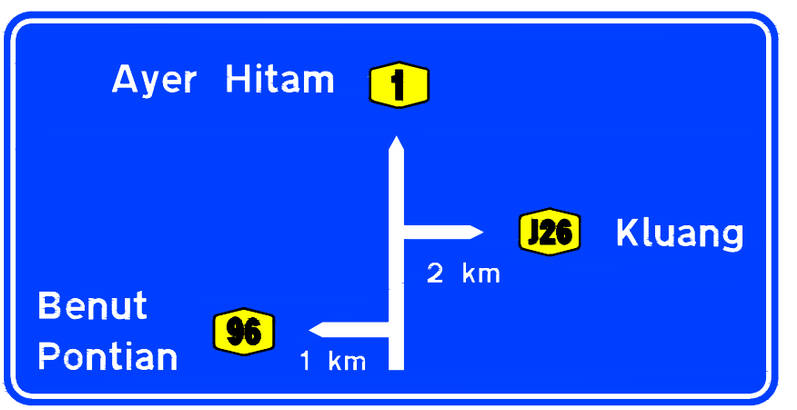
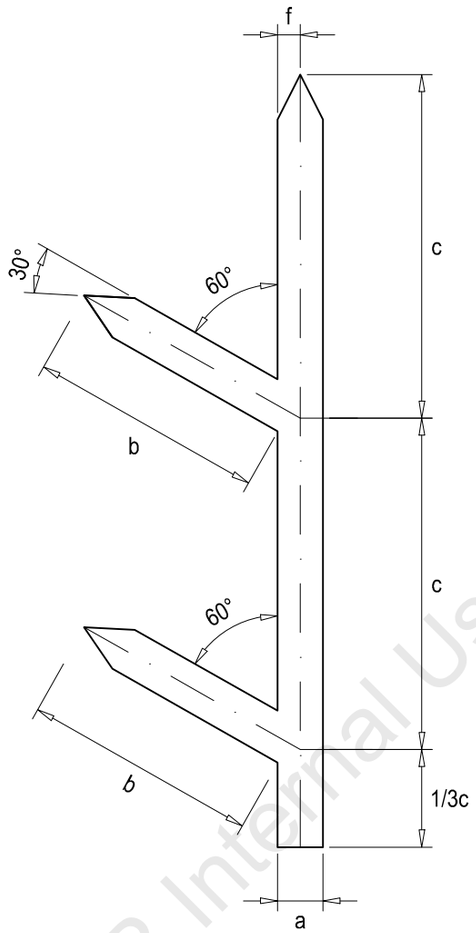


FIGURE A.20 : MAP TYPE DIAGRAM (STAGGERED JUNCTION) DIMENSIONS (TYPE 2)



NOTE :

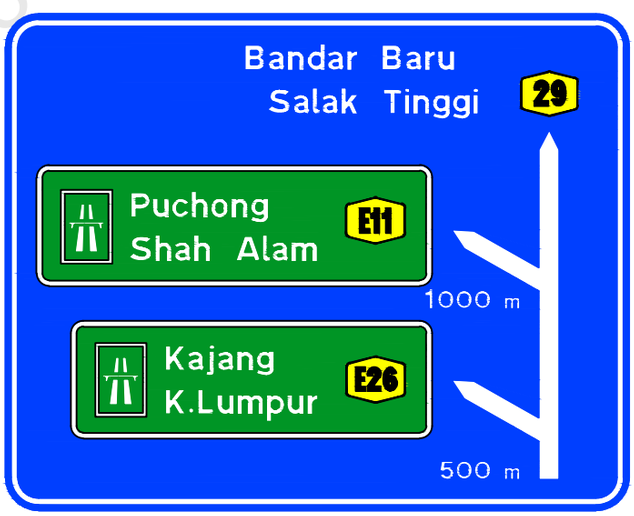
a - 3 times stroke width

b - 14 times stroke width

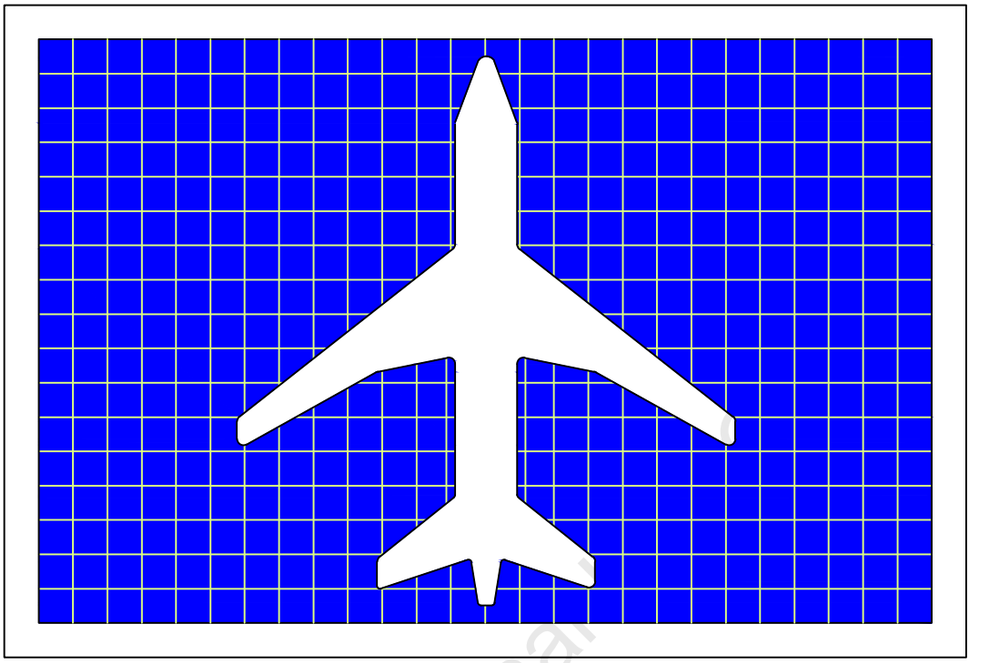
c - 22 times stroke width

Stroke width = 1/5 height of capital letter used

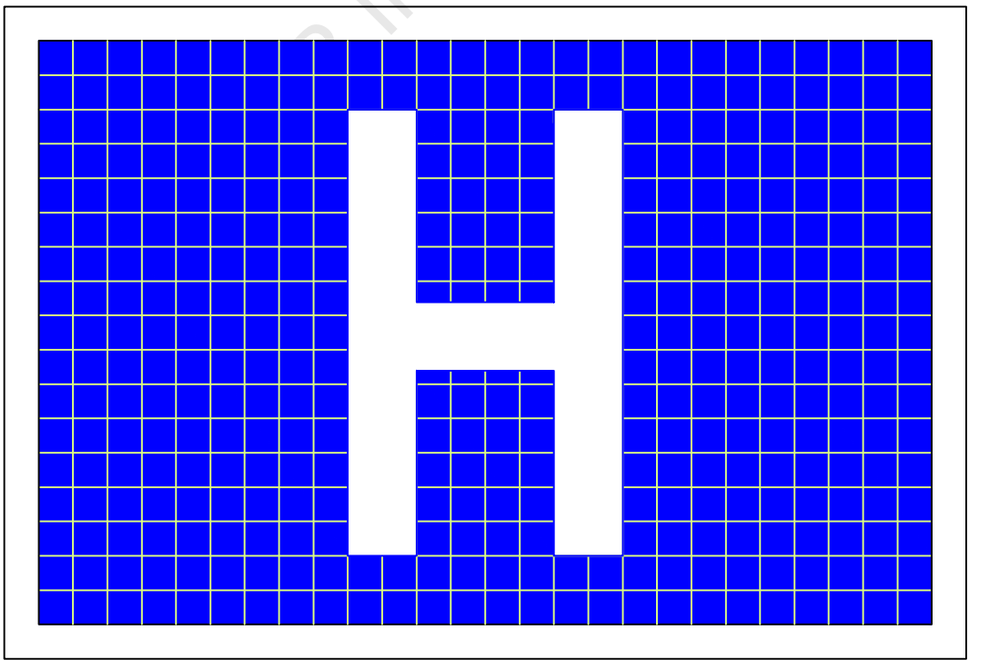
The figure given is only a guidance. Adjustment shall be made base on design condition.



SYMBOL ON TRAFFIC SIGNS (SERVICES)

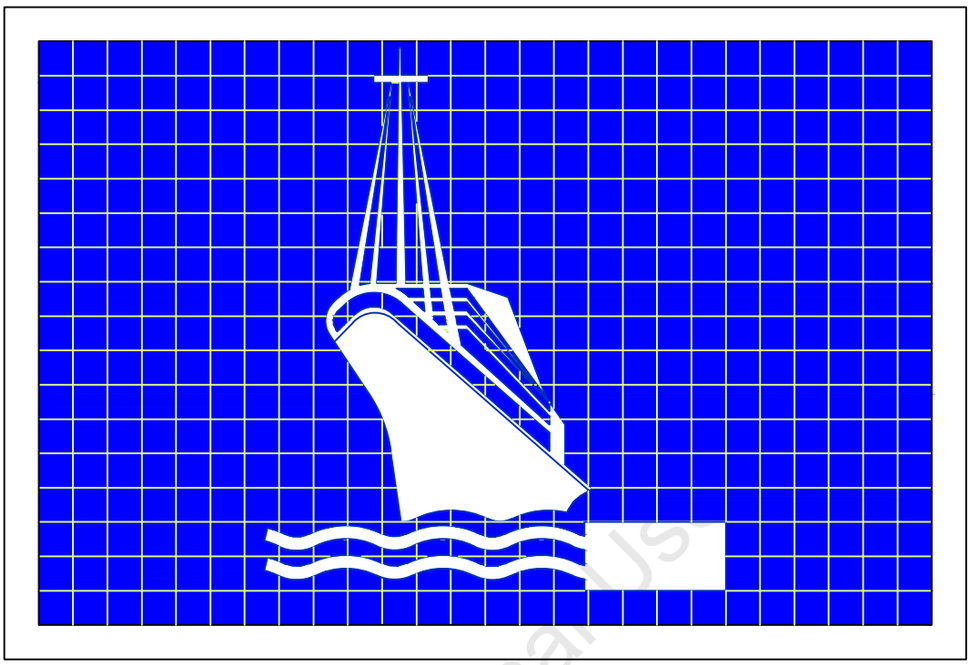


INTERNATIONAL AIRPORT

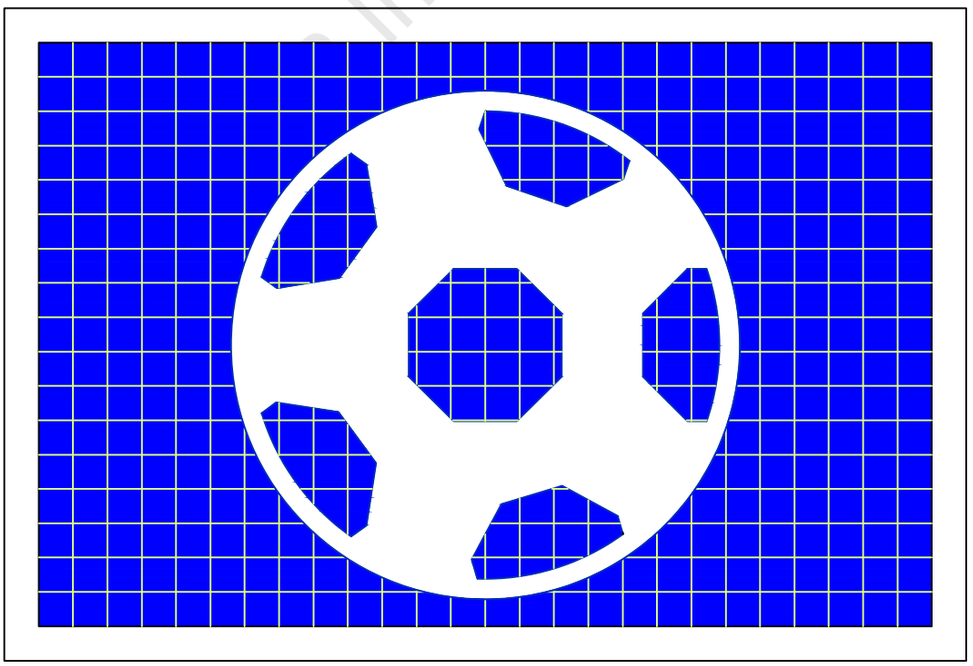


HOSPITAL

SYMBOL ON TRAFFIC SIGNS (SERVICES)

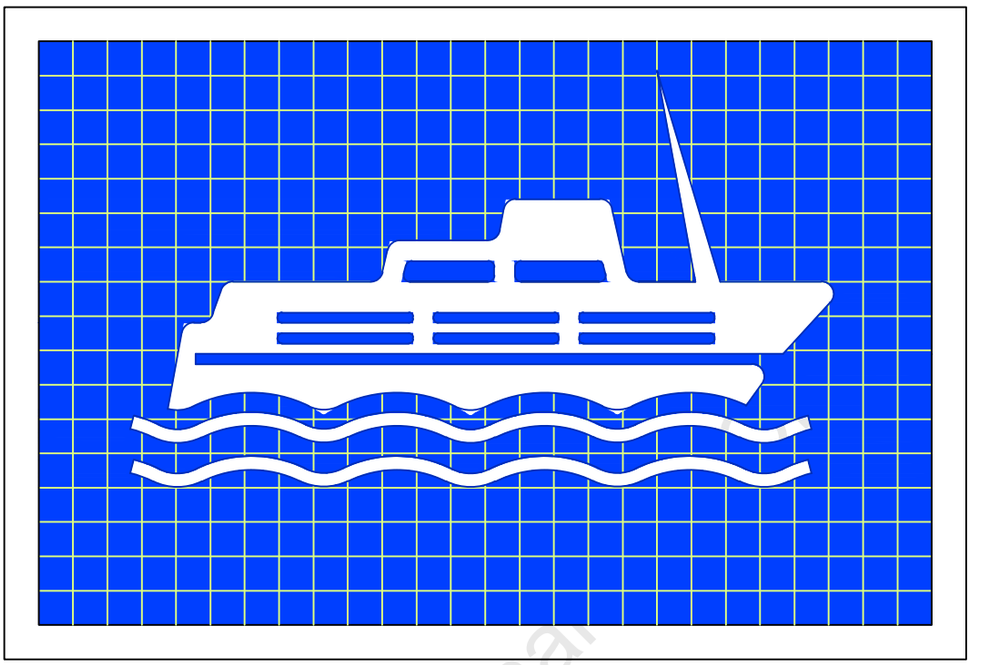


PORT

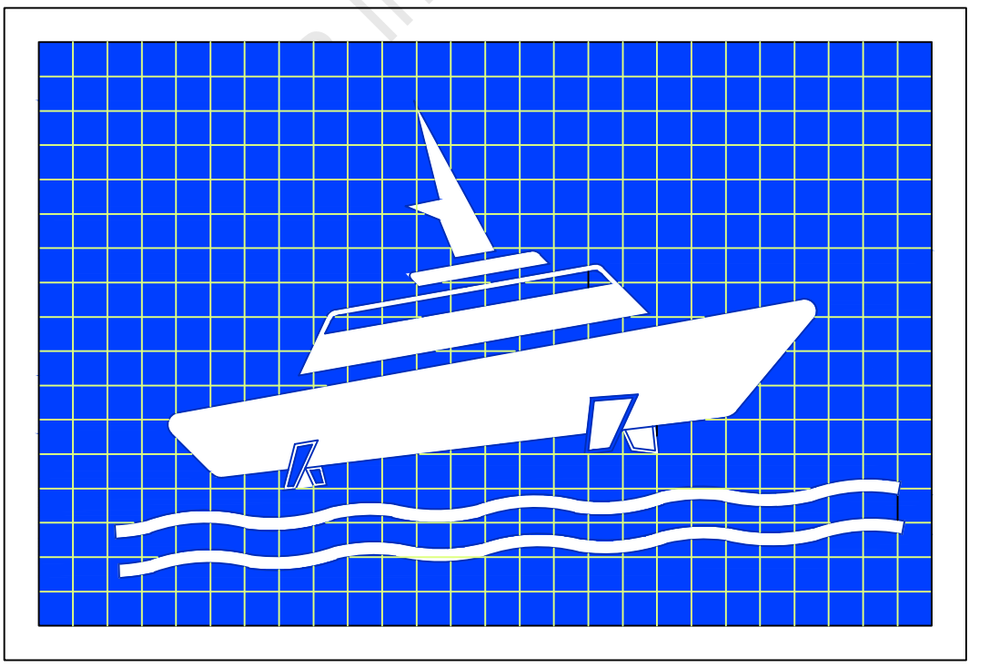


FOOTBALL FIELD

SYMBOL ON TRAFFIC SIGNS (SERVICES)

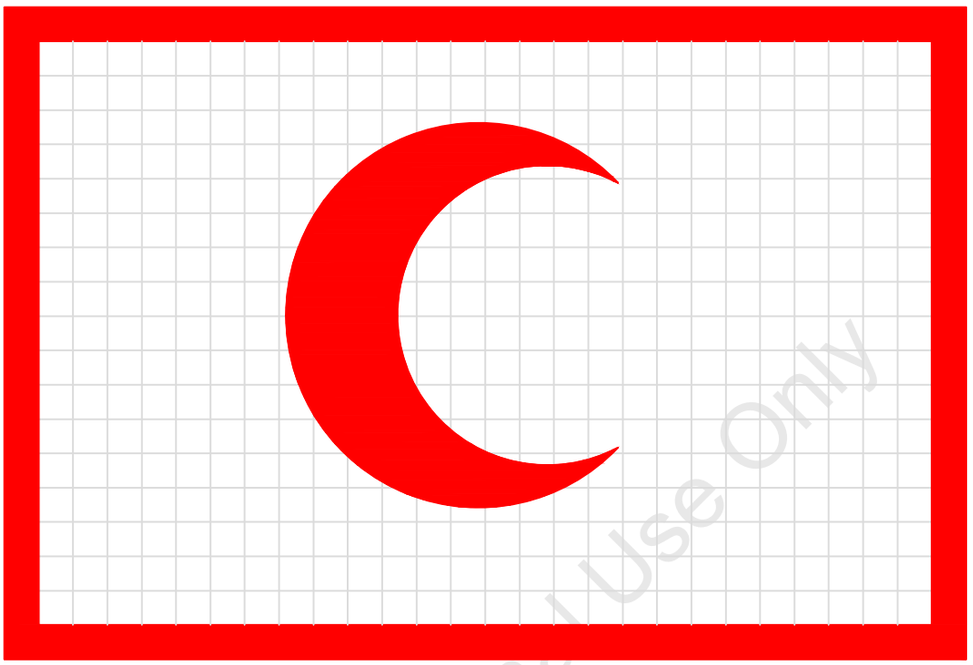


FERRY



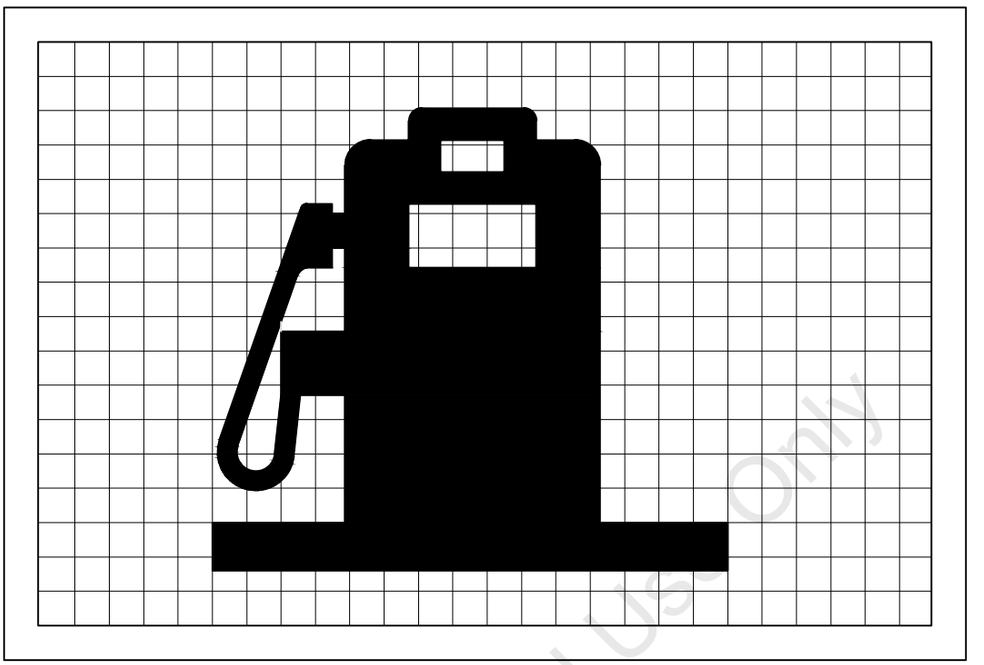
HYDROFOIL

SYMBOL ON TRAFFIC SIGNS (SERVICES)

