Kingdom of Saudi Arabia
Ministry of Communications

# Manual on Uniform Traffic Control Devices

This manual is one of a series of manuals covering highway design and construction, construction materials, highway and bridge maintenance, surveying and mapping, and uniform traffic control devices, prepared in cooperative effort by the Ministry of Communications of the Kingdom of Saudi Arabia and the Federal Highway Administration of the United States of America.

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# Part 1. General Provisions

### Purpose of Traffic Control Devices

Traffic control devices improve highway safety by providing for the orderly movement of vehicles, pedestrians, and other conveyances throughout the Kingdom's highway transportation system. These devices also provide drivers with guidance and warnings for safe and informed operation.

### Requirements of Traffic Control Devices

A. This Manual sets forth the basic principles that govern the design and usage of traffic control devices.

B. The Manual presents standards for traffic control devices to be used on all highways under the jurisdiction of the Ministry of Communications. Other agencies are encouraged to consult this Manual to insure the consistent use of these devices throughout the Kingdom.

C. To be effective, traffic control devices must meet five basic requirements:

1. Fulfill a need.
2. Command attention.
3. Convey a clear, simple meaning.
4. Command respect of road users.
5. Give adequate time for proper response.

D. Five basic considerations are used to insure these requirements are met: Design, Placement, Operations, Maintenance, and Uniformity.

E. In the case of regulatory devices, the actions required of vehicle operators and pedestrians are specified by the **Traffic Regulations,** adopted by Royal Decree and in force throughout the Kingdom.

Design, placement (location), operation (application), maintenance, and uniformity (consistency) determine the effectiveness of traffic control devices.

### Responsibility for Traffic Control Devices

The responsibility for traffic control devices rests with the Ministry of Communications, the Provinces, through their respective Governors, and the cities, through their respective Mayors, for roads under their jurisdictions.

### Engineering Study

The provisions of this Manual are the standards for the installation of traffic control devices. Engineering judgement must be used in determining needs, and if a qualified engineer is not available, assistance from the Ministry of Communications should be sought.

### Development of New Standards

As this Manual is implemented, the need to develop refinements to the Manual will become apparent. The Ministry of Communications (Traffic Engineering Department) will be the coordinating office to assemble a file of these desired or necessary changes.

### Relation to Other Documents

Several documents have a direct bearing on this Manual: **Traffic Regulations,** adopted by Royal Decree, and the Manuals for **Design, Construction, Materials,** and **Maintenance.**

### Color Code

The following color code establishes general meanings for seven colors appropriate for use in conveying traffic control information. Central values and tolerance limits for each color are available through the Ministry of Communications, Traffic Engineering Department.

1. YELLOW—Work area signs, warning signs, pavement markings, zigzag no-parking zones, traffic signal change warning indication, channelizing islands.
2. WHITE—Regulatory signs, certain Informative signs, edge lines, lane lines, crosswalks, stop lines, word and symbol pavement markings, pedestrian signal indications, cross-hatching markings (chevrons).
3. RED—STOP and traffic signal stop indication, prohibitive indication, and messages on certain Regulatory, Warning and Informative signs.
4. BROWN—Recreational and cultural interest areas.
5. BLACK—Certain Informative signs, symbols on signs, end prohibition.
6. GREEN—Portion of symbol on Signal Ahead sign, traffic signal proceed indication, route markers, and certain Informative signs.
7. BLUE—Certain Regulatory and Informative signs.

### Authority for Placement

Traffic control devices shall be placed only by the authority of a public body or official having jurisdiction for the purpose of regulating, warning, or guiding traffic.

### General Prohibitions—Advertising and Confusing Devices

Any unauthorized devices placed on the highway right-of-way by a private organization or individual constitutes a public nuisance. All unofficial or nonessential devices shall be removed.

# Part 2. Signs

## 2.01 Introduction and General Standards

### A. Function of Signs

Signs are to be used only where this Manual indicates the need for placement. Signs are required where special regulations apply at specific places or at specific times only, or where hazards are not self-evident. Signs also give information as to highway routes, directions, destinations, and points of interest. Rules of the road can stand alone, and signs are not needed to confirm the rules.

### B. Scope of Sign Standards

1. This Manual prescribes standards for the signing within the right-of-way of all design classifications of public highways (see Highway Design Manual). Detailed standards for Warning, Regulatory, and Informative signs are found in successive sections. The general signing requirements for expressways and arterials have the same standards for use and design, especially for Informative signs.

2. Roadway geometric design and signing shall be coordinated providing effectively placed signing to give drivers necessary informative, regulatory, and warning information.

### C. Standardization of Application

1. Each standard sign shall be displayed only for the specific purpose prescribed for it in this Manual.

2. Uniformity of design and placement is as important as the use of standard signs. Identical conditions shall always be indicated with the same type and placement of sign, despite where those particular conditions occur.

3. Urban and rural traffic conditions differ, and, in many instances, signs must be applied and located differently. Where pertinent, this Manual sets forth separate recommendations for rural and urban conditions.

### D. Variable Message Signs

1. Variable message signs are designed to have one or more messages, which may be displayed or deleted as required. Such a sign may be changed manually, by remote control, or by automatic controls which "sense" the conditions requiring special sign messages.

2. Some variable message signs cannot conform to the exact shape, color, and dimensions specified in these standards because of technological limitations. A desirable usage of the variable message sign is with advance warnings to reduce collisions of high vehicles with highway structures, where "sensor" devices can be used.

### E. Excessive Use of Signs

A conservative use of Warning and Regulatory signs is recommended. If used to excess, these signs tend to lose credibility and then effectiveness. In the case of Informative signs, frequent display to keep drivers informed does not lessen the value.

### F. Classification of Signs

Functionally, signs are classified as follows:

1. Warning signs call attention to conditions on, or adjacent to, a highway or street potentially hazardous to traffic operations.

2. Regulatory signs give notice of traffic laws or regulations.

3. Informative signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.

### G. Design

Uniformity in design includes shape, color, dimensions, legends, and illumination or reflectorization. This Manual shows many typical standard signs. The standards for these designs do not preclude making minor changes in proportion of symbols, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.