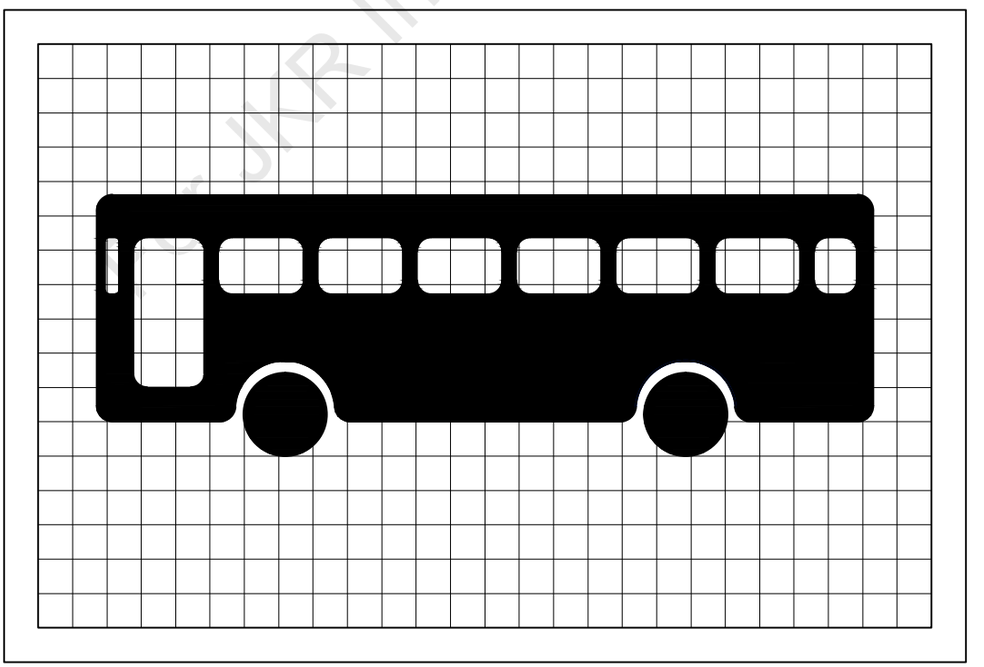


FIRST AID FACILITY

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

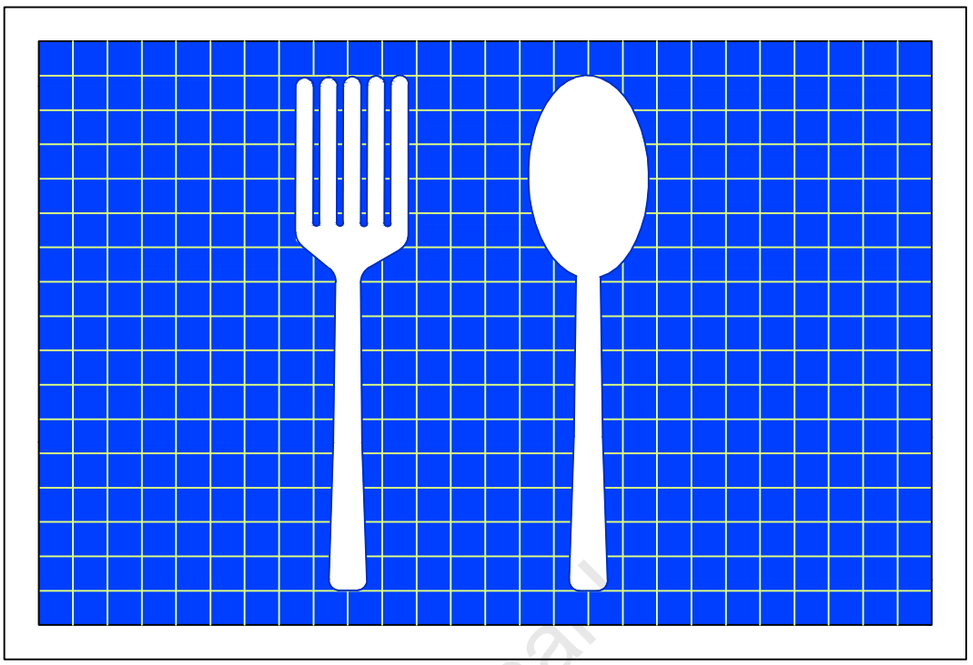


PETROL STATION

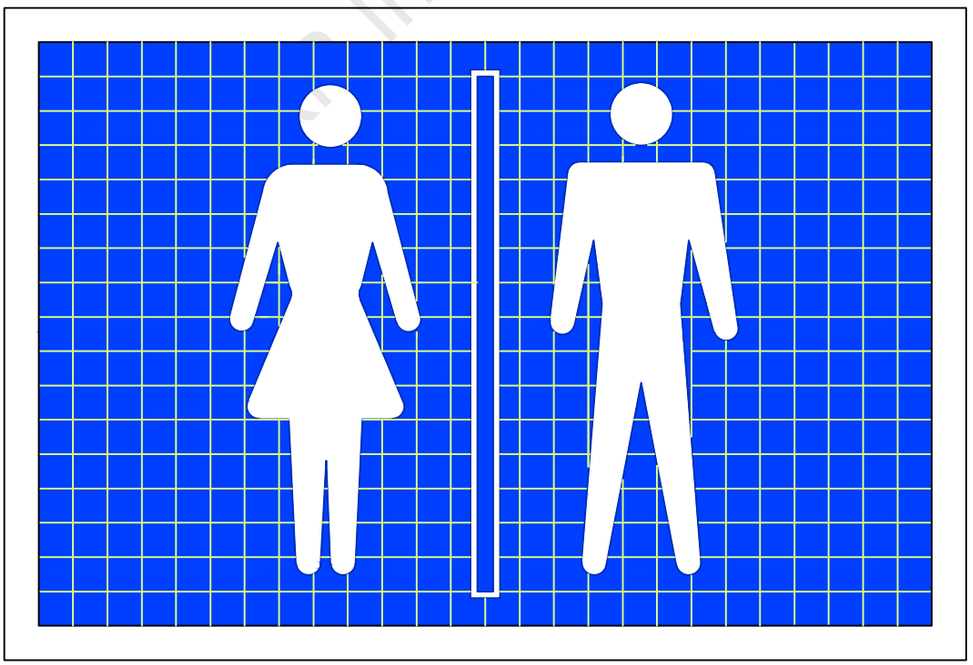


BUS STOP

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

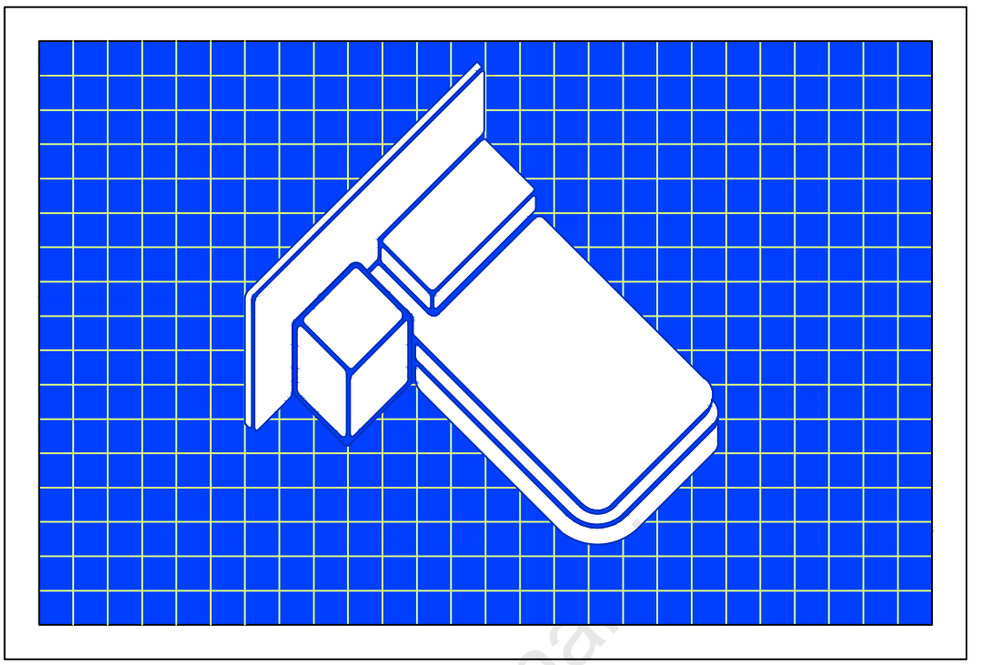


RESTAURANT

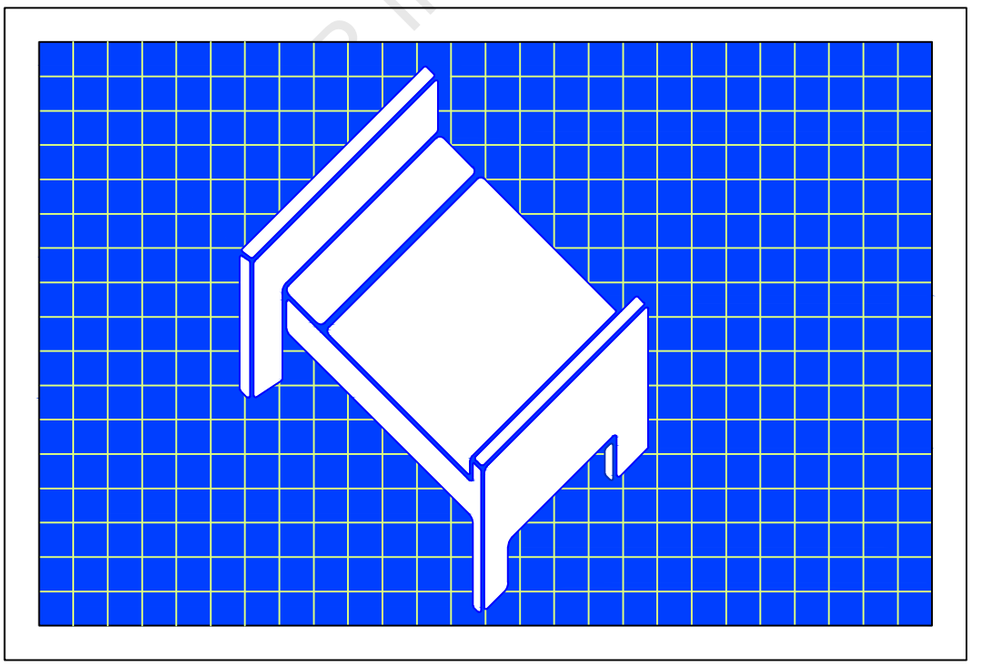


TOILET

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

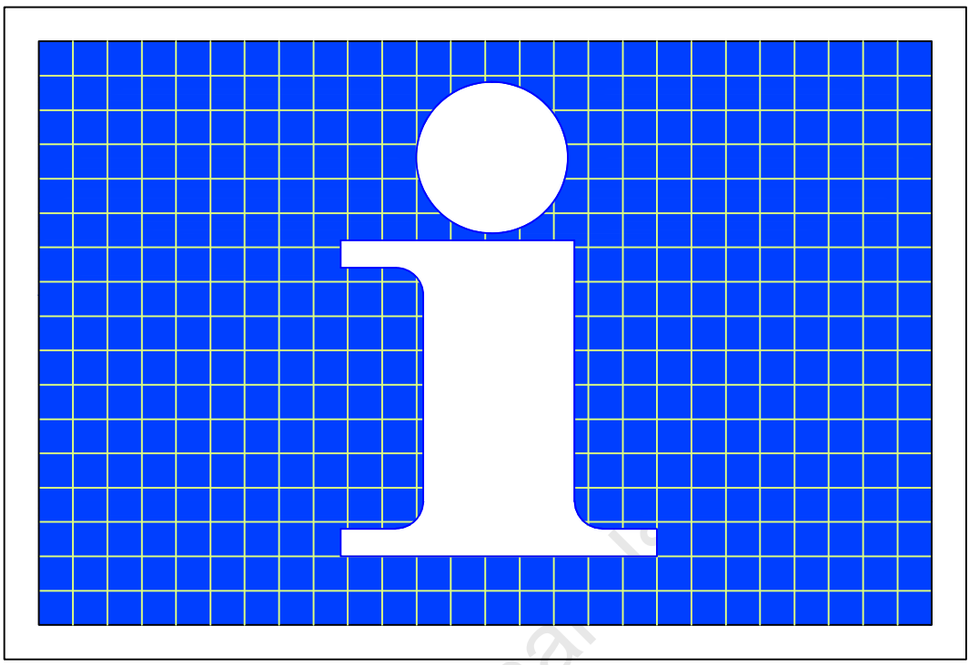


HOTEL / MOTEL

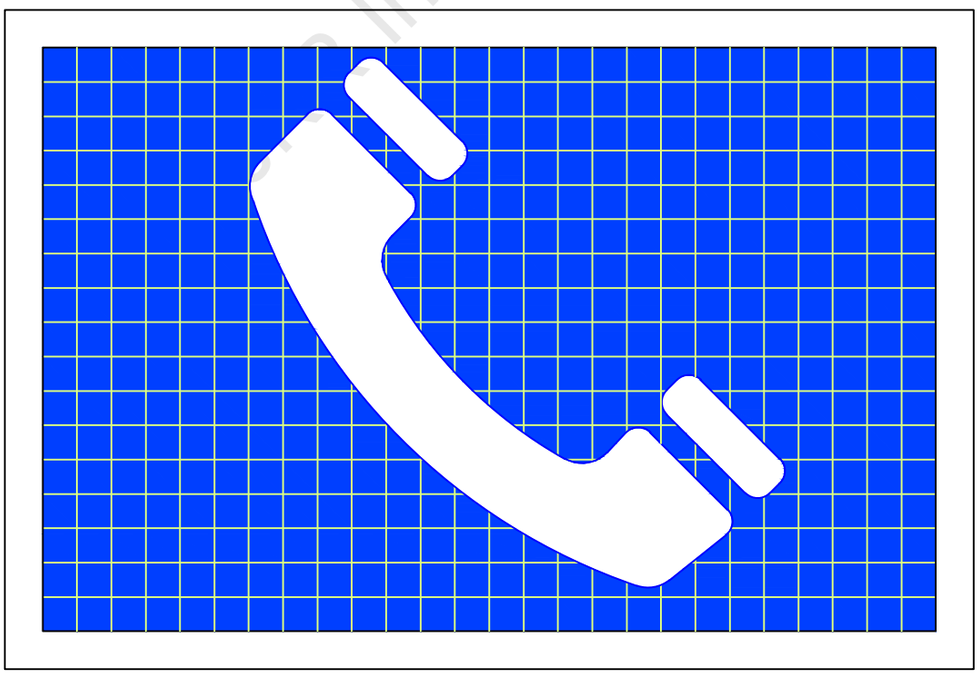


LODGING

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

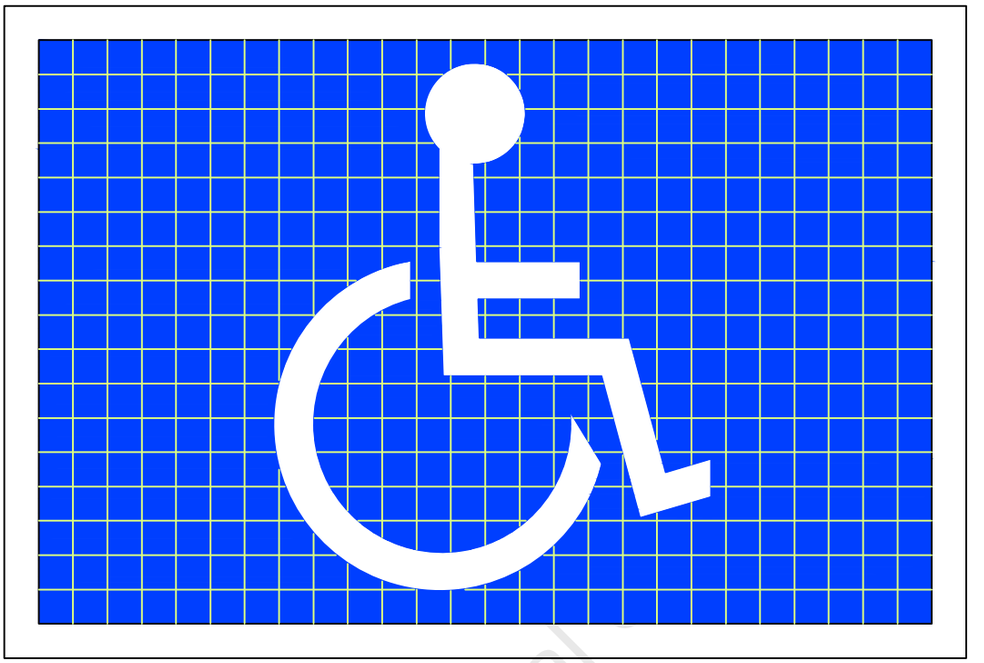


INFORMATION

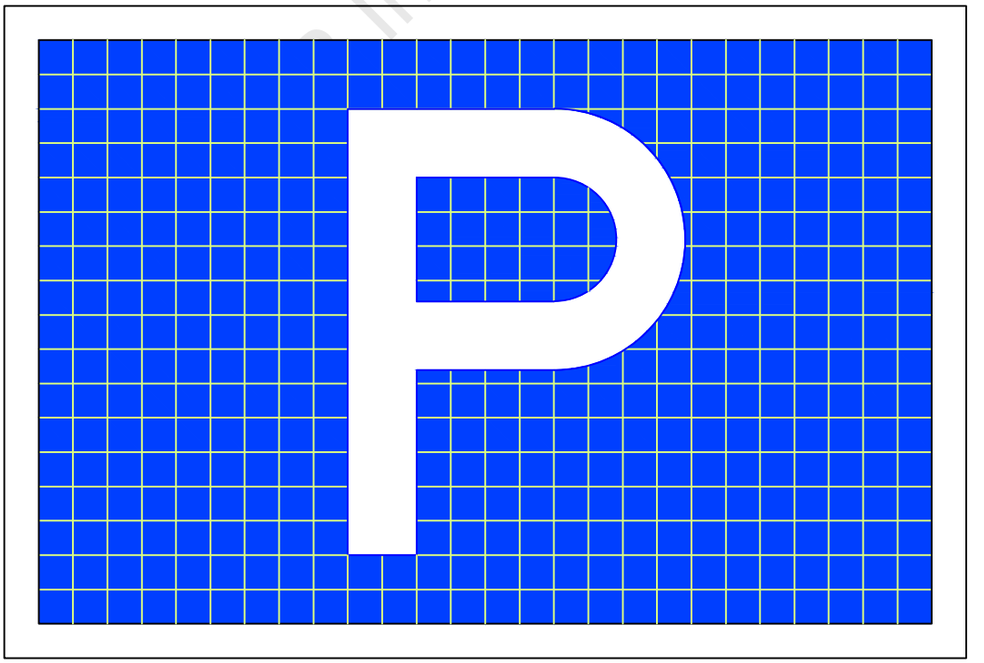


TELEPHONE

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

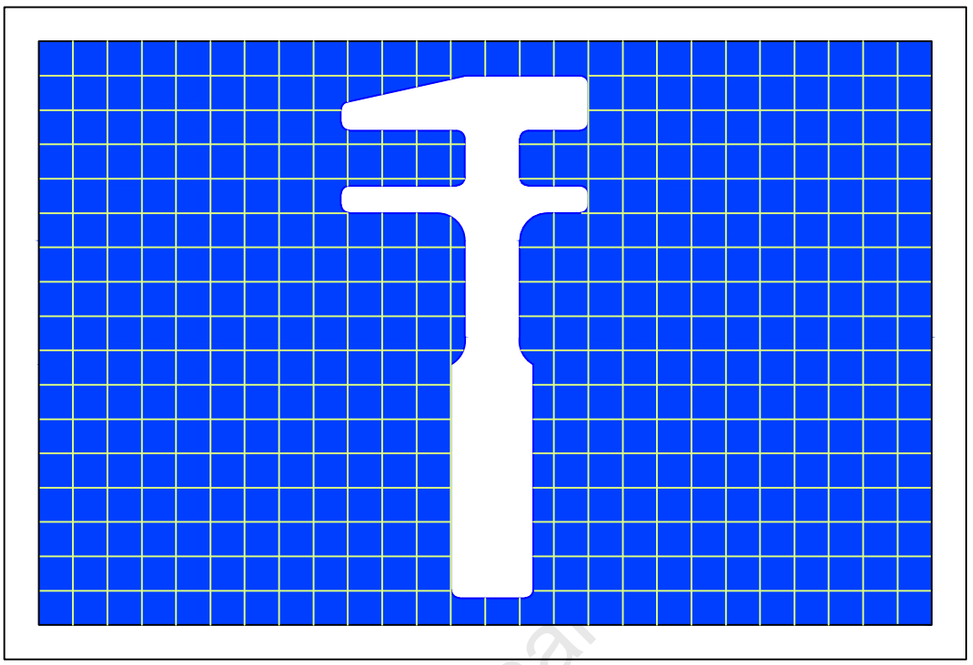


HANDICAPPED FACILITIES

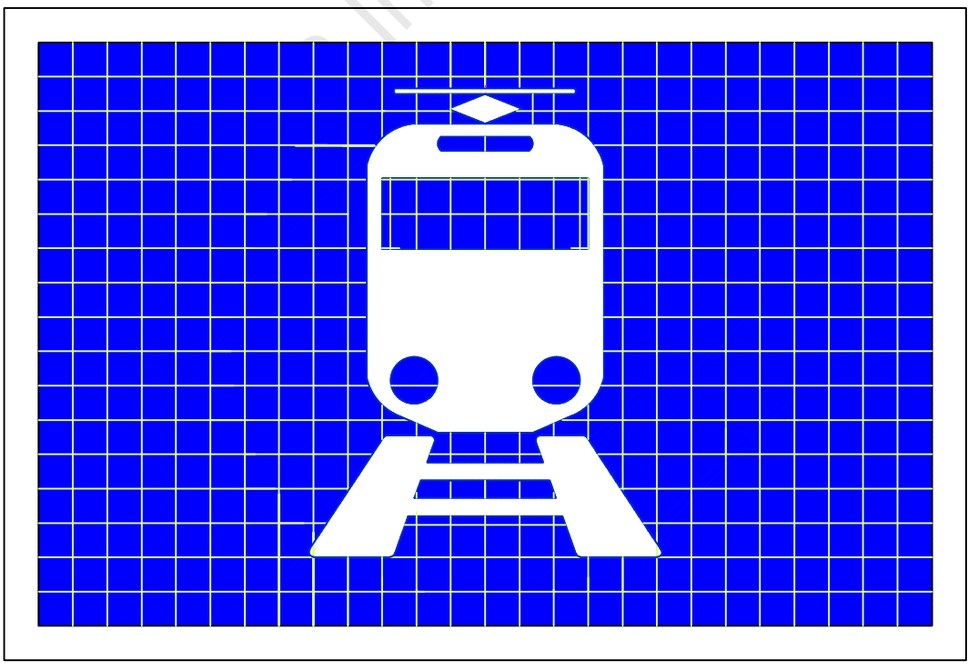


PARKING

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

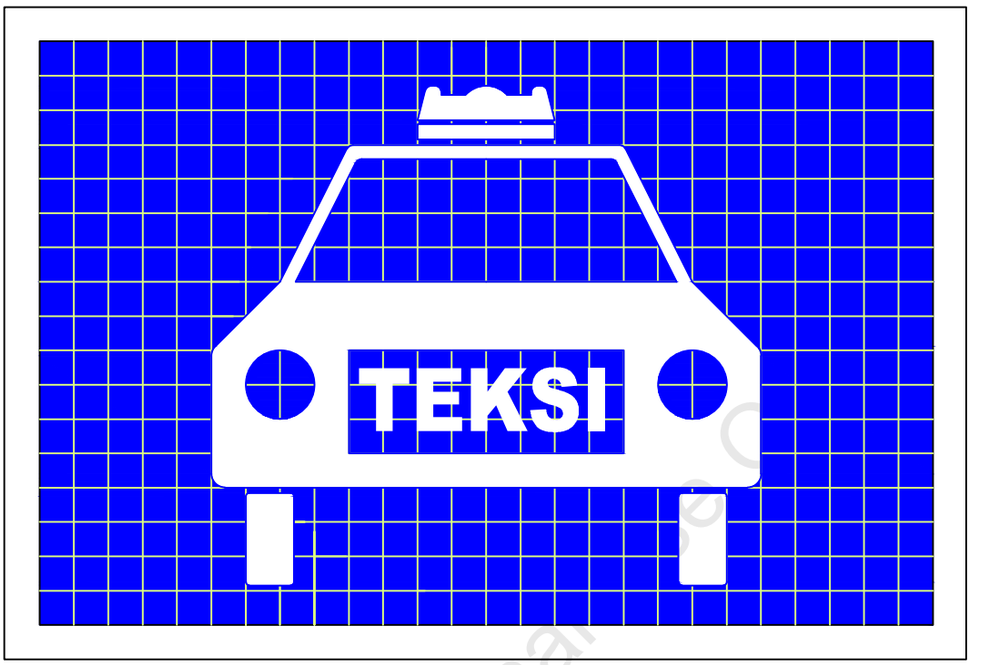


MECHANIC

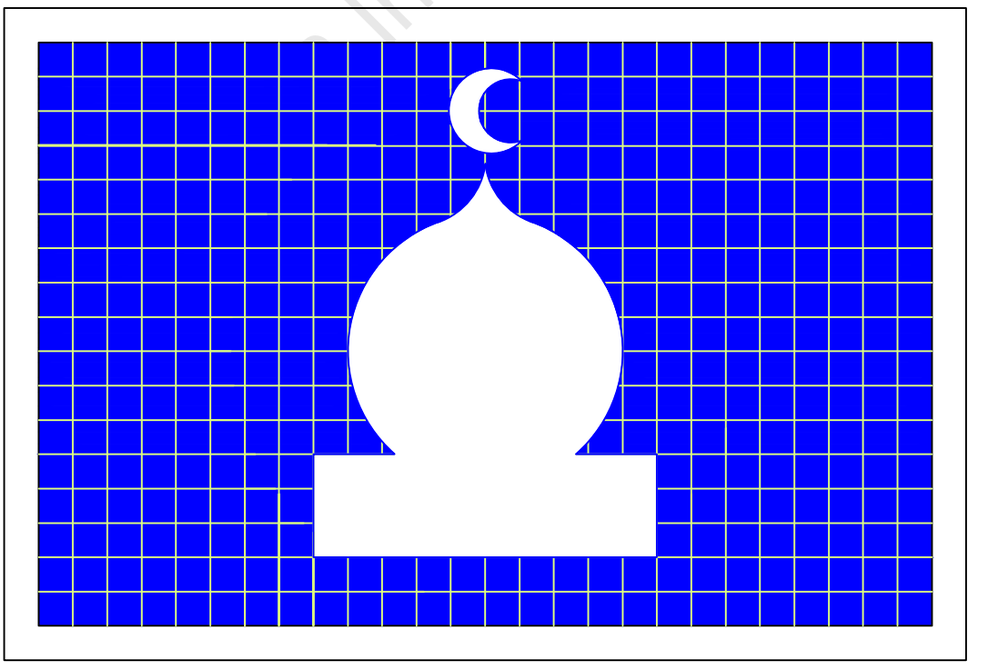


RAIL STATION

SYMBOL ON TRAFFIC SIGNS (FACILITIES)

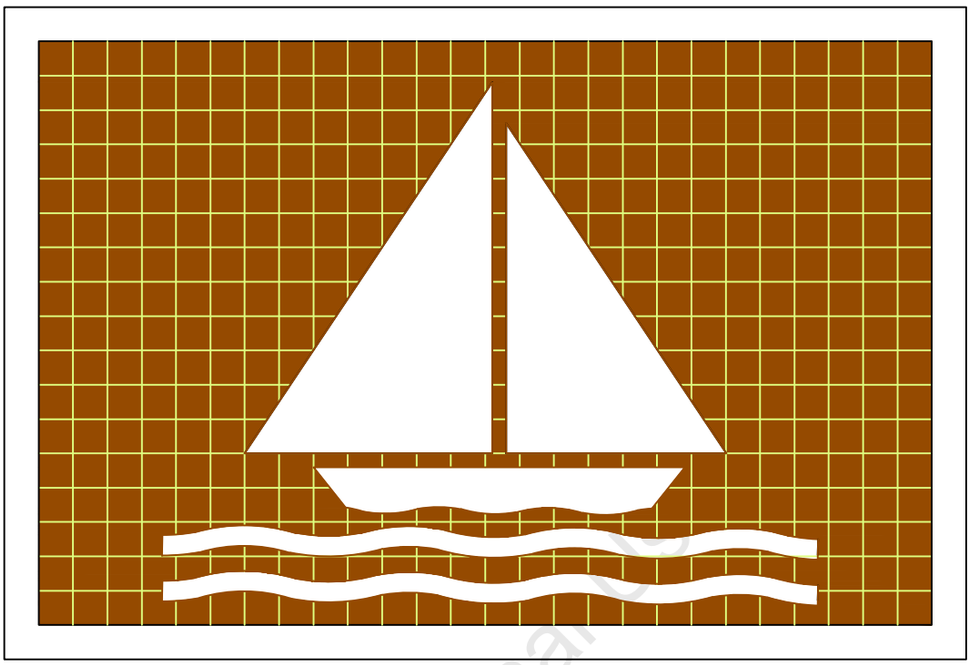


TEKSI

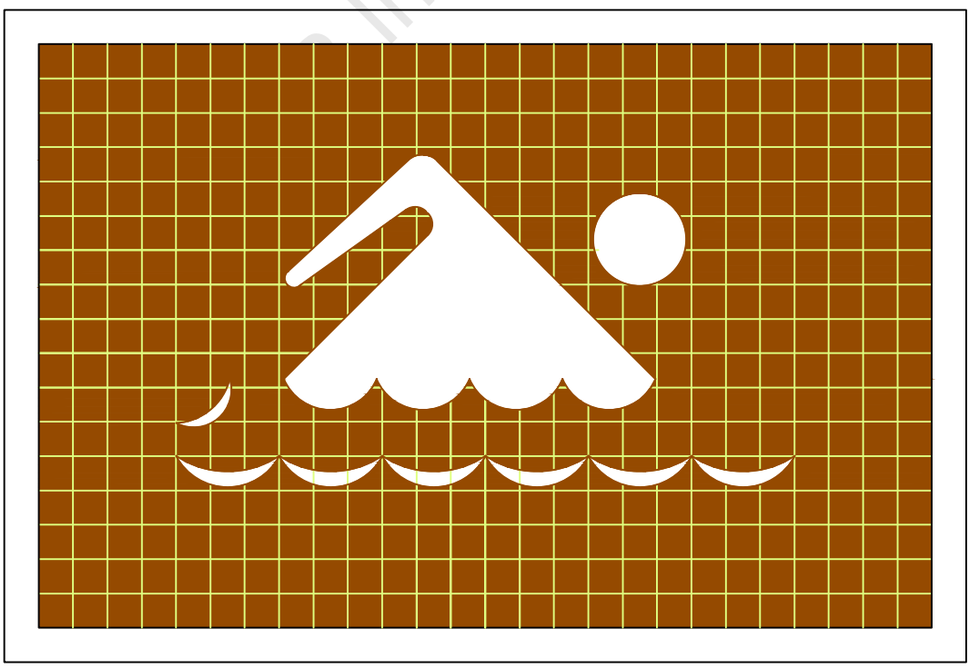


MASJID / SURAU

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

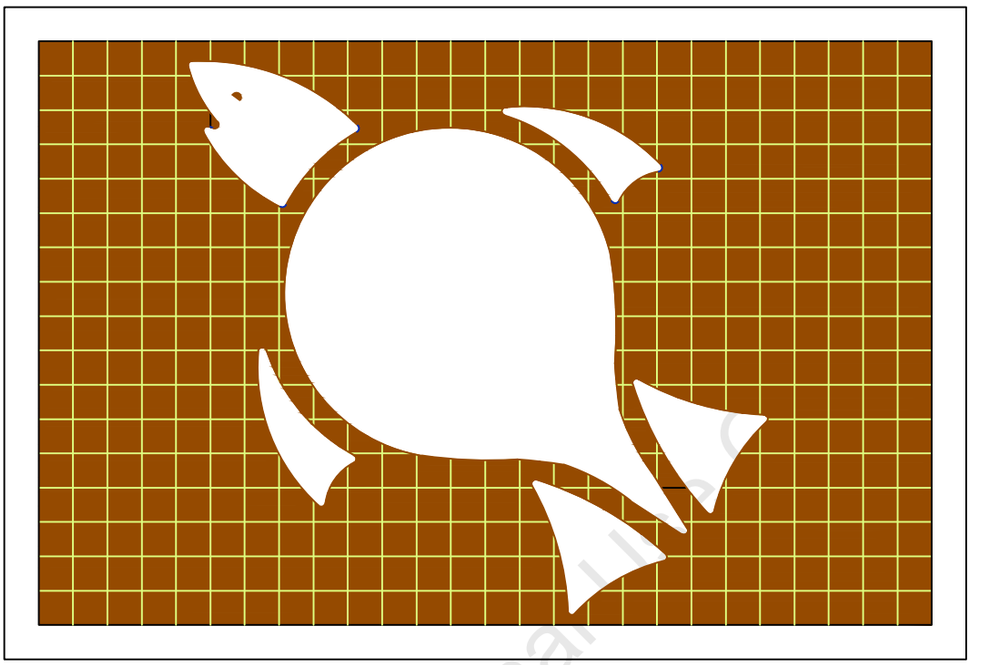


SAIL BOATING

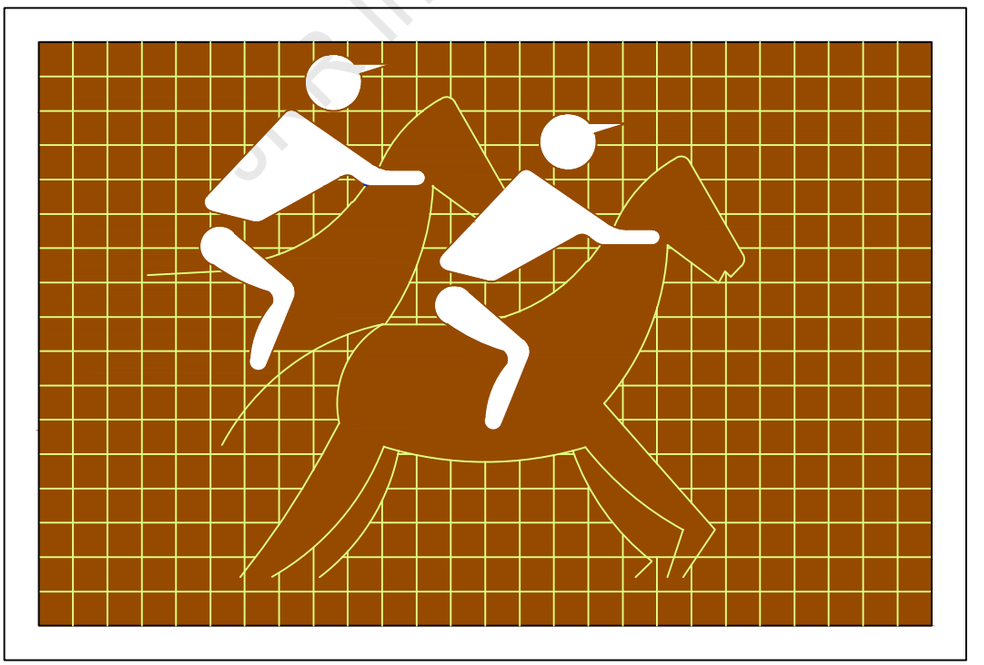


SWIMMING

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

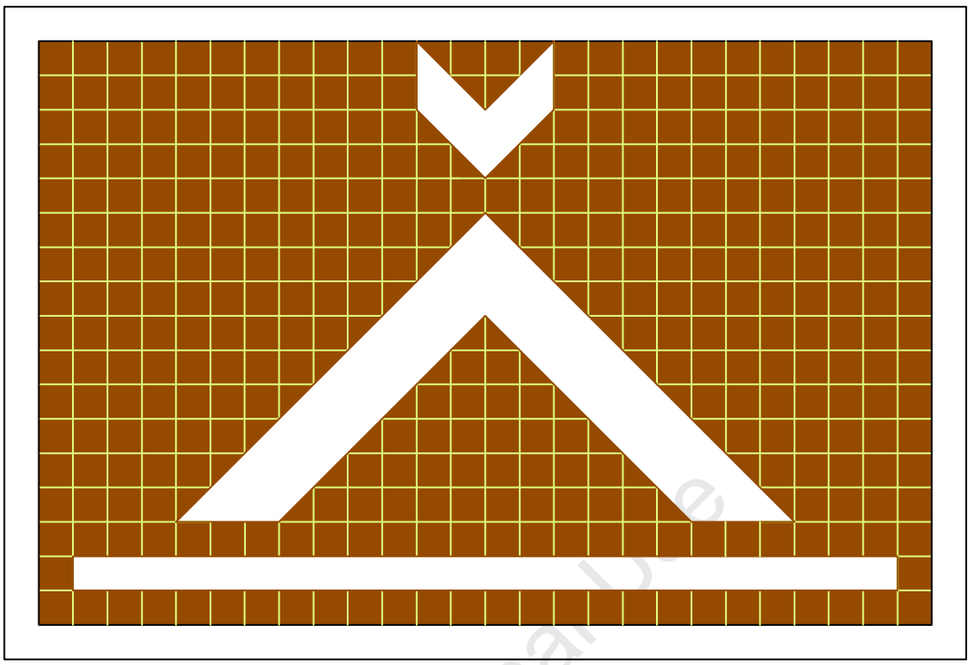


TURTLE WATCHING

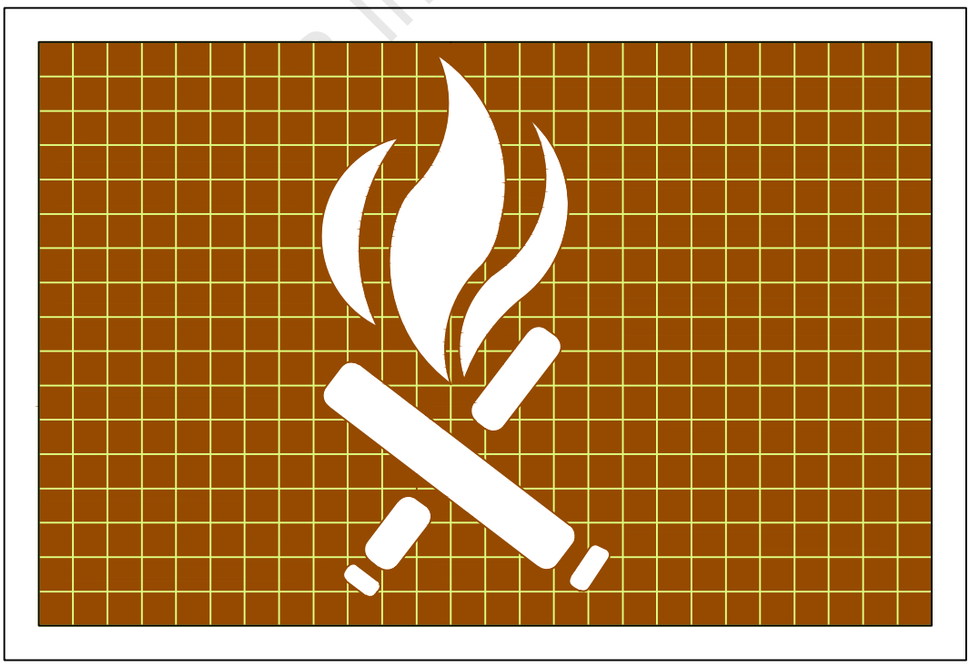


HORSE RACING

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

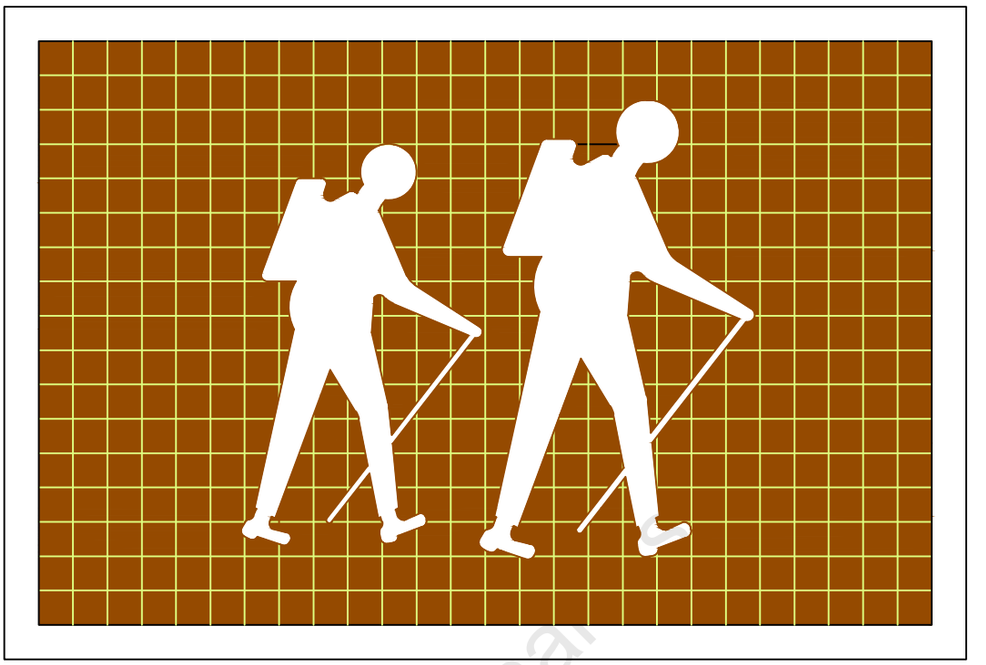


CAMPING