### H. Shapes

Standard sign shapes are as follows:

1. The octagon shape shall be reserved exclusively for the STOP sign.

2. The equilateral triangle, with one point downward, shall be reserved exclusively for the Give Way sign. The equilateral triangle, with one point upward, shall be reserved exclusively for Warning signs.

3. The round shape shall be reserved exclusively for Regulatory signs.

4. The rectangle shall be used for Informative signs, basically for advance direction, direction, and confirmatory. The square or rectangle, the latter with the longer dimension either vertical or horizontal, shall be used for the Pedestrian Pushbutton sign, Useful Information signs, Facilities signs, and Parking signs.

### I. Colors

The colors used on standard signs shall be as follows (The Ministry of Communications has color chips and specifications for all colors described in this manual):

1. Red is used as a background color for the STOP sign. Red is used for messages or borders on certain Warning signs, certain Regulatory signs, and certain Informative signs.

2. White is used as a background color on Regulatory, Warning signs, and certain Informative signs. White is used as the message or border on blue, red, black, and brown signs.

3. Blue is used as a background color for all Mandatory signs and certain Informative signs.

4. Yellow is used on some information panels and as a background for the signs in work areas.

5. Black is used as a background color for certain Informative signs. Black is used for messages on yellow and white signs. Black is used for messages on End of All Special Prohibitions Imposed on Moving Vehicle signs.

6. Brown is used as a background color for Recreation and Cultural Interest signs.

7. Green is used on certain informative signs.

### J. Dimensions

The sign dimensions prescribed in this Manual shall be the standard for application on highways within the Kingdom under the jurisdiction of the Ministry of Communications. Where greater legibility or emphasis is needed, the standard sizes should be increased. Larger signs are prescribed for expressways.

### K. Lettering

The Arabic letter style shall be Naskh. Proper names in Arabic shall be translated in English; Arabic street names shall be a transliteration in English. Only Arabic numbers in Naskh style shall appear on all route markers and speed limit signs.

### L. Illumination and Reflectorization

Warning and Regulatory signs shall be reflectorized or internally illuminated to show the same color day and night. All Informative signs shall be reflectorized and, in certain instances, shall be illuminated as well. Reflectorization shall be obtained by reflectorizing the background or by using button or sheeting copy on an opaque background, or a combination of both. All overhead signs shall be illuminated where possible.

### M. Sign Borders

With the exception of warning signs or as noted below, all signs shall have a border the same color as the legend. The border widths should generally not exceed the stroke-width of the Arabic lettering of the sign, however, a minimum border width of 30 mm should be used. For signs exceeding 2 m by 3 m in size, the border should be approximately 50 mm wide or on unusually large signs, 75 mm may be appropriate. The corners of the sign border shall be rounded. Where practicable, the corners of the sign panels should also be rounded to fit the border.

1. Borders on Warning signs shall be red and shall have the dimensions to approximate the widths illustrated for each sign.

2. Borders on Regulatory signs shall be red except for the STOP sign, which shall be white and the No Entry sign, which has no border.

3. Mandatory signs do not have a border.

4. Useful Information signs do not have a border.

5. White on blue or green advance direction signs and direction signs shall have a white border. A black border shall be used on advance direction and direction signs with a white background.

### N. Standardization of Location

1. Standardization of location for locating signs cannot always be attained in practice. However, the general rule is to locate signs on the right hand side of the road where the driver is looking for the signs. On wider facilities, or where some degree of lane-use control is desirable, or where space is not available at the roadside, overhead signs are often necessary. Supplementary signs may be helpful at times if the initial signs are not in a direct line of sight for the driver. A supplementary Warning sign shall be located on the left median of a divided highway or on the left of a one-way roadway where the view of the standard sign in the normal location may be obstructed by traffic.

2. Signs should not obscure each other or be hidden from view by other objects.

3. Signs should not block the view of a driver approaching an intersection to traffic approaching from an intersecting street.

4. Spacing between signs must be sufficient to allow time for the driver to make the required decisions safely.

5. Standard positions for typical signs are illustrated in Figures 2-1 to 2-4b.

**O. Overhead Sign Installations**

1. Overhead signs have value at many locations. The following conditions provide a basis for justifying the erection of overhead sign displays:

a. Traffic volume at or near capacity for highways with two or more lanes.

b. Complex interchange design.

c. Three or more lanes in each direction.

d. Restricted sight distance.

e. Multi-lane exits.

f. Large percentage of trucks.

g. Street lighting background.

h. High speed traffic.

i. Consistency of sign message location through a series of interchanges.

j. Insufficient space for ground mounted signs.

k. Junction of one major road with another.

2. One or more of the conditions listed above do not in themselves automatically justify the use of overhead signs. Close coordination between design and operation at the design stage make some of these elements less critical.

**P. Height**

1. Signs erected at the side of the road in rural areas shall be mounted at a height of at least 1.5 m measured from the bottom of the sign to the nearest edge of the pavement. In business, commercial, and residential areas where parking and/or pedestrian movement is likely to occur or the driver's view is obstructed, the clearance between the bottom of the sign and the pavement shall be at least 2 m.

2. On major roads, the advance direction, direction, and confirmation signs shall be erected with the clearance between the bottom of the sign and the pavement being 2 m.

3. Overhead signs shall provide a clearance of not less than 5.5 m.

**Q. Lateral Clearance**

1. Signs should have the maximum practical lateral clearance from the edge of the traveled way, to increase safety of motorists who may accidently run off the road striking sign supports. Breakaway or yielding supports shall be used.

2. Normally, signs should not be closer than 2 m from the edge of the shoulder or, if no shoulder exists, 3.5 m from the edge of the traveled way. Large Informative signs should be placed preferably 9 m or more from the nearest traffic lane. In urban areas, 0.5 m is recommended as a clearance from the curb face. Overhead sign supports shall not be erected in gore areas or other exposed locations. Where desirable or necessary, impact attenuators should be placed around the base of the overhead sign structure. In many instances, the location of Informative and Warning signs can be shifted to take advantage of existing roadway devices such as guardrail or overcrossing structures to minimize the exposure of sign supports to traffic.

**R. Position**

1. A Warning sign is placed in advance of the condition to which it calls attention.

2. A Regulatory sign normally is placed where its mandate or prohibition applies or begins.

3. Informative signs are placed, where needed, to keep drivers well informed as to their route and destination.

4. Detailed standards for sign locations are given in sections of the Manual dealing with individual signs or classes of signs.

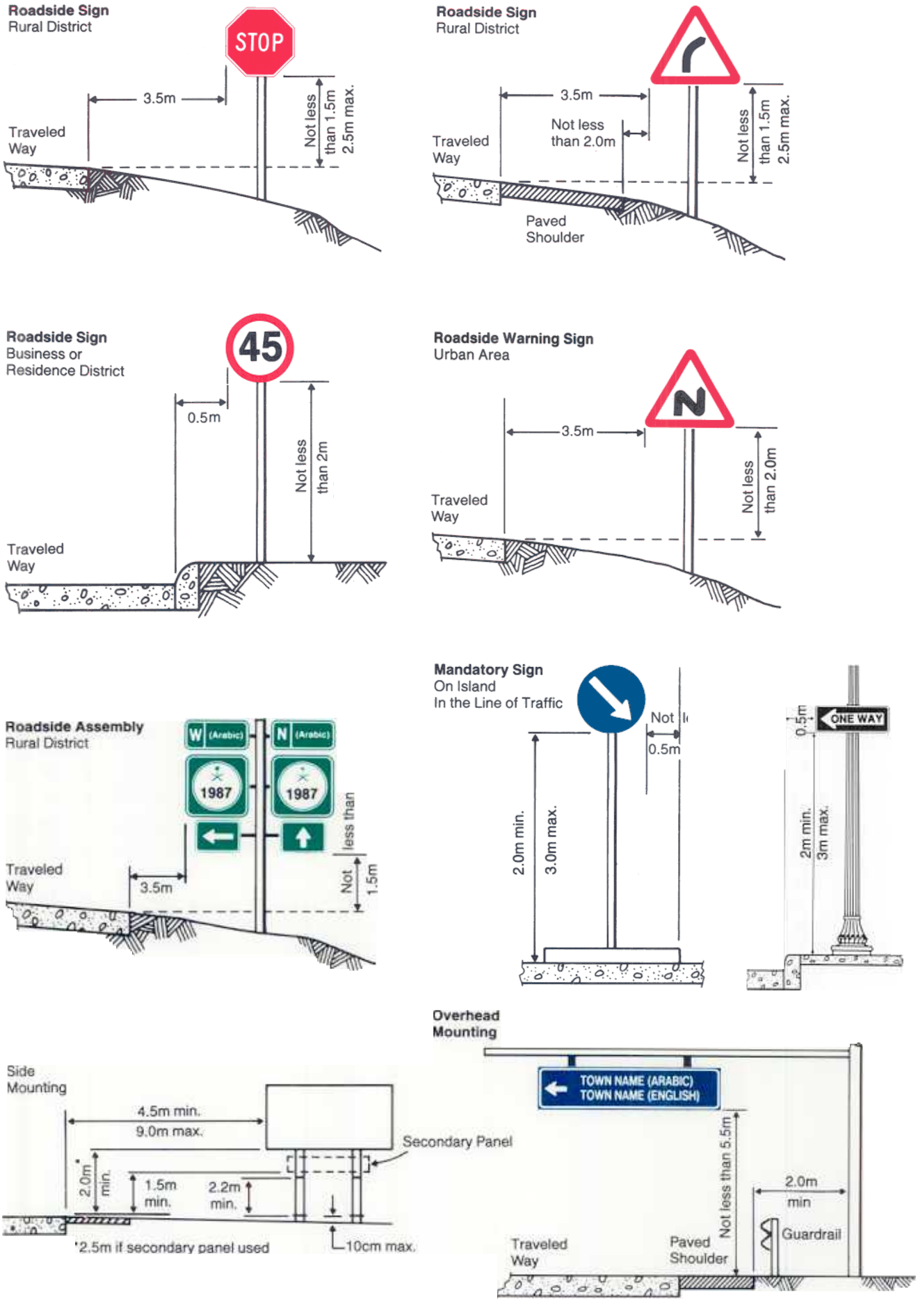
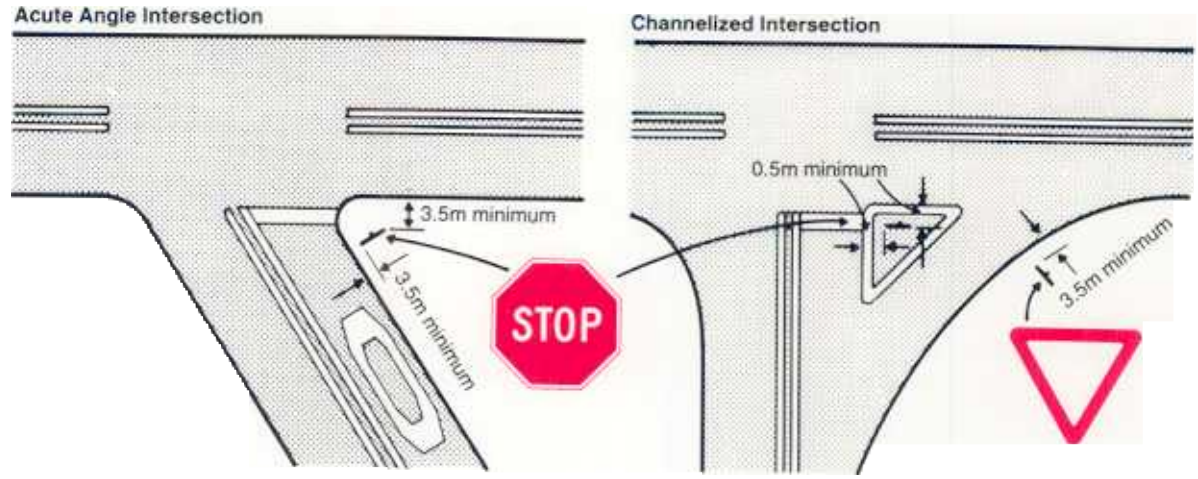
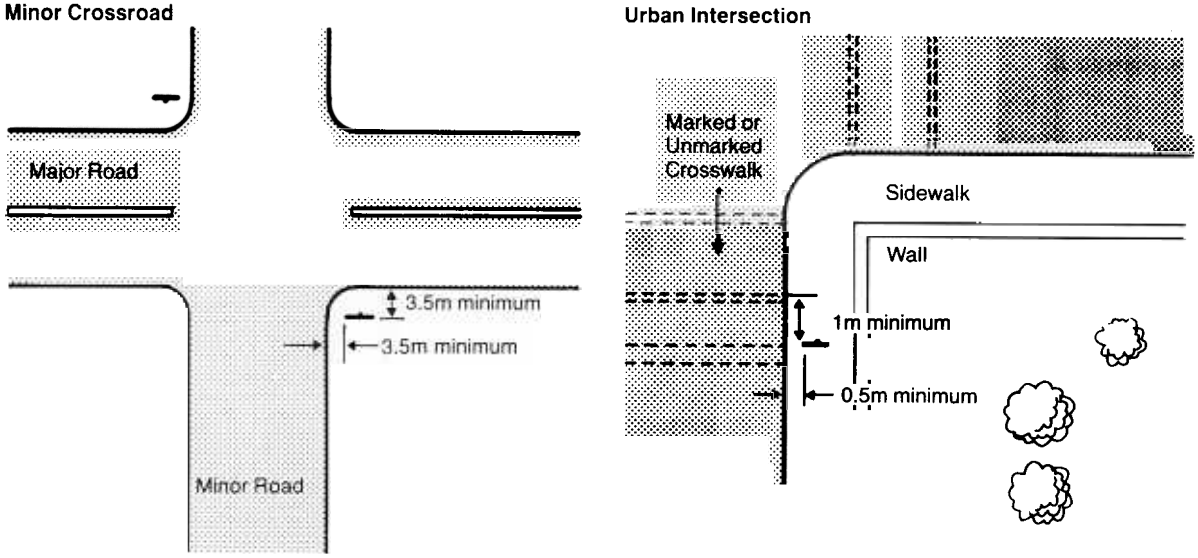