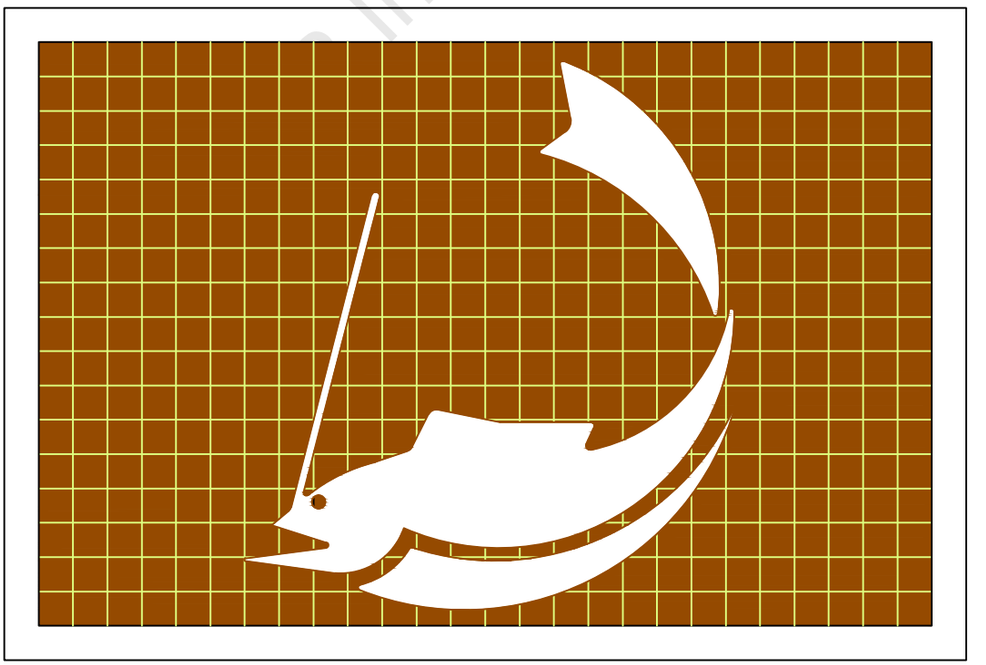


CAMPFIRES

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

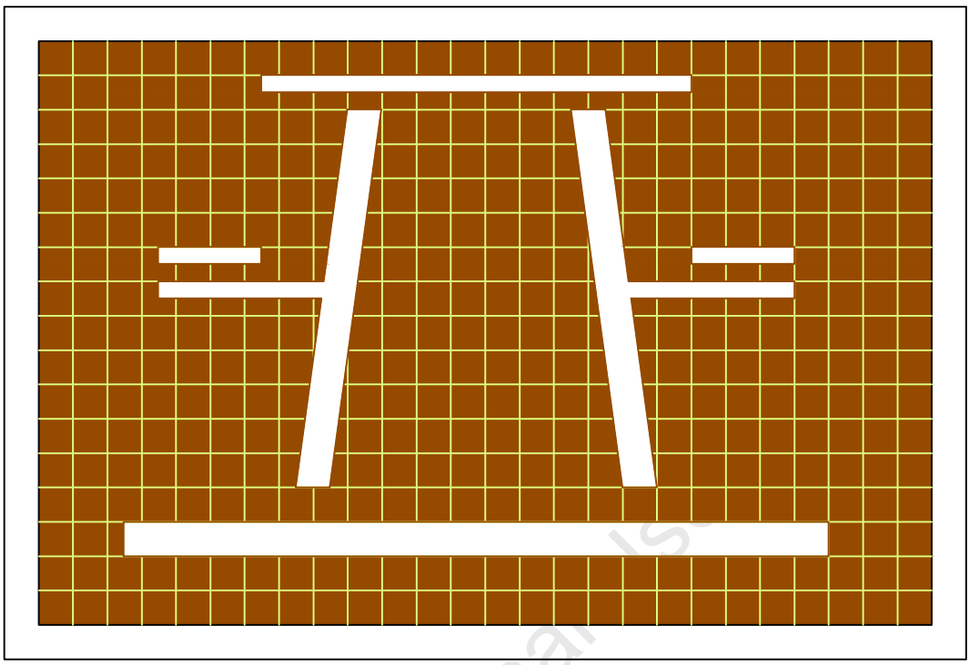


TRACKING

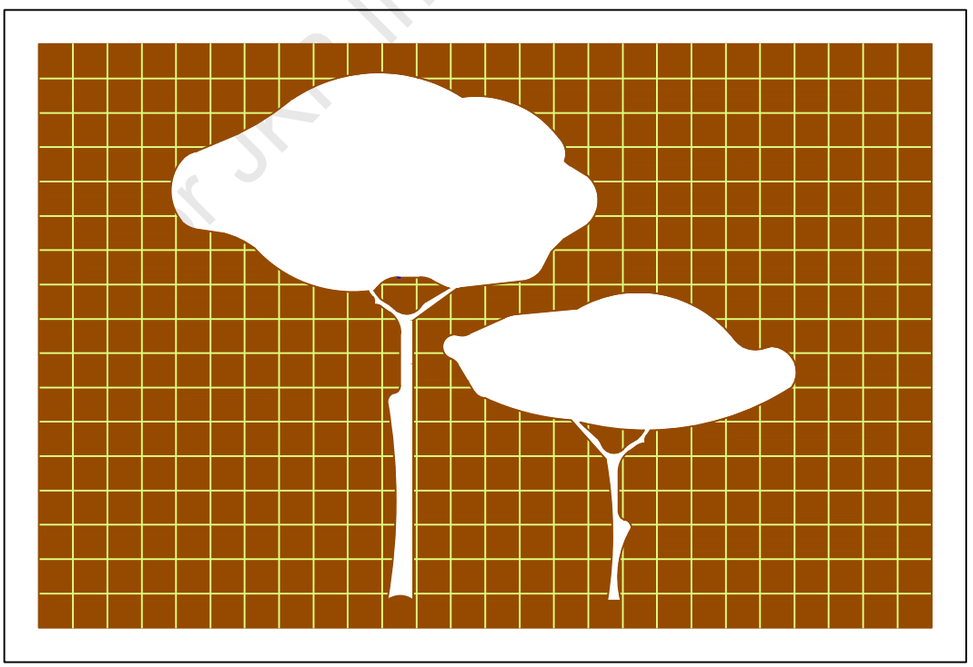


FISHING

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

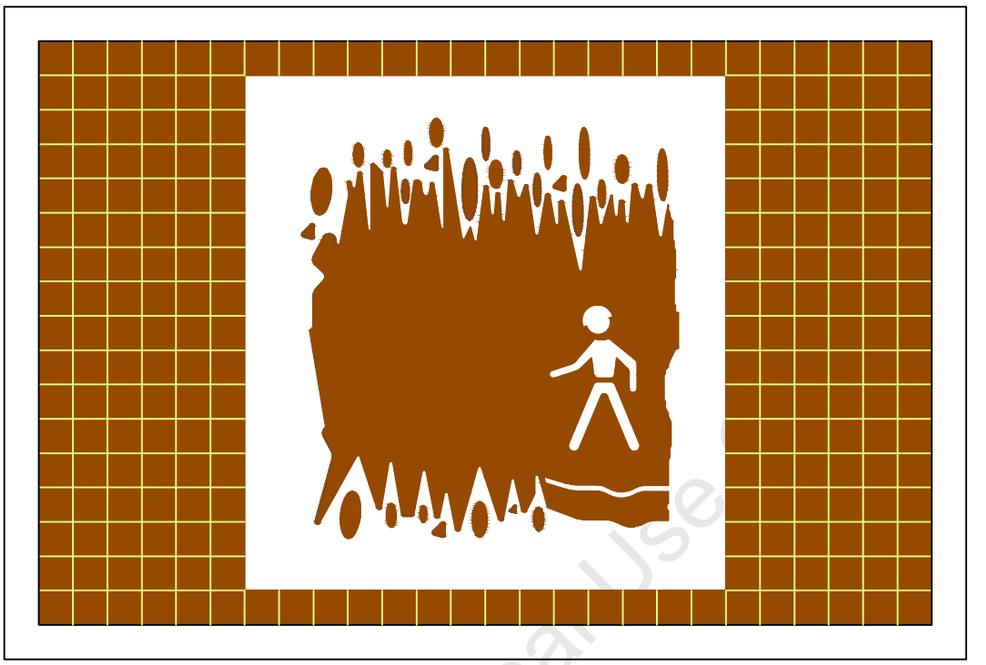


PICNIC

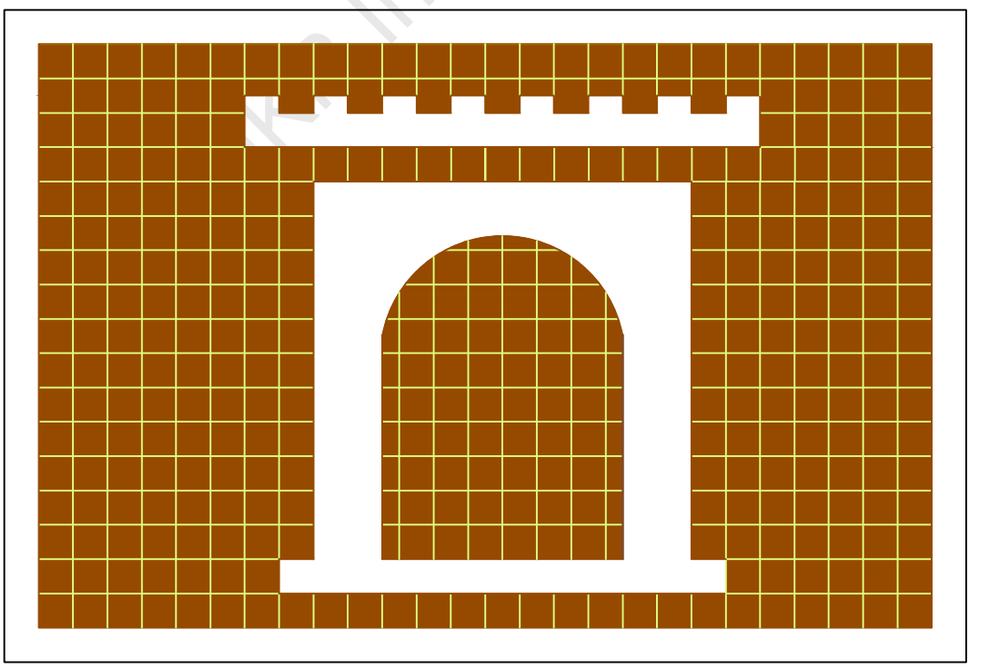


RECREATIONAL PARK

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)

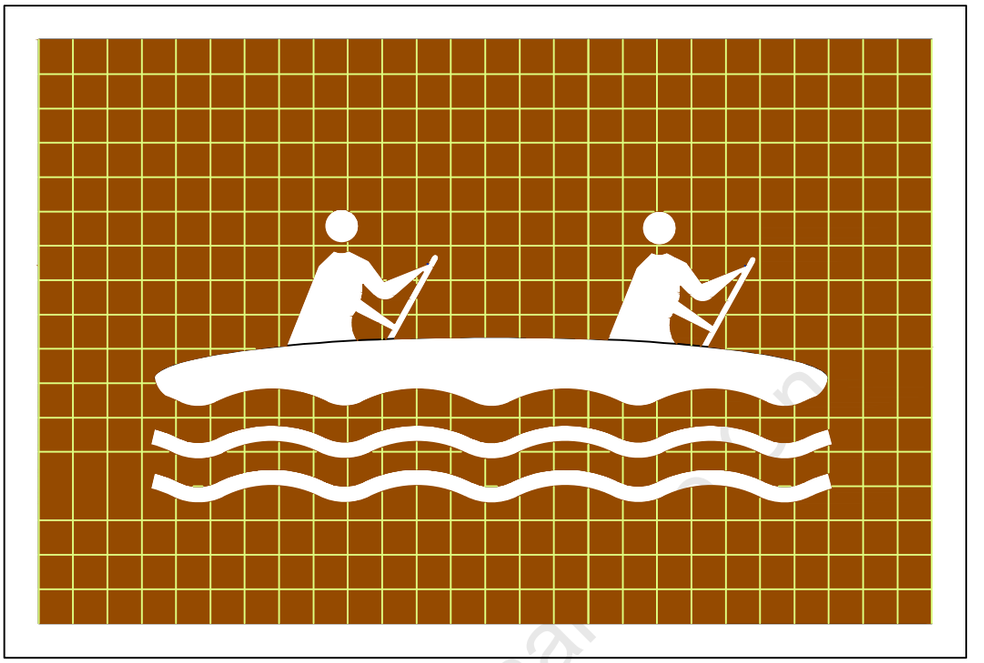


CAVES

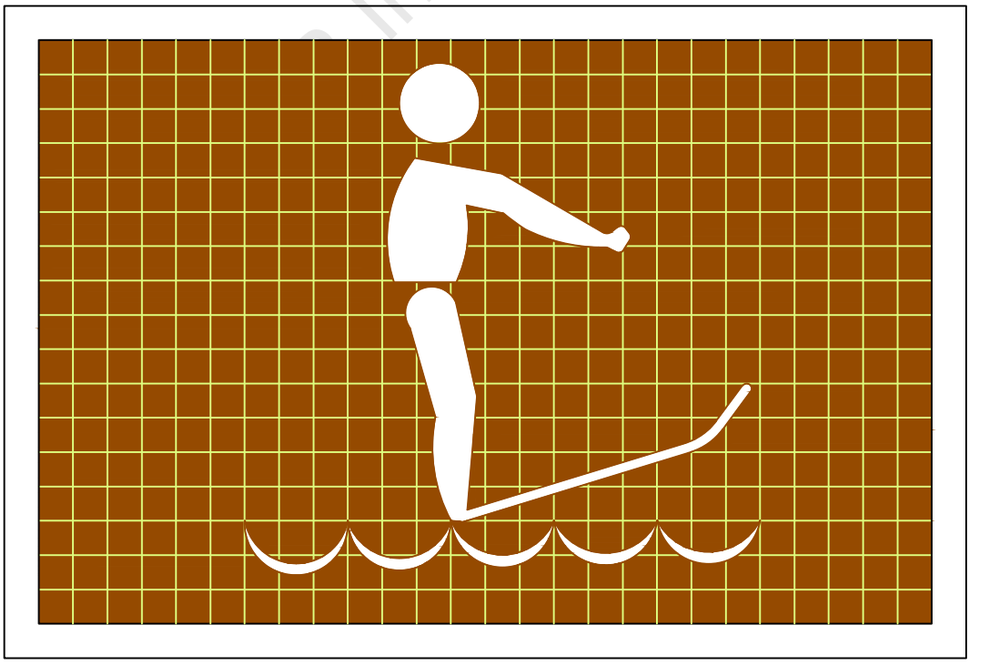


CASTLE

SYMBOL ON TRAFFIC SIGNS (RECREATIONAL / TOURISM)