**Figure 2-1**
**Height and lateral location of signs—typical installations.**




***Note:*** *All pavement markings shall conform to Part 3- Markings*

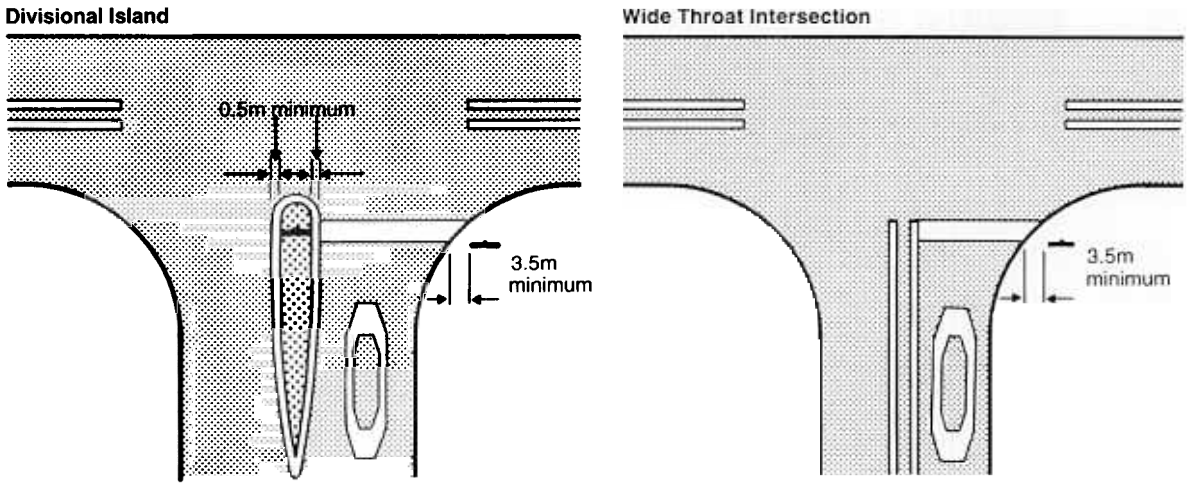



**Figure 2-2**
**Typical locations for STOP signs and GIVE WAY signs.**

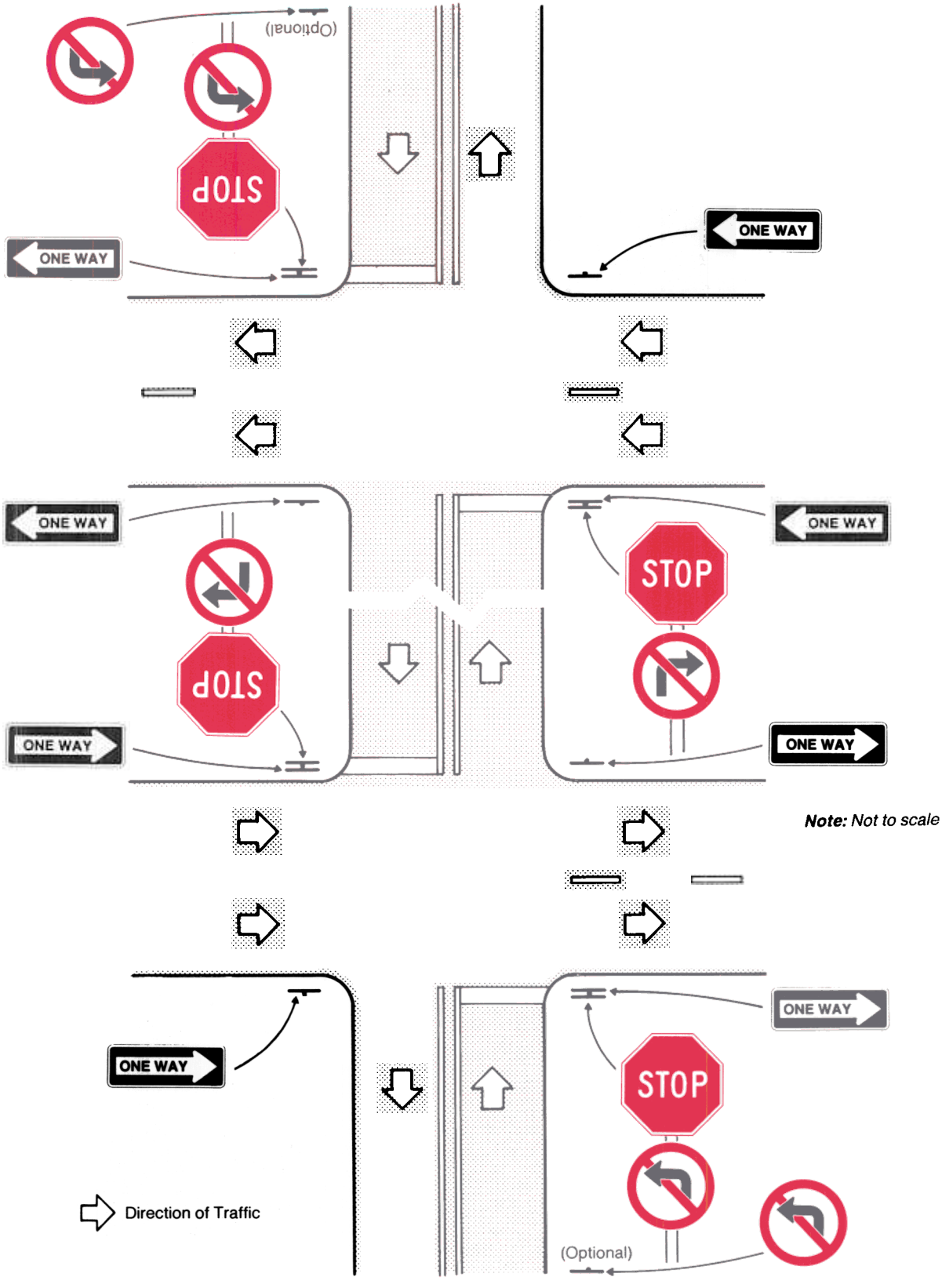
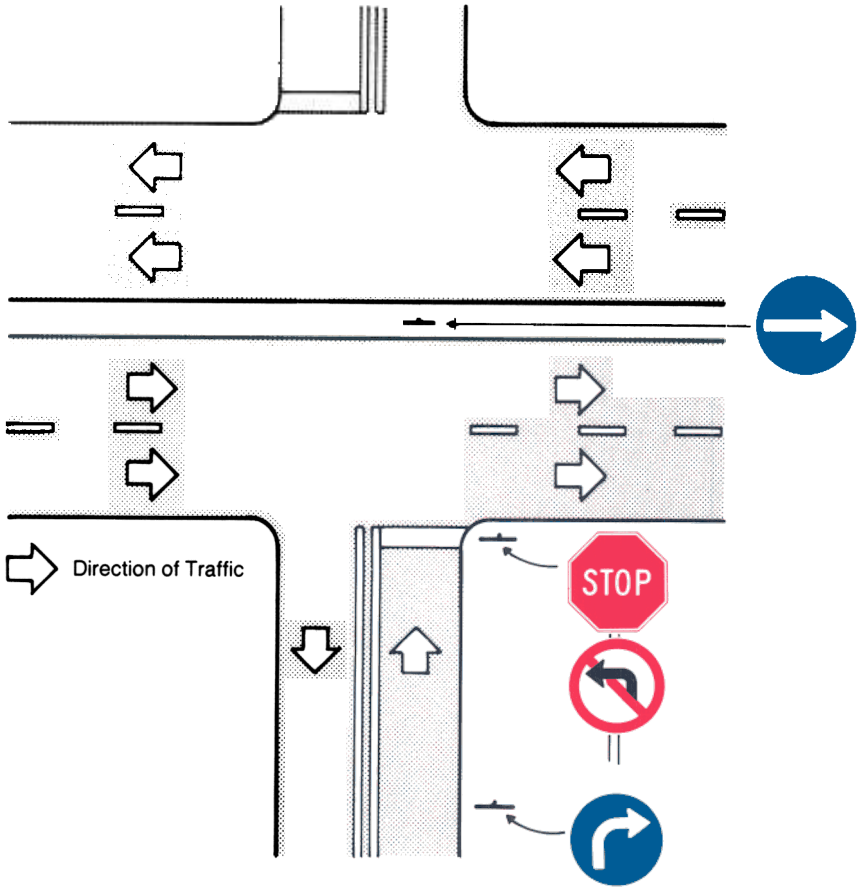



**Figure 2-3**
**Location for One-way and turn prohibition signs.**




Mandatory movement signs

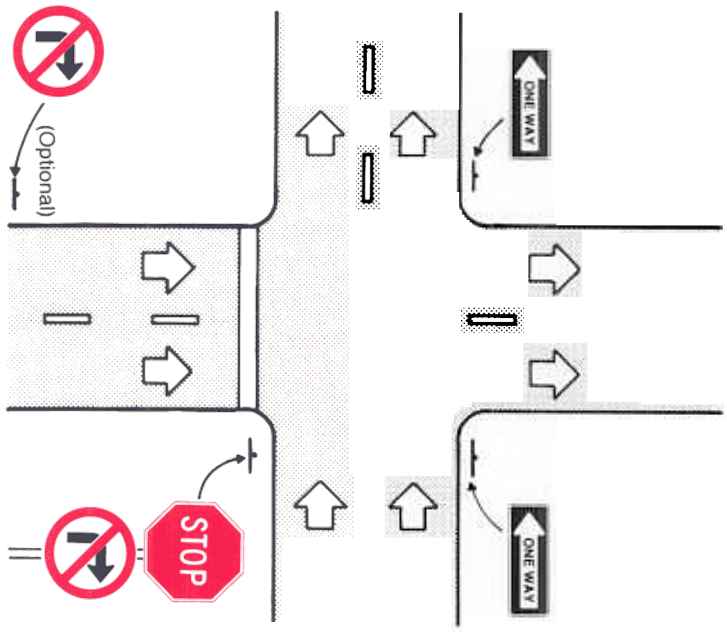
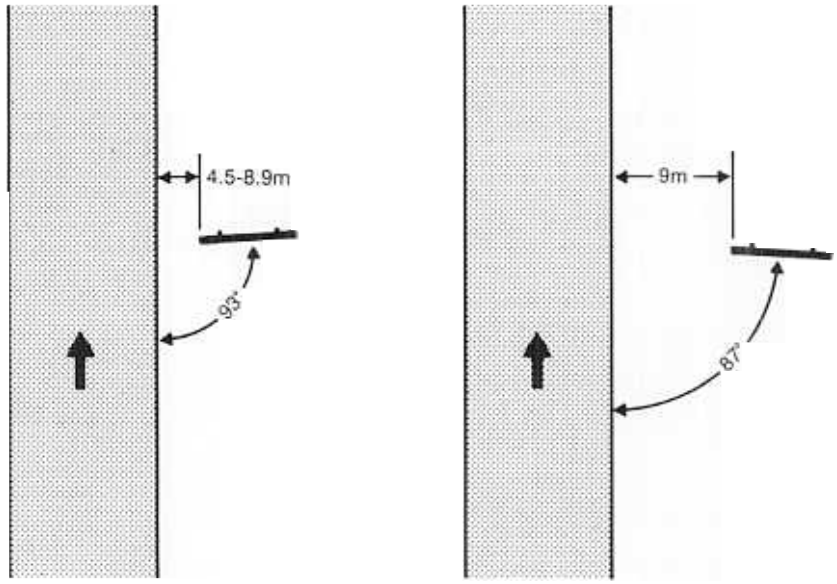