CANOEING



WATER SKIING

APPENDIX B

Place Names for Use on Guide Signs

(Federal and Major State Roads)

PERLIS

	Name of Town	Abbreviated Name
1.	Kangar	-
2.	Padang Besar	Pdg. Besar
3.	Kuala Perlis	K. Perlis
4.	Arau	-
5.	Simpang Ampat	Spg. Ampat
6.	Wang Kelian	-

KEDAH

	Name of Town	Abbreviated Name
1.	Bukit Kayu Hitam	Bkt. Kayu Hitam
2.	Jitra	-
3.	Alor Setar	-
4.	Gurun	-
5.	Sungai Petani	Sg. Petani
6.	Baling	-
7.	Kulim	-
8.	Yan	-
9.	Pendang	-
10.	Kubang Pasu	-
11.	Sik	-
12.	Kodiang	-
13.	Kuala Kedah	K. Kedah
14.	Sintok	-
15.	Durian Burung	-
16.	Kulim Hi-Tech	-
17.	Lunas	-
18.	Padang Serai	Pdg. Serai
19.	Serdang	-
20.	Bandar Baharu	Bdr. Baharu
21.	Selama	-
22.	Mahang	-
23.	Kuala Ketil	K. Ketil
24.	Kupang	-

PULAU PINANG

	Name of Town	Abbreviated Name
1.	Telok Bahang	Tlk. Bahang
2.	George Town	-
3.	Bayan Lepas	-
4.	Balik Pulau	-
5.	Nibong Tebal	-
6.	Simpang Ampat	Spg. Ampat
7.	Bukit Mertajam	Bkt. Mertajam
8.	Butterworth	-
9.	Kepala Batas	-
10.	Batu Kawan	Bt. Kawan
11.	Bukit Panchor	Bkt. Panchor
12.	Bukit Tambun	Bkt. Tambun
13.	Changkat	-
14.	Jawi	-
15.	Relau	-
16.	Sungai Acheh	Sg. Acheh
17.	Sungai Bakap	Sg. Bakap
18.	Sungai Bakau	Sg. Bakau
19.	Sungai Baong	Sg. Baong
20.	Sungai Duri	Sg. Duri
21.	Sungai Kechil	Sg. Kechil
22.	Sungai Udang	Sg. Udang
23.	Tasek	-
24	Val Dor	-
25.	Val Dor Sungai	-

MELAKA

	Name of Town	Abbreviated Name
1.	Melaka	-
2.	Alor Gajah	-
3.	Jasin	-
4.	Masjid Tanah	-
5.	Lubok China	-

6.	Sungai Udang	Sg. Udang
7.	Tanjong Kling	Tg. Kling
8.	Merlimau	-
9.	Durian Tunggal	-
10.	Selandar	-
11.	Bemban	-
12.	Sungai Rambai	Sg. Rambai
13.	Simpang Ampat	Spg. Ampat

PERAK

	Name of Town	**Abbreviated Name**
1.	Parit Buntar	Prt. Buntar
2.	Bagan Serai	-
3.	Kuala Kangsar	K. Kangsar
4.	Sungai Siput	Sg. Siput
5.	Ipoh	-
6.	Kampar	-
7.	Tapah	-
8.	Bidor	-
9.	Slim River	-
10.	Tanjong Malim	Tg. Malim
11.	Sitiawan	-
12.	Ayer Tawar	A. Tawar
13.	Teluk Intan	Tlk. Intan
14.	Lumut	-
15.	Bagan Datoh	-
16.	Bruas	-
17.	Parit	-
18.	Kuala Sepetang	K. Sepetang
19.	Taiping	-
20.	Kroh	-
21.	Grik	-
22.	Batu Gajah	Bt. Gajah
23.	Selama	-
24.	Batang Padang	-

25.	Gopeng	-
26.	Kinta	-
27.	Lenggong	-

SELANGOR

	Name of Town	Abbreviated Name
1.	Kuala Kubu Bharu	K. Kubu Bharu
2.	Rawang	-
3.	Petaling Jaya	-
4.	Shah Alam	-
5.	Klang	-
6.	Sepang	-
7.	Banting	-
8.	Kuala Selangor	K. Selangor
9.	Tanjung Karang	Tg. Karang
10.	Sungai Besar	Sg. Besar
11.	Sabak Bernam	-
12.	Subang Jaya	-
13.	Cheras	-
14.	Kajang	-
15.	Sungai Buloh	Sg. Buloh
16.	Kepong	-
17.	Gombak	-
18.	Sekinchan	-
19.	Kapar	-
20.	Kerling	-
21.	Bestari Jaya	-
22.	Puchong	-
23.	Seri Kembangan	-
24.	Semenyih	-
25.	Hulu Langat	H. Langat
26.	Bangi	-
27.	Ampang	-
28.	Bagan Lalang	-
29.	Putrajaya	-

30.	Cyberjaya	-
31.	Dengkil	-
32.	Bandar Puncak Alam	Bdr. Puncak Alam

NEGERI SEMBILAN

	Name of Town	**Abbreviated Name**
1.	Seremban	-
2.	Rembau	-
3.	Tampin	-
4.	Gemas	-
5.	Kuala Pilah	K. Pilah
6.	Bahau	-
7.	Port Dickson	Pt. Dickson
8.	Kuala Kelawang (Jelebu)	K. Kelawang
9.	Labu	-
10.	Mantin	-
11.	Batu Kikir	Bt. Kikir
12.	Pedas	-
13.	Jempol	-
14.	Bandar Baru Serting	Bdr. Baru Serting
15.	Linggi	-
16.	Juasseh	-
17.	Simpang Durian	Spg. Durian
18.	Nilai	-

JOHOR

	Name of Town	**Abbreviated Name**
1.	Segamat	-
2.	Labis	-
3.	Yong Peng	-
4.	Ayer Hitam	A. Hitam
5.	Kulai	-
6.	Senai	-
7.	Johor Bahru	-

8.	Kota Tinggi	-
9.	Mersing	-
10.	Pontian Kechil	-
11.	Batu Pahat	Bt. Pahat
12.	Muar	-
13.	Kluang	-
14.	Pasir Gudang	Psr. Gudang
15.	Tangkak	-
16.	Kukup	-
17.	Sungai Rengit	Sg. Rengit
18.	Simpang Renggam	Spg. Renggam
19.	Masai	-
20.	Pengerang	-
21.	Pekan Nanas	-
22.	Ulu Tiram	-
23.	Nusajaya	-
24.	Benut	-
25.	Parit Sulong	Prt. Sulong
26.	Paloh	-
27.	Endau	-

PAHANG

	Name of Town	**Abbreviated Name**
1.	Karak	-
2.	Temerloh	-
3.	Maran	-
4.	Kuantan	-
5.	Pekan	-
6.	Kuala Rompin	K. Rompin
7.	Bentong	-
8.	Raub	-
9.	Benta	-
10.	Kuala Lipis	K. Lipis
11.	Triang	-
12.	Muadzam Shah	-

13.	Bukit Fraser	Bkt. Fraser
14.	Tanah Rata	-
15.	Brinchang	-
16.	Jerantut	-
17.	Mentakab	-
18.	Cameron Highlands	-
19.	Rompin	-
20.	Bera	-
21.	Gambang	-
22.	Chini	-
23.	Chenor	-
24.	Sungai Koyan	Sg. Koyan
25.	Bandar Tun Abdul Razak	Bdr. Tun Abdul Razak
26.	Bandar Pusat Jengka	Bdr. Pusat Jengka
27.	Bukit Tinggi	Bkt. Tinggi
28.	Genting Highlands	-
29.	Balok	-
30.	Simpang Pelangai	Spg. Pelangai

TERENGGANU

	Name of Town	**Abbreviated Name**
1.	Jertih	-
2.	Kampong Raja	Kg. Raja
3.	Permaisuri	-
4.	Kuala Terengganu	K. Terengganu
5.	Dungun	-
6.	Marang	-
7.	Chukai	-
8.	Kuala Berang	K. Berang
9.	Paka	-
10.	Kerteh	-
11.	Kemasik	-
12.	Ajil	-
13.	Kemaman	-
14.	Kijal	-

15.	Setiu	-
16.	Besut	-
17.	Tasik Kenyir	-
18.	Bukit Besi	-
19.	Hulu Terengganu	H. Terengganu
20.	Tok Bali	-

KELANTAN

	Name of Town	**Abbreviated Name**
1.	Rantau Panjang	-
2.	Pasir Mas	Psr. Mas
3.	Kota Bharu	-
4.	Kubang Kerian	-
5.	Pasir Puteh	Psr. Puteh
6.	Tanah Merah	-
7.	Machang	-
8.	Gua Musang	-
9.	Kuala Krai	K. Krai
10.	Pengkalan Chepa	Pgkl. Chepa
11.	Tumpat	-
12.	Bachok	-
13.	Jeli	-
14.	Ketereh	-
15.	Tok Bali	-

SARAWAK

	Name of Town	**Abbreviated Name**
1.	Kuching	-
2.	Bau	-
3.	Serian	-
4.	Simunjan	-
5.	Sri Aman	-
6.	Semantan	-
7.	Betong	-

8.	Lubok Antu	-
9.	Sarikei	-
10.	Sibu	-
11.	Julau	-
12.	Dalat	-
13.	Mukah	-
14.	Bintulu	-
15.	Miri	-
16.	Lundu	-
17.	Lutong	-
18	Daro	-

SABAH

	Name of Town	**Abbreviated Name**
1.	Kota Kinabalu	-
2.	Tenom	-
3.	Sipitang	-
4.	Kuala Penyu	K. Penyu
5.	Penampang	-
6.	Kota Belud	-
7.	Tambunan	-
8.	Beaufort	-
9.	Ranau	-
10.	Papar	-
11.	Tuaran	-
12.	Sandakan	-
13.	Lahad Datu	-
14.	Tawau	-
15.	Semporna	-
16.	Kunak	-

WILAYAH PERSEKUTUAN

	Name of Town	Abbreviated Name
1.	Kuala Lumpur	K. Lumpur
2.	Putrajaya	-
3.	Labuan	-

NOTE:

1. The use of abbreviated names shall be consistent throughout the length of the route.
2. The updated spelling for each destination name shall be confirmed with the relevant local authorities.
3. The major destinations shall be determined by the relevant authorites and are not limited to that which is stated.

APPENDIX C

Standard Abbreviations for Place Names

	Common Initial Name	Abbreviated Name
1.	Ayer/ Air	A.
2.	Batu	Bt.
3.	Bukit	Bkt.
4.	Changkat	Cgkt.
5.	Gunung	G.
6.	Hilir	Hlr.
7.	Hulu	H.
8.	Jalan	Jln.
9.	Kampong	Kg.
10.	Kuala	K.
11.	Lapangan	Lpg.
12.	Lembah	Lbh.
13.	Padang	Pdg.
14.	Parit	Prt.
15.	Pasir	Psr.
16.	Pelabuhan	Plbh.
17.	Pengkalan	Pgkl.
18.	Permatang	Pmtg.
19.	Pulau	P.
20.	Simpang	Spg.
21.	Sungai	Sg.
22.	Tanah	Tnh.
23.	Tanjung	Tg.
24.	Telok	Tlk.
25.	Universiti	Univ.
26.	Hospital	Hosp.
27.	Taman	Tmn.
28.	Pejabat	Pej.
29.	Sekolah	Sek.
30.	Kerajaan	Krjn.
31.	Persiaran	Psrn.
32.	Bandar	Bdr.

NOTE: If possible, all place names on signs should be used in full except when space is limited.

APPENDIX D

Application of Guide Signs

FIGURE D.1 : TYPICAL APPLICATION OF GUIDE SIGNS FOR T-INTERSECTION LEADING TO PLACE NAMES IN APPENDIX B

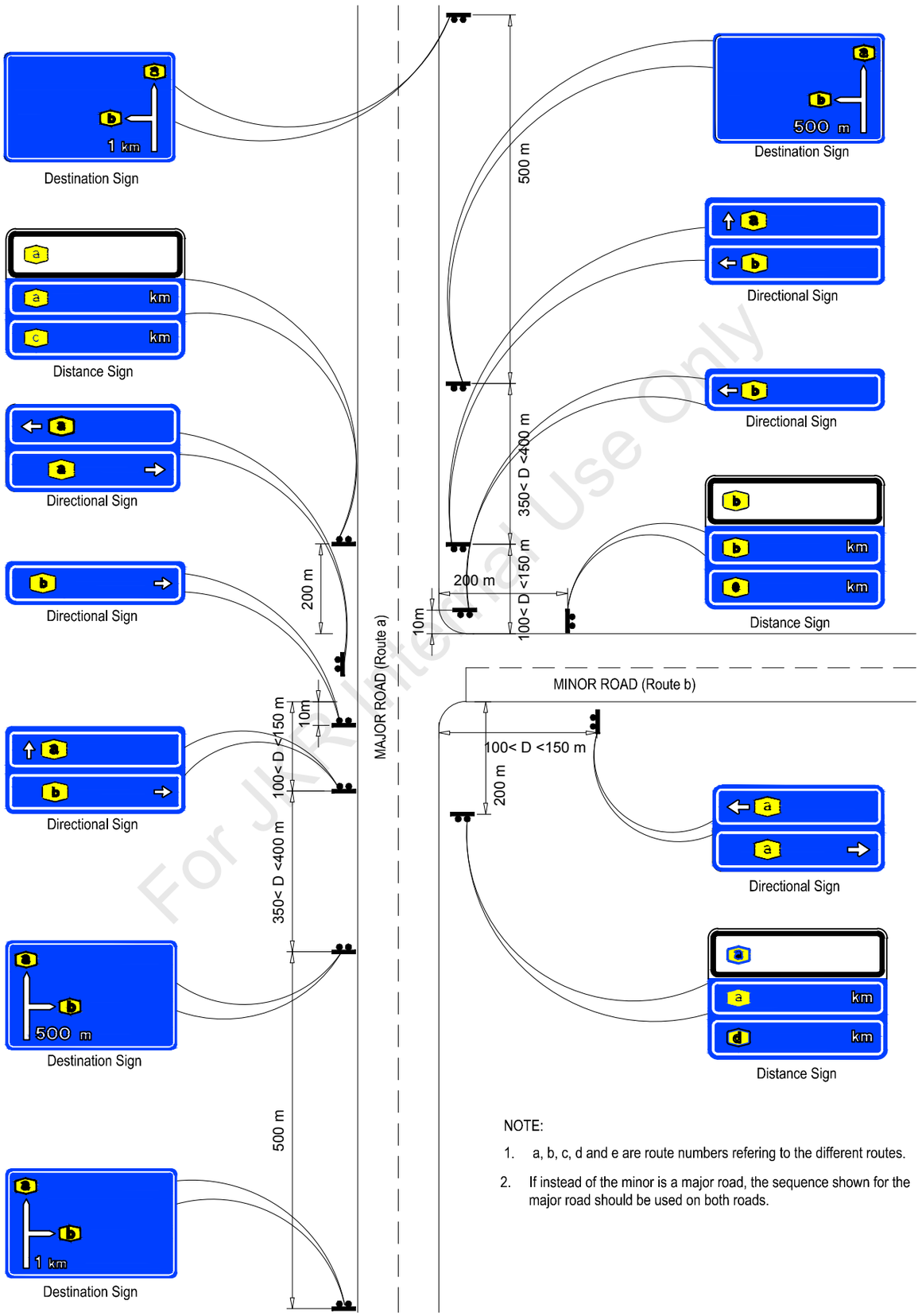


FIGURE D.2 : TYPICAL APPLICATION OF GUIDE SIGNS FOR T-INTERSECTION NOT LEADING TO PLACE NAMES IN APPENDIX B BUT MAJOR STATE ROADS