**Figure 2-4**
**Typical location for One-way signs.**




*Note: This installation standard shall apply to all Expressway signs. This standard may also be used for other signs.*

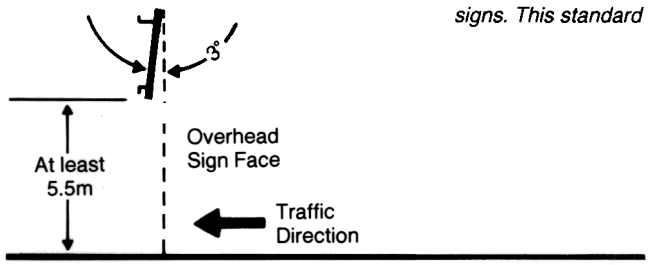



**Figure 2-4a**
**Typical sign orientation**

### S. Erection

Normally signs are mounted at approximately right angles to the direction of, and facing, the traffic the signs are intended to serve. Where mirror reflection (specular glare) is encountered, the sign should be turned slightly away from the road. Large Informative signs, which are offset 9 m from a defined pavement edge, should generally be slightly turned toward the road. On grades, a sign can be tilted forward or back from the vertical to improve the viewing angle. Overhead signs should be tilted slightly forward.* (See Figure 2-4a)

### T. Posts and Mountings

1. Sign posts shall hold signs in a proper and permanent position.

2. Sign supports shall be of a suitable breakaway or yielding design.

3. Overhead sign supports are nonbreakaway type and shall be protected by the appropriate barriers.

4. In urban areas, signs may be placed on supports such as traffic signals, street lights, and utility poles.

### U. Bridges for Sign Supports

Overcrossing structures frequently can serve for the support of overhead signs. Use of such structures eliminates the need for foundations, sign supports, and protecting barriers along the roadside.

### V. Maintenance

1. All traffic signs shall be kept in proper position, clean, and legible at all times. Damaged signs shall be replaced without undue delay.

2. Weeds, trees, shrubbery, and parked construction and maintenance equipment and materials should not obstruct sign faces.