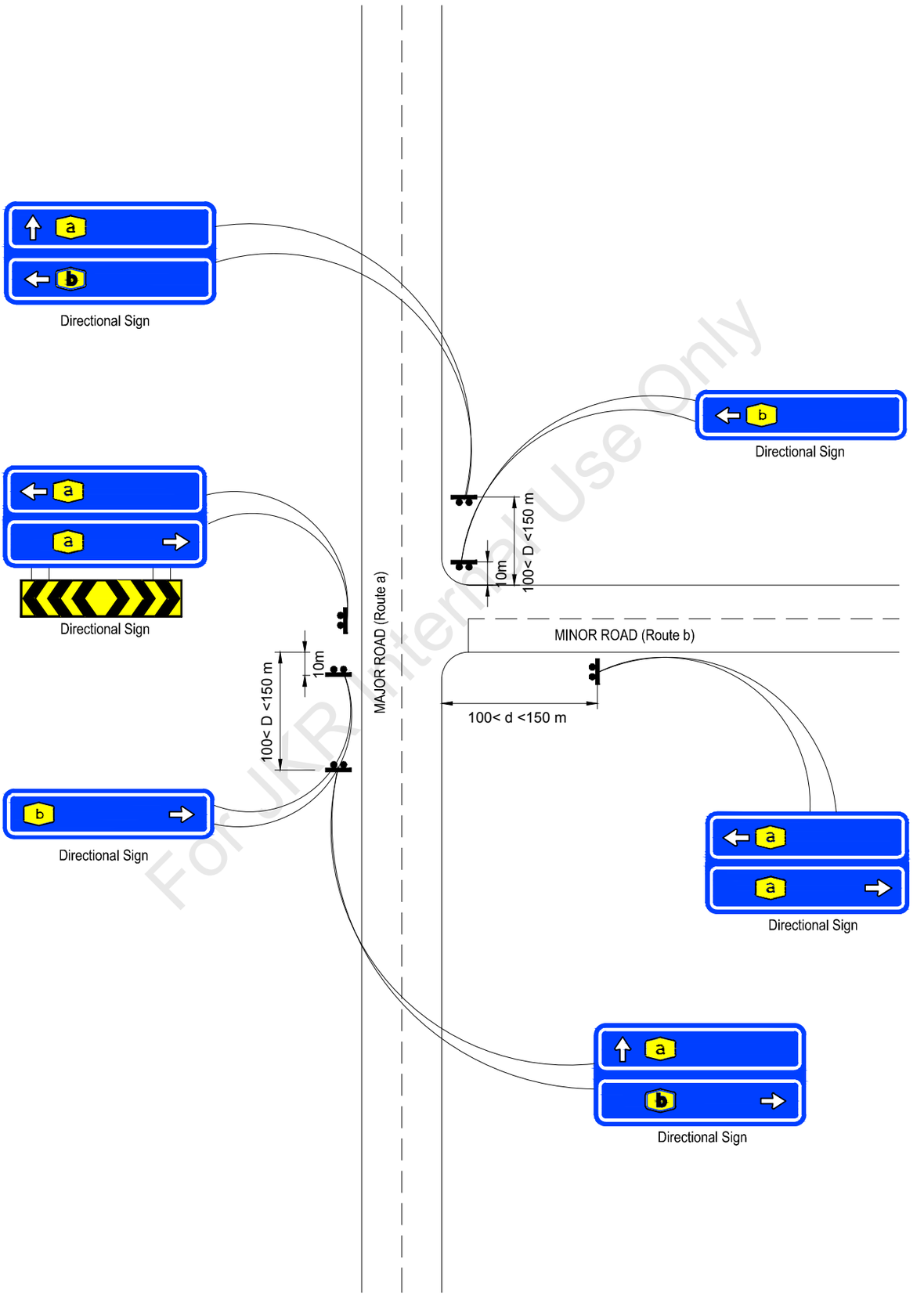
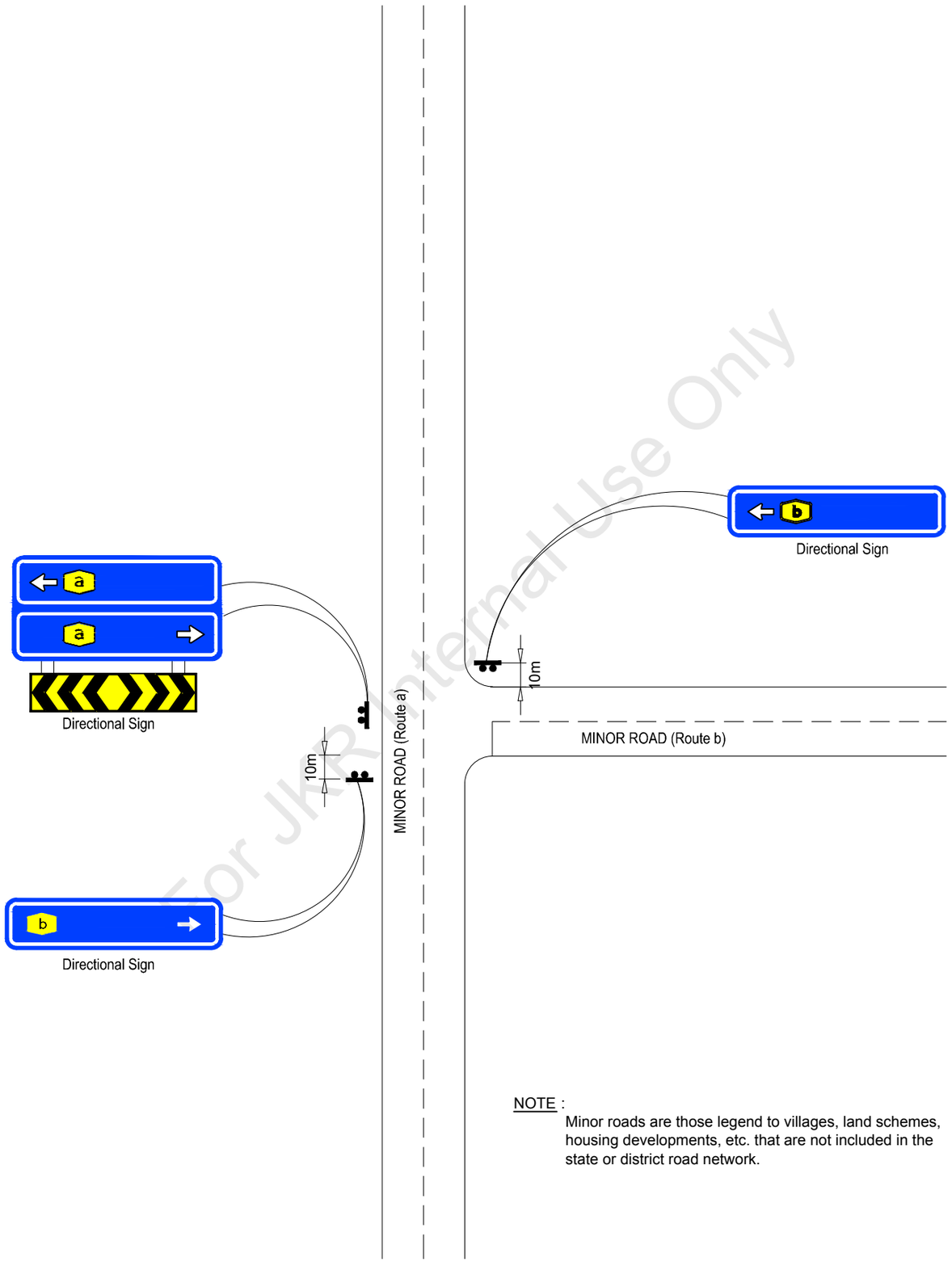


FIGURE D.3 : TYPICAL APPLICATION OF GUIDE SIGNS OF MINOR ROADS



NOTE :
Minor roads are those legend to villages, land schemes, housing developments, etc. that are not included in the state or district road network.

FIGURE D.4 : TYPICAL APPLICATION OF GUIDE SIGNS FOR X-INTERSECTION LEADING TO PLACE NAMES IN APPENDIX B

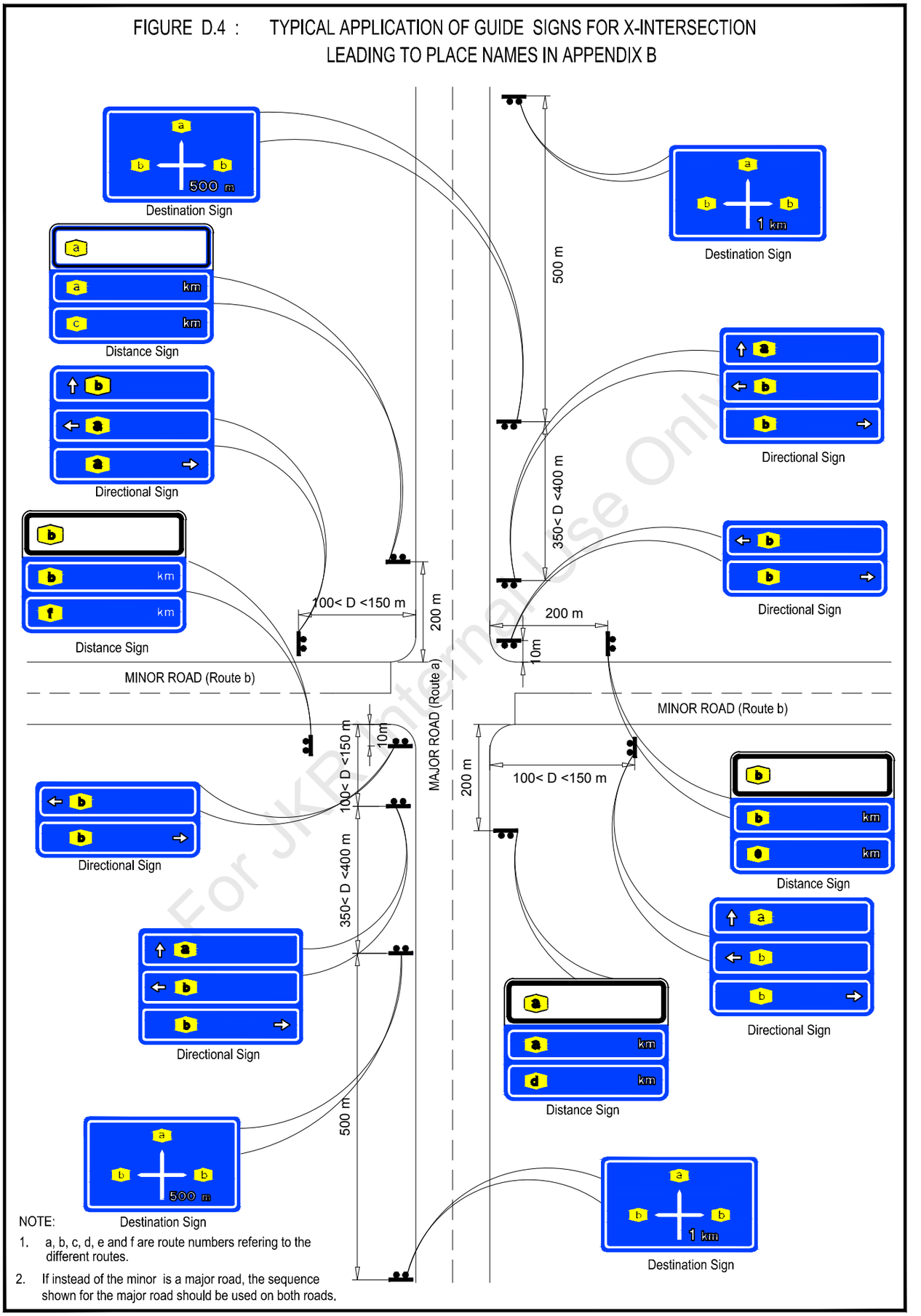


FIGURE D.5 : TYPICAL APPLICATION OF GUIDE SIGNS FOR X-INTERSECTION NOT LEADING TO PLACE NAMES IN APPENDIX B BUT MAJOR STATE ROADS

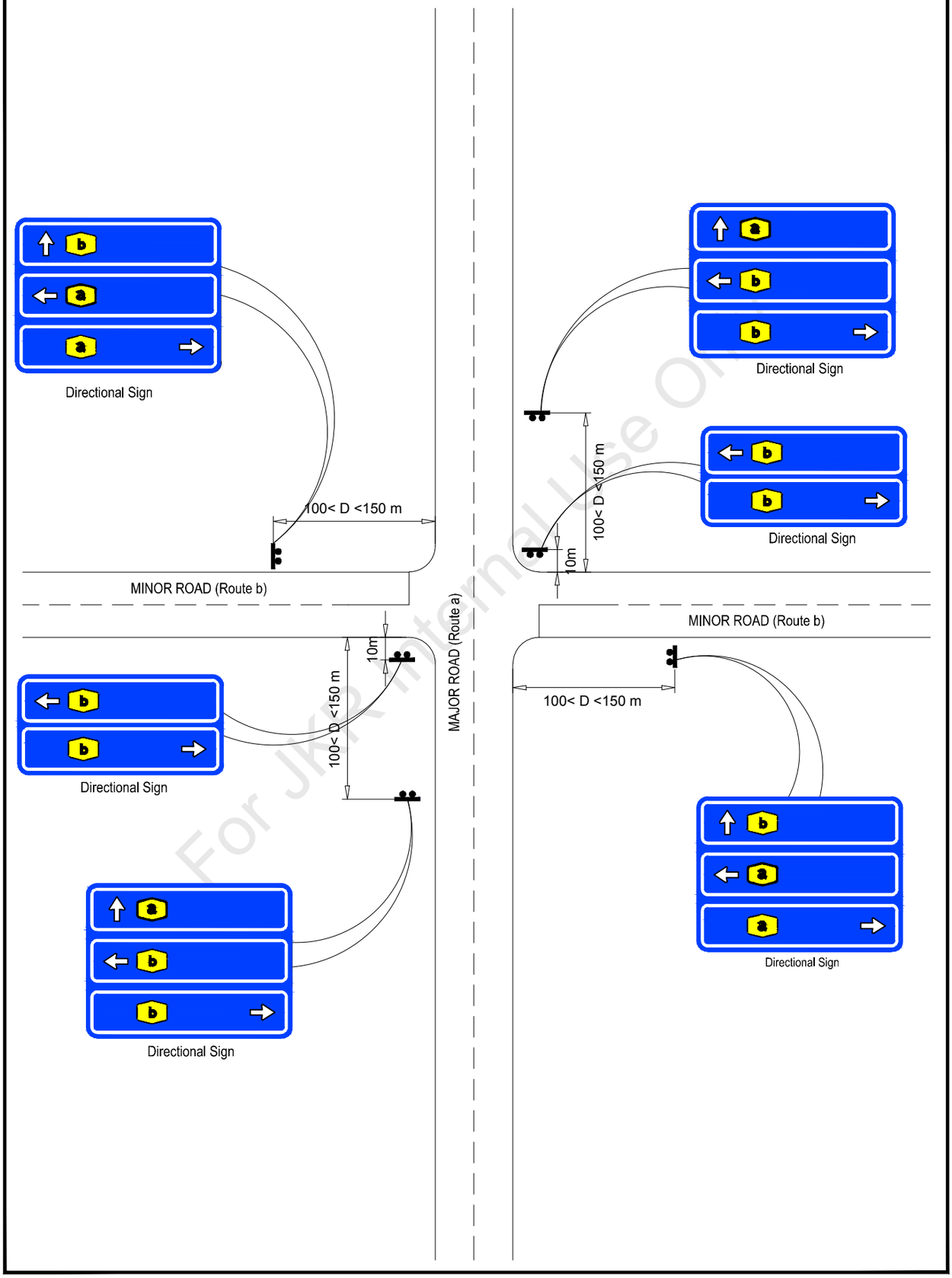
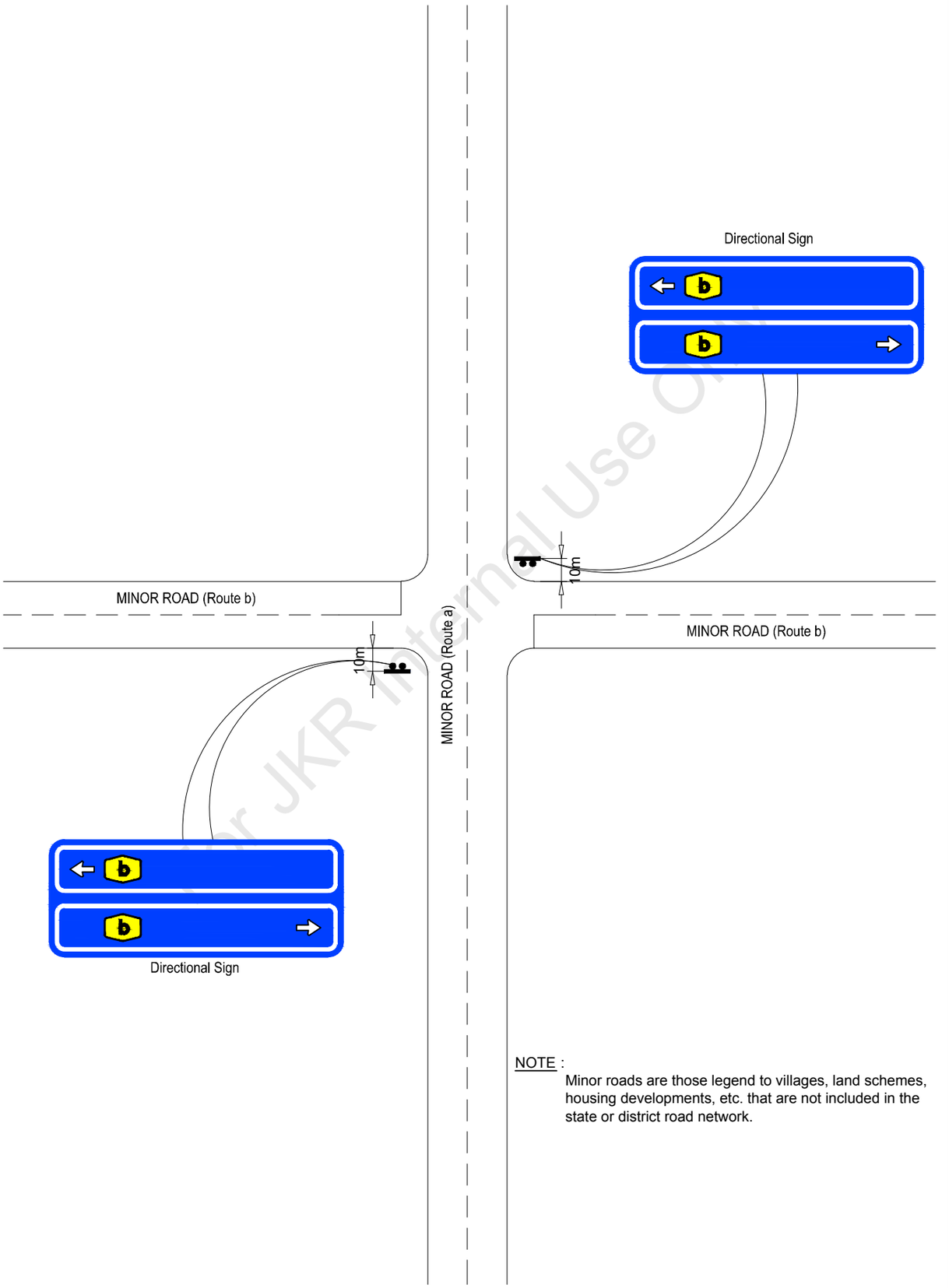


FIGURE D.6 : TYPICAL APPLICATION OF GUIDE SIGNS FOR X-INTERSECTION OF MINOR ROADS



NOTE :
Minor roads are those legend to villages, land schemes, housing developments, etc. that are not included in the state or district road network.

FIGURE D.7 : TYPICAL APPLICATION OF GUIDE SIGNS FOR INTERCHANGE LEADING TO PLACE NAMES IN APPENDIX B

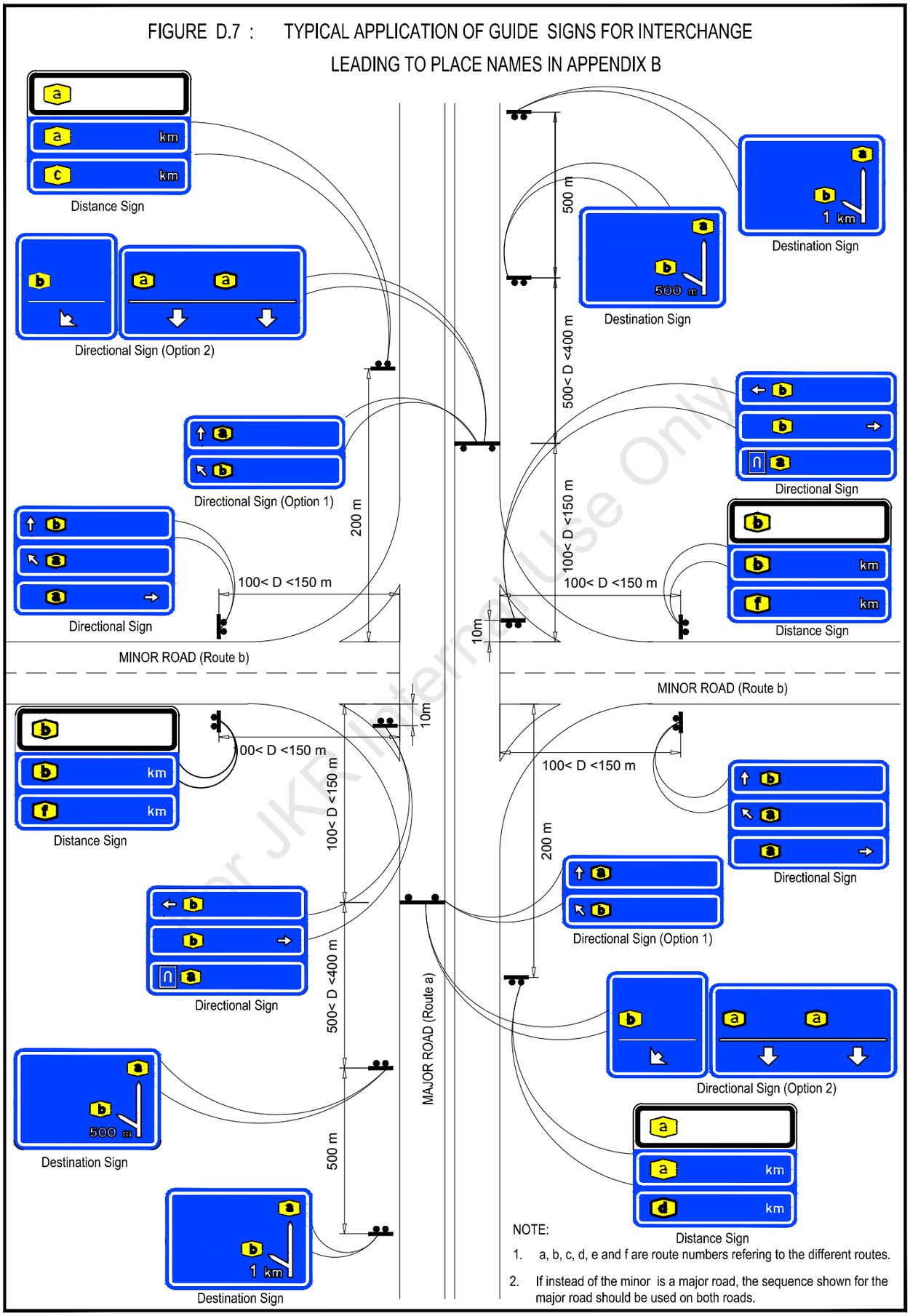


FIGURE D.8 : TYPICAL APPLICATION OF GUIDE SIGNS FOR INTERCHANGE WITH SIGNING LEADING TO PLACE NAMES IN APPENDIX B

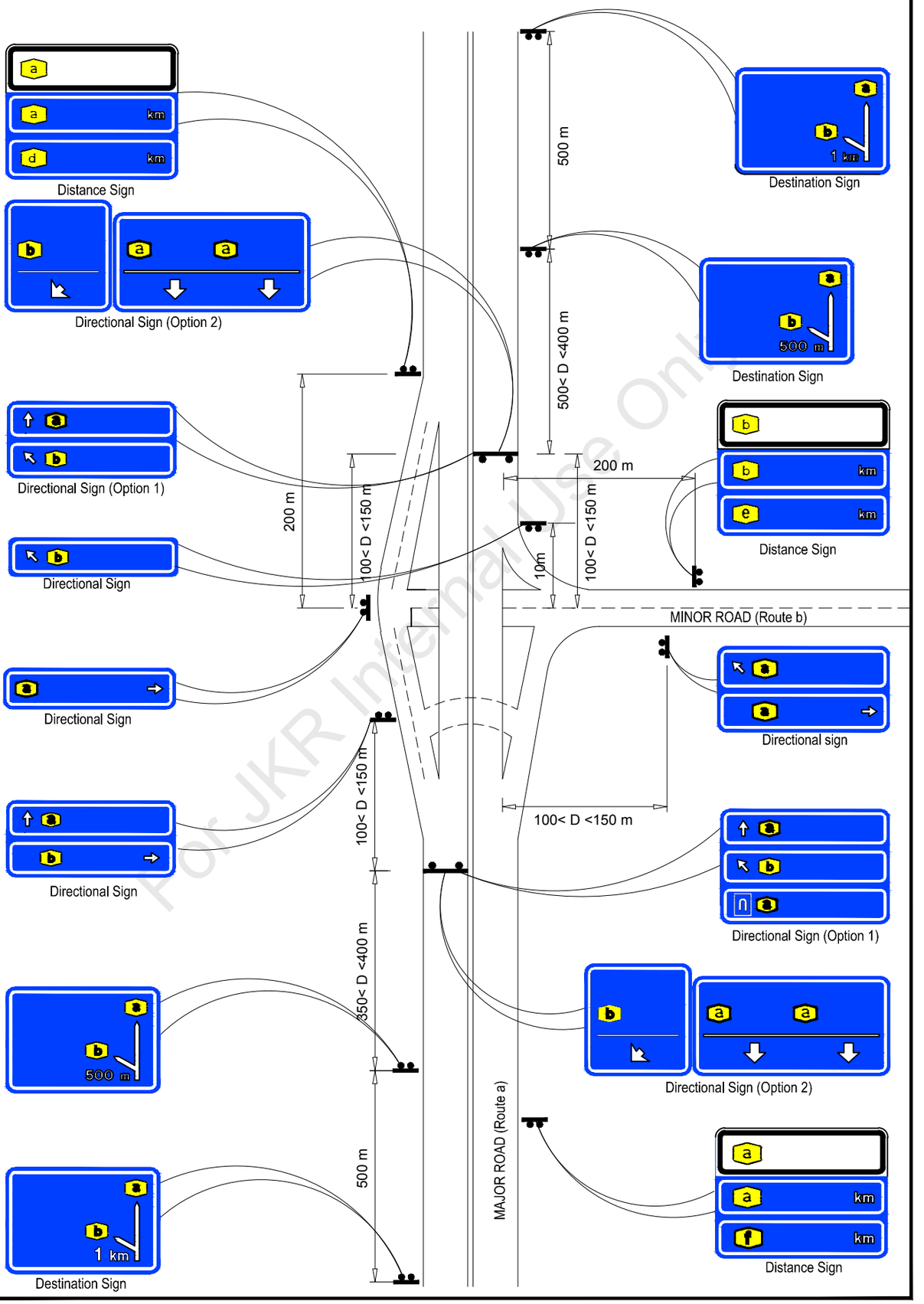


FIGURE D.9 : SERIES OF SIGNS ON HIGHWAY APPROACHING INTEGRATED SERVICES & SYSTEM INTERCHANGES (THROUGH LANE TRAFFIC PRIORITY)

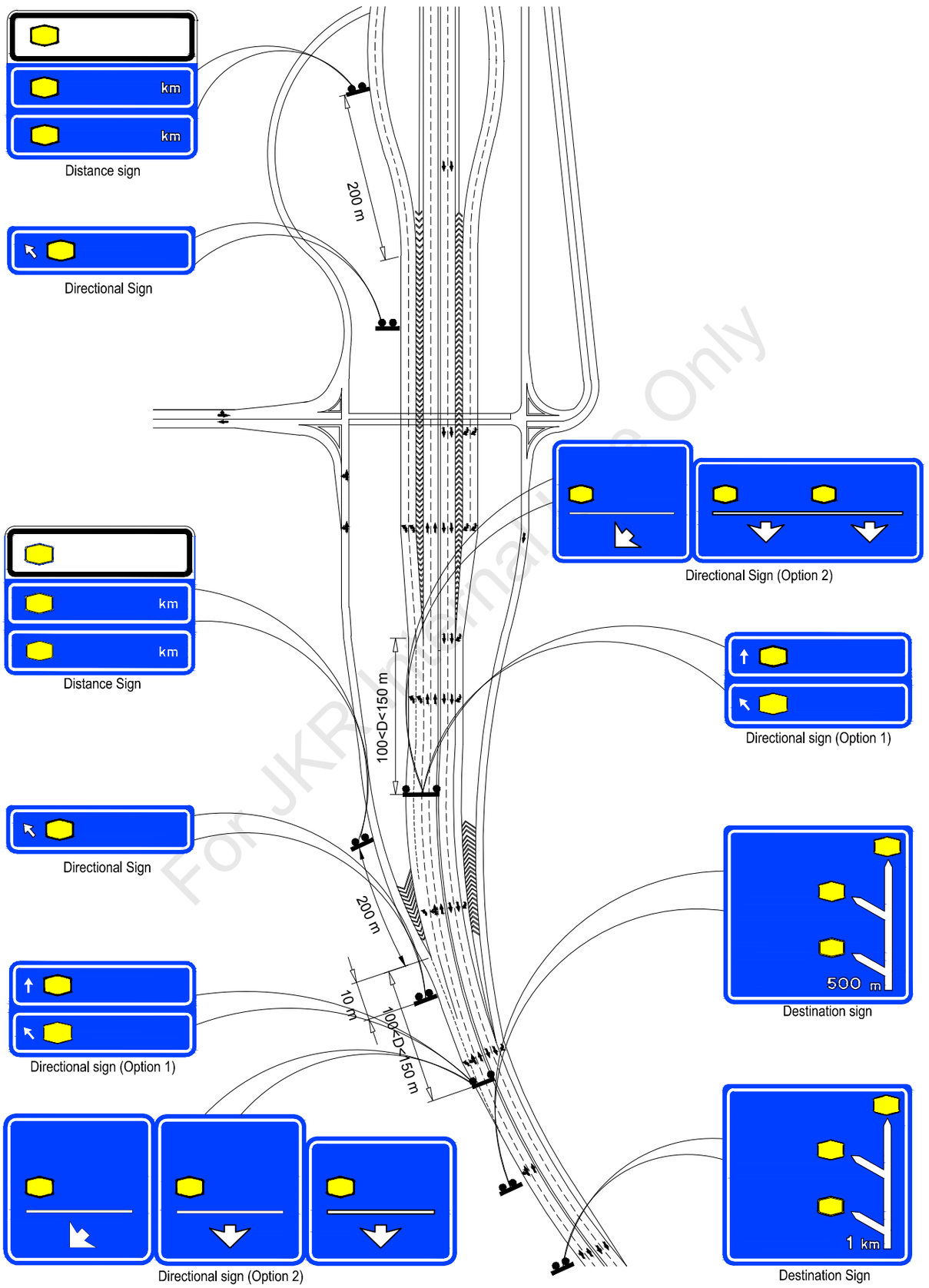


FIGURE D.10 : TYPICAL APPLICATION OF GUIDE SIGNS FOR DIAMOND INTERCHANGE LEADING TO PLACE NAMES IN APPENDIX B

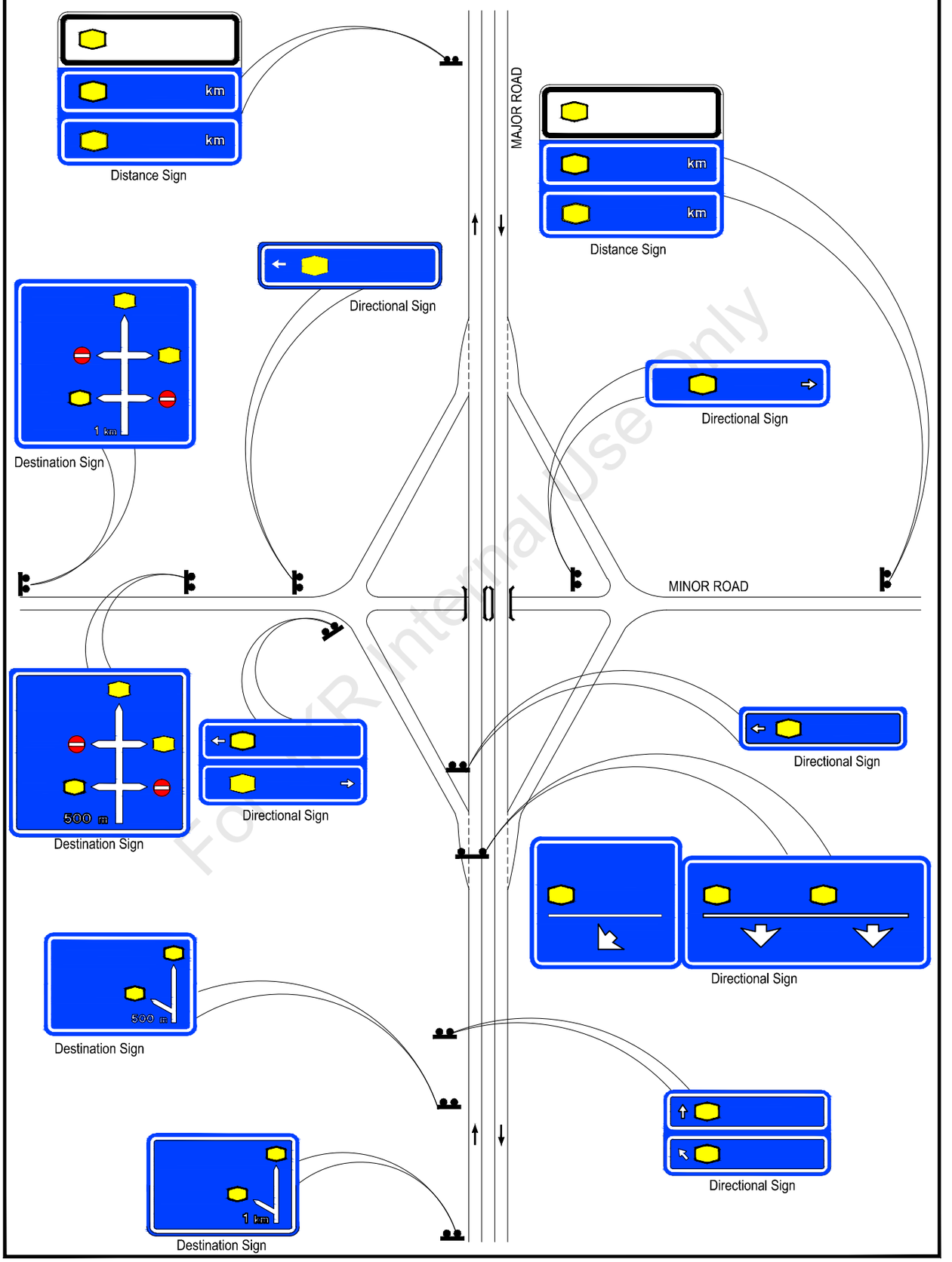


FIGURE D.11 : TYPICAL APPLICATION OF GUIDE SIGNS FOR FULL CLOVERLEAF INTERCHANGE LEADING TO PLACE NAMES IN APPENDIX B

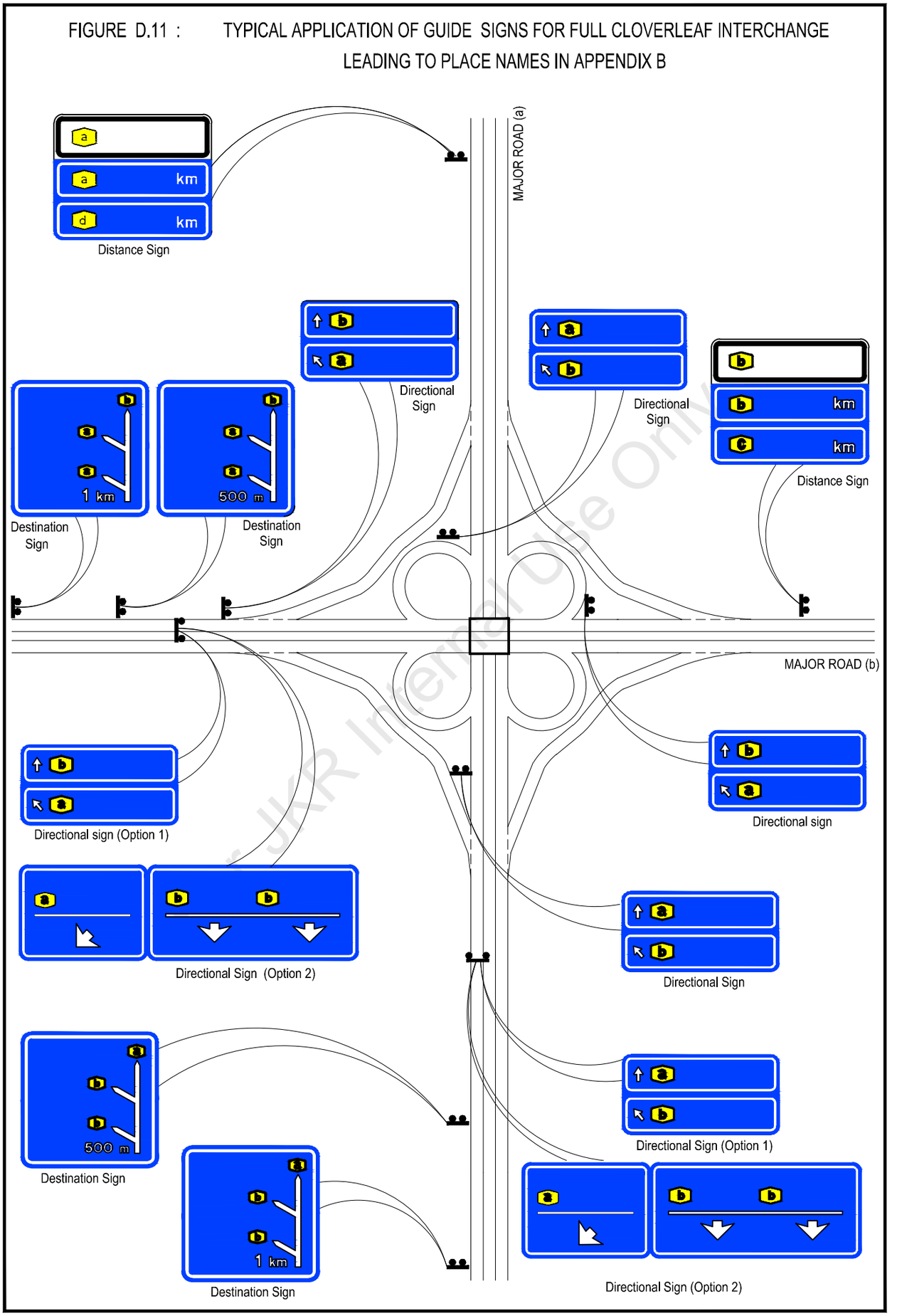


FIGURE D.12: ACTUAL EXAMPLES OF GUIDE SIGNS APPLICATION

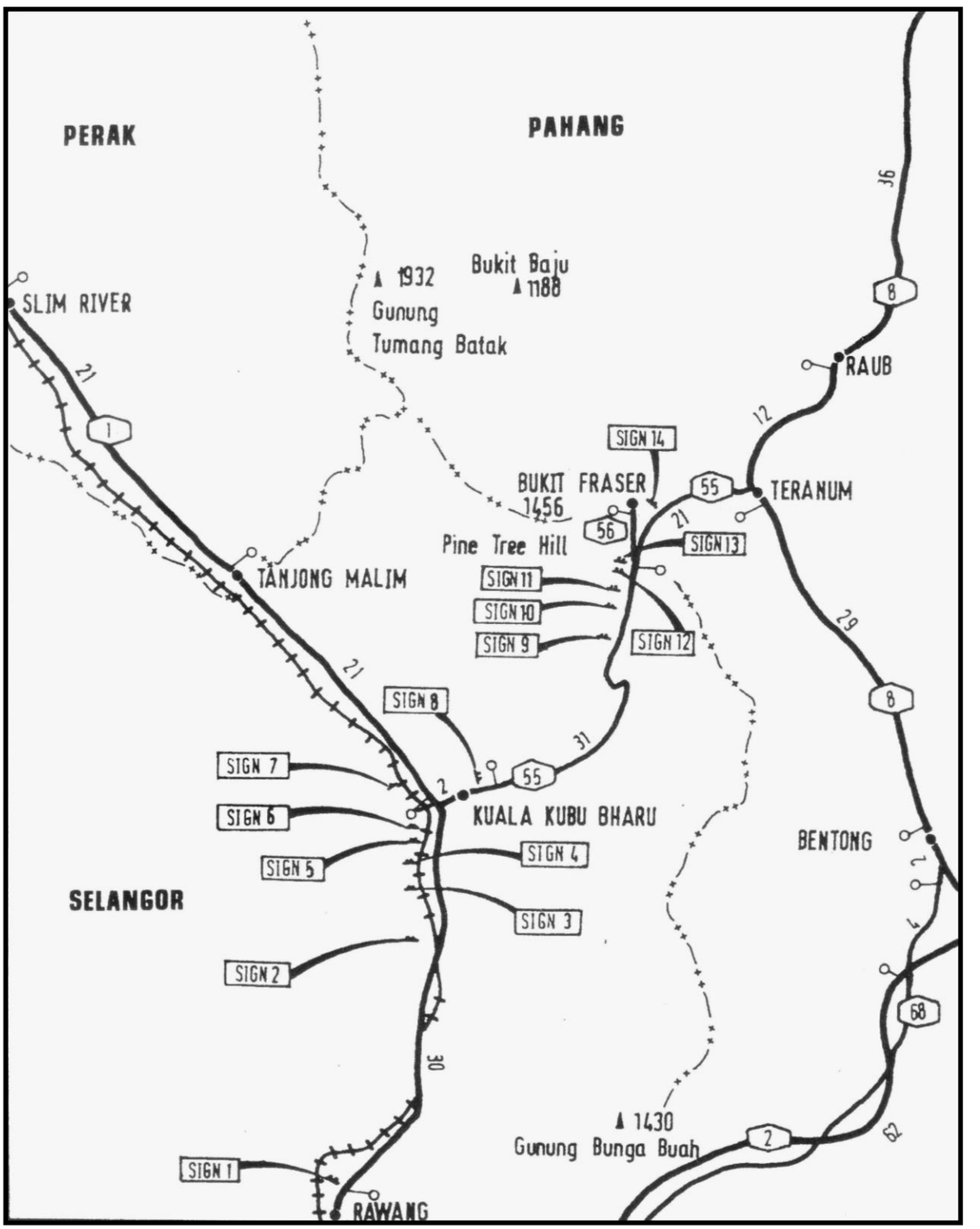
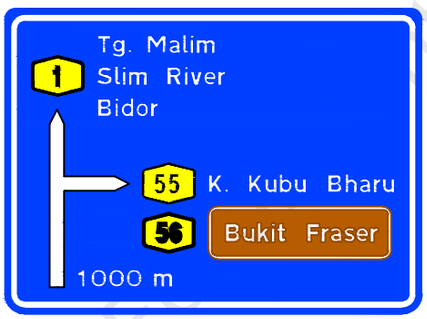