**For small ground-mounted signs the forward tilt is not necessary.*

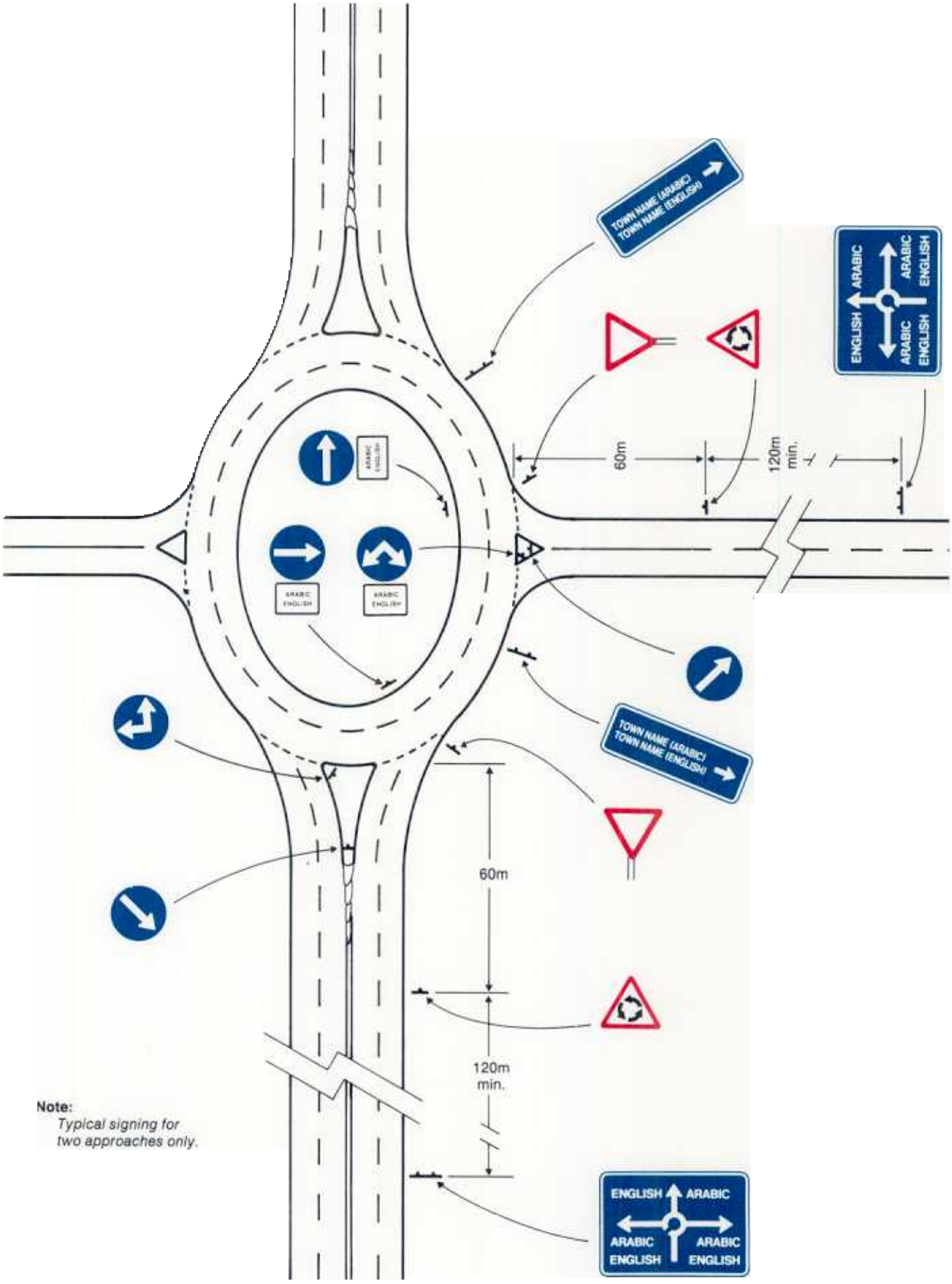



**Figure 2-4b**
**Typical Signing for Roundabouts**

## 2.02 Warning Signs

### A. Application of General Warning Signs

1. Warning signs are used when traffic needs to be warned of existing or potentially hazardous conditions on or adjacent to a highway or street. Warning signs require drivers to be cautious and may call for a reduction in speed or a maneuver in the interest of his own safety, or that of other drivers and pedestrians.

2. Use of Warning signs should be kept to a minimum. Unnecessary use of signs to warn of apparent conditions lessens a driver's compliance to warnings truly reflecting dangerous hazards.

3. Typical locations and hazards that may warrant the use of Warning signs are as follows:

a. Changes in horizontal alignment.

b. Intersections.

c. Advance warning of control devices.

d. Converging traffic lanes.

e. Narrow roadways and roadways with narrow shoulders.

f. Changes in the design features of the roadway.

g. Steep grades.

h. Roadway surface conditions.

i. Railroad crossings.

j. Entrances and crossings.

k. Miscellaneous roadway elements.

4. If warnings other than those listed above or illustrated in this Manual are needed, the signs shall be the standard shape, color, and placement of Warning signs.

5. Warning signs may be accompanied by an educational plaque (in Arabic) placed below the symbol sign.

6. Supplemental plaques may be added to a warning sign to show distances, grades, advisory speeds, or other information.

### B. Design of Warning Signs

1. Generally, all Warning signs shall be a triangle shape. The background color is white, with black symbols on the sign face and a red border, except as specified.

2. All Warning signs shall be fully reflectorized or internally illuminated.

3. The minimum (normal) size for each Warning sign described in this section is 900 mm. Where conditions of speed, volume, or special hazard require greater visibility or emphasis, larger signs are to be used.

### C. Placement of Warning Signs

1. Warning signs shall be erected in accordance with the general requirements for sign positions described in Sections 2.01 N to T.

2. Since Warning signs are primarily for the benefit of the driver who is unacquainted with the road, special care should be given to the placement of these signs. Warning signs should provide adequate time for the driver to perceive, identify, decide, and perform any necessary maneuver. This total time to perceive and complete a reaction to a sign is the sum of the times necessary for PIEV which stands for Perception, Identification (understanding), Emotion (decision making), and Volition (execution of decision). The PIEV time can vary from about 3 seconds for general warning signs to 10 seconds for high driver judgment condition warning signs.

Table 2-1 lists suggested minimum sign placement distances, which may be used for three conditions:

a. Condition A—a higher driver judgment condition, which requires the driver to use extra time making and executing a decision because of a complex driving situation (lane changing, passing, or merging).

b. Condition B—a condition where the driver will likely be required to stop.

c. Condition C—a condition where the driver will likely be required to decelerate to a specific speed.

The placement of temporary warning signs used at highway construction and maintenance sites is covered in Part 5 of this Manual, and the suggested minimum sign placement distances given in Table 2-1 may not apply to that group of signs.

3. Other miscellaneous Warning signs that advise of potential hazards, but are not related to a specific spot, may be installed in the most appropriate locations since these signs are not covered in Table 2-1. These include types such as camel crossing and soft shoulder. Minimum spacing between Warning signs with different messages normally should be based on the PIEV times for driver comprehension and reaction.

## Table 2-1[1]

### A Guide for Advance Warning Sign Placement Distance

| Posted or 85 – Percentile Speed km/h | Condition A High Judgment Needed[2] (10 Secs. PIEV) | General Warning Signs[3] | | | | | |
|---|---|---|---|---|---|---|---|
| | | Condition B Stop Condition | Condition C Deceleration Condition to Listed Suggested Safe Speed – km/h (or Desired Speed at Condition) | | | | |
| | | 0 | 20 | 40 | 60 | 80 | 100 |
| 30 km/h | 50 m | [4] | [4] | | | | |
| 40 | 75 | [4] | 35 m | | | | |
| 50 | 100 | 35 m | 50 | | | | |
| 60 | 130 | 60 | 70 | 60 | | | |
| 70 | 160 | 85 | 95 | 80 | | | |
| 80 | 190 | 110 | 125 | 110 | 80 | | |
| 90 | 215 | 140 | 155 | 140 | 110 | | |
| 100 | 245 | 180 | 185 | 175 | 145 | 100 | |
| 110 | 275 | 220 | 225 | 210 | 175 | 130 | |
| 120 | 305 | 260 | 265 | 250 | 215 | 170 | 120 |

[1]Distances shown are for level roadways. Corrections should be made for grades as prevailing speeds will alter both upgrade and downgrade due to acceleration or deceleration demands to fit traffic conditions. If 1,200 mm signs are used, the legibility distance may be increased to 60 m. This would allow reducing the above distances by 25 m.

[2]In urban areas, a supplementary plate underneath the Warning sign should be used specifying the distance to the condition if there is an in-between intersection which might confuse the motorist.

[3]Distance provides for 3-second PIEV, 40 m Sign Legibility Distance, Braking Distance for Condition B and Comfortable Braking Distance for Condition C[5].