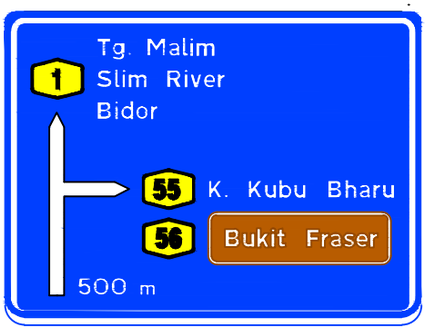
FIGURE D13 : DETAILS OF THE GUIDE SIGNS INDICATED IN FIGURE D12

Sign 1

Sign 2

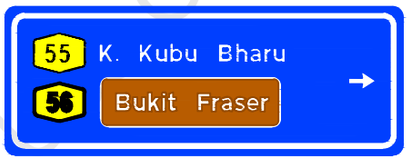


Sign 3



Sign 4

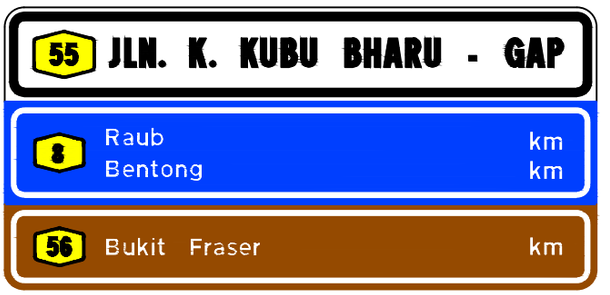
Sign 5



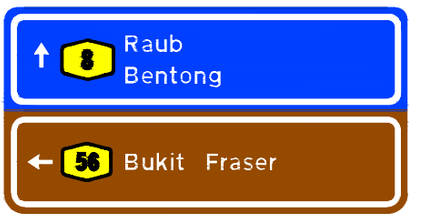
Sign 6

Sign 7

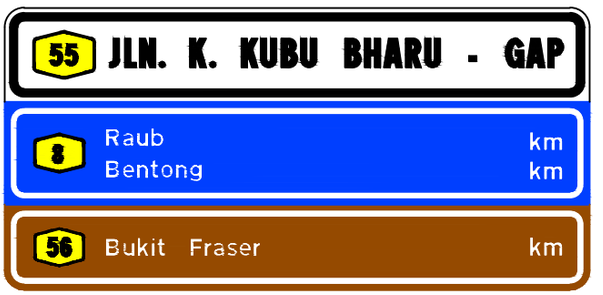
FIGURE D13 : DETAILS OF THE GUIDE SIGNS INDICATED IN FIGURE D12



Sign 8



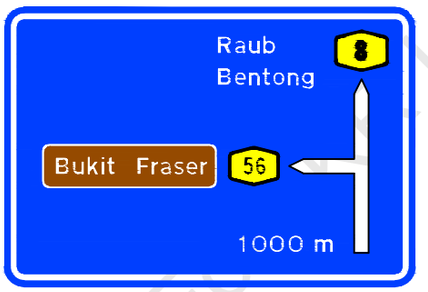
Sign 12



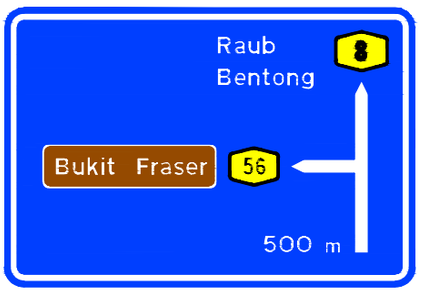
Sign 9

Sign 13

Sign 14



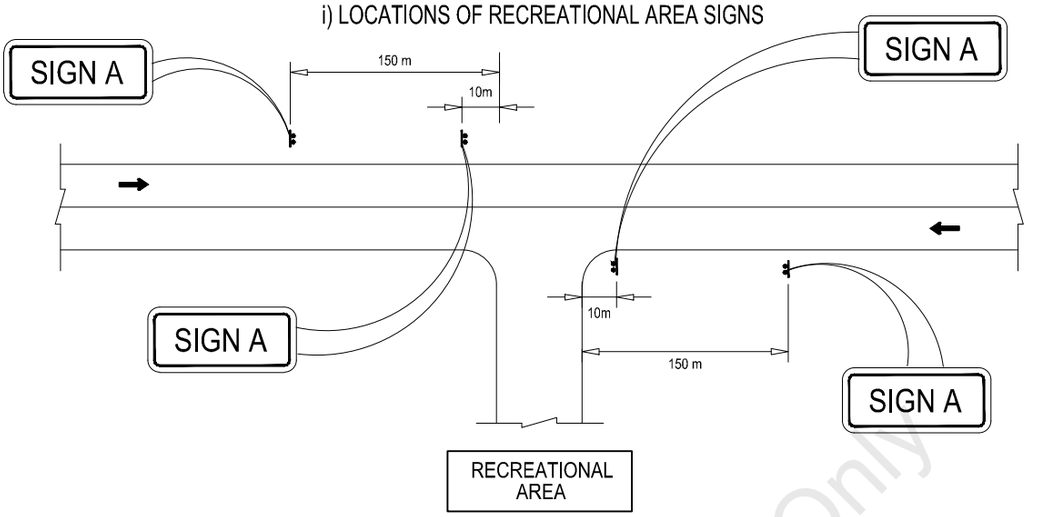
Sign 10



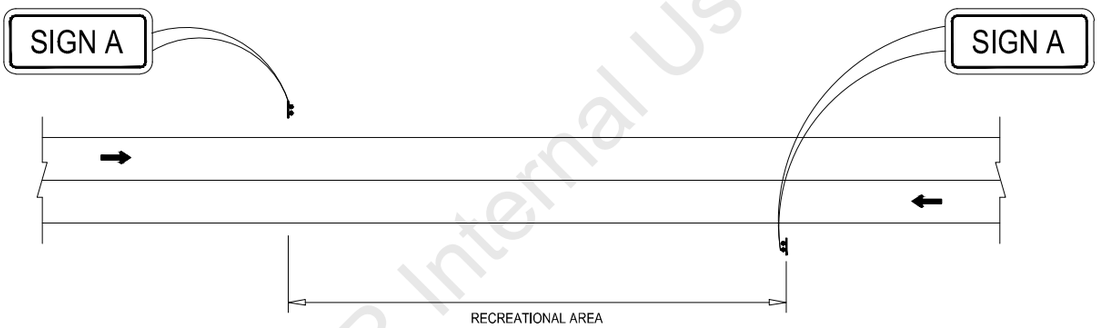
Sign 11

FIGURE D14 : APPLICATION OF RECREATIONAL AREA SIGNS

i) LOCATIONS OF RECREATIONAL AREA SIGNS



NOTE: Recreational area signs for those recreational areas that are off the road should be placed at least 150 m and 10 m away from the junctions leading to such areas as shown above.



NOTE: Recreational area signs for those recreational areas that are along the road should be placed facing the traffic at the start and at the end of such areas as shown above. An example of such signs is as shown by Sign A in Figure 3.16. In this case directional arrows are not required.

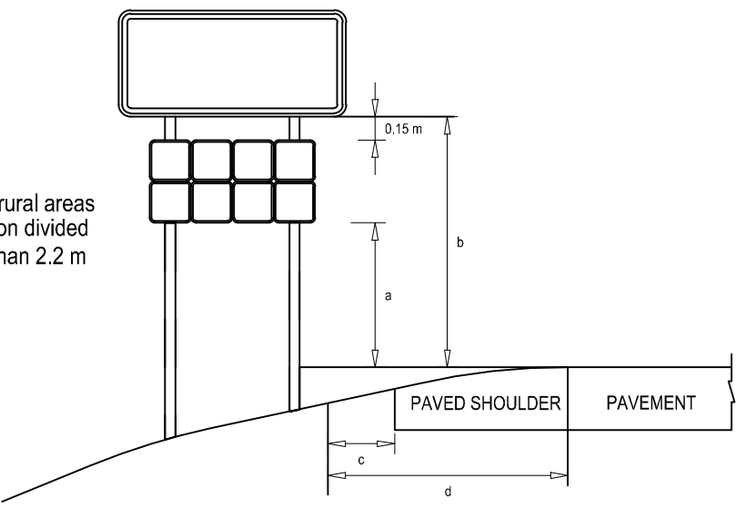
ii) ERECTING RECREATIONAL AREA SIGNS

a = Not less than 1.2 m

b = Not less than 1.5 m in rural areas or not less than 1.8m on divided highways or not less than 2.2 m in business areas

c = Not less than 0.6 m

d = Not less than 3.6 m



APPENDIX E

Colour Codes and Chromaticity Coordinates

Table E.1: Chromaticity Coordinates

COLOUR	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.303	0.3000	0.368	0.366	0.340	0.393	0.274	0.329
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472
Orange	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216
Brown	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390
Fluorescent Yellow Green	0.387	0.610	0.369	0.546	0.428	0.496	0.460	0.540
Fluorescent Yellow	0.479	0.520	0.446	0.483	0.512	0.421	0.557	0.442
Fluorescent Orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355

The chromaticity coordinates of retro-reflective sheeting shall conform to Table E1.

Reference:

ASTM D4956-09: Standard Specification for Retroreflective Sheeting for Traffic Control

APPENDIX F

Codes for Local Authority Routes

CODES FOR LOCAL AUTHORITY ROUTES

Table F.1: Codes for Local Authority Routes

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
1.	**Perlis**			4.	**Perak**		
	a) MP Kangar	MPK	RKA		a) MB Ipoh	MBI	AAA
					b) MP Taiping	MPT	ATA
2.	**Kedah**				c) MP Manjung	MPM	AMA
	a) MB Alor Star	MBAS	KAS		d) MP Teluk Intan	MPTI	ATI
	b) MP Sungai Petani	MPSPK	KSP		e) MD Gerik	MDG	AGE
	c) MP Langkawi	MPLBP	KLA		f) MD Selama	MDS	ASE
	d) MP Kulim	MPKK	KKU		g) MD Lenggong	MDLG	ALE
	e) MD Kubang Pasu	MDKP	KKP		h) MP Kuala Kangsar	MPKKPK	AKK
	f) MD Sik	MDSik	KSK		i) MD Kerian	MDK	AKE
	g) MD Pendang	MDP	KPE		j) MD Perak Tengah	MDPT	APT
	h) MD Yan	MDYan	KYA		k) MD Kinta Barat	MDKB	AKB
	i) MD Baling	MDBaling	KBA		l) MD Kinta Selatan	MDKS	AKS
	j) MD Bandar Baharu	MDBB	KBB		m) MD Pengkalan Hulu	MDPH	APH
	k) MD Padang Terap	MDPT	KPT		n) MD Tapah	MDT	ATP
	l) PBT TP Hitech Kulim		KPK		o) MD Tanjung Malim	MDTM	ATM
3.	**Pulau Pinang**						
	a) MP Seberang Perai	MPSP	PSP				
	b) MP Pulau Pinang	MBPP	PPG				

Table F.1: Codes for Local Authority Routes *(continued)*

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
5.	**Selangor**			**6.**	**Negeri Sembilan**		
	a) MB Shah Alam	MBSA	BSA		a) MP Seremban	MPS	NSE
	b) MP Klang	MPK	BKL		b) MP Nilai	MPN	NNL
	c) MP Subang Jaya	MPSJ	BSJ		c) MP Port Dickson	MPPD	NPD
	d) MB Petaling Jaya	MBPJ	BPJ		d) MD Jempol	MDJm	NJM
	e) MP Kajang	MPKj	BKA		e) MD Kuala Pilah	MDKP	NKP
	f) MP Ampang Jaya	MPAJ	BAJ		f) MD Rembau	MDR	NRE
	g) MP Selayang	MPSe	BSE		g) MD Jelebu	MDJe	NJE
	h) MD Sabak Bernam	MDSB	BSB		h) MD Tampin	MDT	NTA
	i) MD Hulu Selangor	MDHS	BHS				
	j) MD Kuala Selangor	MDKS	BKS	**7.**	**Melaka**		
	k) MD Kuala Langat	MDKL	BKU		a) MB Melaka Bersejarah	MBMB	MMB
	l) MP Sepang	MPSp	BSP		b) MP Jasin	MPJ	MJA
					c) MP Alor Gajah	MPAG	MAG

Table F.1: Codes for Local Authority Routes *(continued)*

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
8.	**Johor**			**9.**	**Pahang**		
	a) MB Johor Bahru	MBJB	JJB		a) MP Kuantan	MPK	CKN
	b) MP Muar	MPM	JMU		b) MP Temerloh	MPT	CTE
	c) MP Batu Pahat	MPBP	JBP		c) MD Cameron Highlands	MDCH	CCH
	d) MP Kluang	MPKI	JKL		d) MD Lipis	MDL	CLP
	e) MP Johor Bahru Tengah	MPJBT	JJT		e) MD Jerantut	MDJ	CJE
	f) MD Tangkak	MDT	JTA		f) MD Raub	MDRa	CRA
	g) MD Simpang Renggam	MDSR	JSR		g) MD Maran	MDM	CMA
	h) MD Yong Peng	MDYP	JYP		h) MP Bentong	MPB	CBN
	i) MD Segamat	MDS	JSE		i) MD Pekan	MDP	CPK
	j) MD Pontian	MDP	JPN		j) MD Rompin	MDRm	CRM
	k) MP Kulai	MPKu	JKU		k) MD Bera	MDB	CBE
	l) MD Labis	MDL	JLA				
	m) MD Kota Tinggi	MDKT	JKT				
	n) MD Mersing	MDM	JME				
	o) Lembaga Bandaran Johor Tenggara (KEJORA)	LBJT	JKE				
	p) MP Pasir Gudang	MPPG	JPG				

Table F.1: Codes for Local Authority Routes *(continued)*

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
10.	**Terengganu**			**11.**	**Kelantan**		
	a) MP Kuala Terengganu	MPKT	TKT		a) MP Kota Bharu	MPKB	DKB
	b) MP Kemaman	MPK	TKM		b) MD Tumpat	MDT	DTU
	c) MD Setiu	MDS	TSE		c) MD Bachok	MDB	DBA
	d) MD Marang	MDM	TMA		d) MD Kota Bharu	MDKB	DDK
	e) MD Hulu Terengganu	MDHT	THT		e) MD Pasir Mas	MDPM	DPM
	f) MP Dungun	MPD	TDU		f) MD Pasir Puteh	MDPP	DPP
	g) MD Besut	MDB	TBE		g) MD Tanah Merah	MDTM	DTM
					h) MD Jeli	MDJ	DJE
					i) MD Machang	MDM	DMA
					j) MD Kuala Krai	MDKK	DKK
					k) MD Gua MUsang	MDGM	DGM
				12.	**Wilayah Persekutuan**		
					a) Dewan Bandaraya KL	DBKL	WPK
					b) Perbadanan Putrajaya	PP	WPJ
					c) Perbadanan Labuan	PL	WPL

Table F.1: Codes for Local Authority Routes *(continued)*

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
13.	**Sabah**						
	a) DB Kota Kinabalu	DBKK	SSK		t) MD Tenom	MDTe	STE
	b) MP Sandakan	MPS	SSA		u) MD Tuaran	MDTu	STU
	c) MP Tawau	MPT	STA		v) Lembaga Bandaran Kudat	LBK	SLK
	d) MD Beaufort	MDBe	SBE				
	e) MD Beluran	MDBl	SBL				
	f) MD Keningau	MDKe	SKE				
	g) MD Kinabatangan	MDKn	SKN				
	h) MD Kota Belud	MDKB	SKB				
	i) MD Kota Marudu	MDKMP	SKM				
	j) MD Kuala Penyu	MDKP	SKP				
	k) MD Kunak	MDKu	SKU				
	l) MD Lahad Datu	MDLD	SLD				
	m) MD Nabawan	MDN	SNA				
	n) MP Papar	MDPa	SPA				
	o) MP Penampang	MDPe	SPE				
	p) MD Ranau	MDR	SRA				
	q) MD Semporna	MDSe	SSE				
	r) MD Sipitang	MDSp	SSP				
	s) MD Tambunan	MDTa	STA				

Table F.1: Codes for Local Authority Routes *(continued)*

No	State/Local authority	Abbreviation	Route Code	No	State/Local authority	Abbreviation	Route Code
14.	**Sarawak**						
	a) DB Kuching Utara	DBKU	QKU		t) MD Saratok	MDSk	QSK
	b) MB Kuching Selatan	MBKS	QKS		u) MD Sarikei	MDSr	QSR
	c) MPB Miri	MBM	QMR		v) MD Serian	MDSe	QSE
	d) MP Padawan	MPP	QPA		w) MD Simunjan	MDSj	QSJ
	e) MP Sibu	MPS	QSB		x) MD Sri Aman	MDSA	QSA
	f) MD Bau	MDBa	QBA		y) MD Subis	MDSu	QSU
	g) MD Betong	MDBe	QBE		z) Lembaga Kemajuan Bintulu	LKB	QLB
	h) MD Dalat & Mukah	MDDM	QDM				
	i) MD Kanowit	MDKa	QKA				
	j) MD Kapit	MDKp	QKP				
	k) MD Lawas	MDLw	QLW				
	l) MD Limbang	MDLg	QLG				
	m) MD Luar Bandar Sibu	MDLBS	QLB				
	n) MD lubok Antu	MDLA	QLA				
	o) MD Lundu	MDLn	QLN				
	p) MD Maradong dan Julau	MDMJ	QMJ				
	q) MD Marudi	MDM	QMA				
	r) MD Matu dan Daro	MDMD	AMD				
	s) MD Samarahan	MDSm	QSM				

REFERENCES

REFERENCES

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4. Arahan Teknik (Jalan) 12/87, A Guide To The Design of Interchanges, Jabatan Kerja Raya (JKR)

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