[4]No suggested minimum distances provided. At these speeds, sign location depends on physical conditions at site.

[5]In some instances, the suggested distances may have to be altered or a series of signs may be erected to provide a second reminder of the hazard.

Typical Signs for the Listed Conditions in Table 2-1
Condition A–Merge, Right Lane Ends, etc.
Condition B–Crossroad, Stop Ahead, Signal Ahead, Ped Xing, etc.
Condition C–Bend, Divided Road, Hill, Dip, etc.

4. The effectiveness of the placement of any Warning sign should be tested periodically under both day and night conditions.

5. In some instances, the suggested distances might have to be altered or a series of signs erected in order to provide a second reminder of the hazard.

## D. Sign Designations, Usage and Dimensions

### 1. Dangerous Bend Sign (W 1)

a. The Bend sign (W 1-1) is intended for use where engineering investigations of roadway, geometric, and operating conditions show the recommended speed on a bend to be in the range between 50 and 100 km/h and equal to or less than the established speed limit.

b. The Sharp Bend sign (W 1-2) is intended for use where engineering investigations of roadway, geometrics, and operating conditions show the recommended speed on a sharp bend to be 50 km/h or less and this speed is equal to or less than the established speed limit.

c. The Dangerous Bends sign (W 1-3) is intended for use to mark a succession of two or more bends, that are separated by tangent distances of less than 175 m.

d. The Reverse Bend sign (W 1-4) is intended for use to mark two bends in opposite directions.

e. If the first bend is to the right, a Right Dangerous Bends sign shall be used, and if the first bend is to the left, a Left Dangerous Bends sign shall be used.

f. If the Dangerous Bends sign is used, it shall be erected in advance of the first bend.

g. Where fewer than five bends occur in succession, one or more Bend signs (W 1-1) shall be used in lieu of the Dangerous Bends sign (W 1-3).

h. Additional protection may be provided by the use of a suggested speed plate posted below these signs.



Left Bend
**W1-1L**



Right Bend
**W1-1R**



Sharp Bend
**W 1-2L**



Sharp Bend
**W 1-2R**



Dangerous Bends L-R
**W 1-3L**



Dangerous Bends R-L
**W 1-3R**



Reverse Bend L-R
**W 1-4L**



Reverse Bend R-L
**W 1-4R**

## 2. Steep Descent or Ascent Sign (W 2)

a. Intended for use in advance of a downgrade or upgrade where the length, percent of grade, horizontal curvature, or other physical features require drivers to take special precautions.

b. These signs shall be used in advance of descents or ascents for grades over 5 percent.

c. A supplemental plate may be placed underneath the sign(s) which will show the length, or distance of the descent or ascent. If a pronounced variance in grades exist in a given section of highway, then additional sets of signs shall be used with the appropriate distance at which that grade will be encountered.



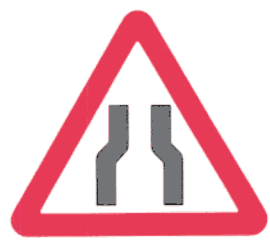

Descent
**W 2-1**




Ascent
**W 2-2**

## 3. Road Narrows Sign (W 3)

Intended for use to warn drivers of the reduction in the number of traffic lanes in the direction of travel on a multi-lane road. The varied symbols show the outline of the road more clearly.



Road Narrows
**W 3-1**



Road Narrows—Keep Left
**W 3-2**



Road Narrows—Keep Right
**W 3-3**

### 4. Road Leads to Quay or River Bank Sign (W 4-1)

Intended for use to give warning the road leads onto a quay or a river bank.



Road Leads to Quay
or River Bank
**W 4-1**

### 5. Rough Road: Bad Condition Sign (W 5-1)

Intended for use to give warning the highway is in bad condition.



Rough Road
**W 5-1**

### 6. Uneven Road: Hump Bridge or Ridge Sign (W 6-1)

Intended for use to give warning a hump bridge or ridge exists.



Hump
**W 6-1**

### 7. Dip Sign (W 7-1)

Intended for use to give warning a dip occurs in the road.



Dip
**W 7-1**

### 8. Slippery Road Sign (W 8-1)

Intended for use to give warning the section of road ahead may be particularly slippery when wet. This sign shall be located in advance of the beginning of the slippery section and at appropriate intervals on long sections of such pavements.



Slippery Road
**W 8-1**

### 9. Loose Gravel Sign (W 9-1)

Intended for use to give warning that a driver's vehicle may cause loose gravel to be thrown up on other vehicles in the immediate vicinity.



Loose Gravel
**W 9-1**

### 10. Falling Rocks Sign (W 10-1)

Intended for use to give warning of a section of road where danger from falling rocks exists and the consequent presence of rocks on the highway.



Falling Rocks
**W 10-1**

### 11. Pedestrian Crossing Sign (W 11)

Intended for use to give warning of an established pedestrian crossing zone. If used as an advance sign, no simulated crosswalk marking will appear on the sign face. When the sign illustrates crosswalk lines on the symbol plate, it is to be used as a supplementary sign to the advance sign and is to be located immediately adjacent to the crossing location. When the two-sign set is used, the crossing shall be defined by pavement markings.



Pedestrian Crossing
**W 11-1**



Pedestrian Crossing
**W 11-2**

### 12. Children Sign (W 12)

Intended for use to give warning of a section of road frequented by children, such as at the exit from a school or a playground. The W 12-1 sign shall be used as an advance warning sign. If children are crossing at a marked crosswalk, a supplementary sign can be used illustrating the crosswalk lines on the sign. This supplementary sign shall be located immediately adjacent to the crossing location.



Children
**W 12-1**



Children Crossing
**W 12-2**

### 13. Cyclists Sign (W 13-1)

Intended for use to give warning of a point where cyclists frequently enter or cross the road. If the approach to an intersection is controlled by a traffic control signal, STOP sign, or Give Way sign, this sign may not be needed.



Cyclists
**W 13-1**

### 14. Animals Crossing Sign (W 14)

Intended for use to give warning of the danger of animals crossing the road. The symbol should represent the animal, either domestic or wild, most frequently encountered in a given section. Examples of domestic animals are donkeys, sheep, goats, horses, and camels. Posting for crossings of wild animals shall be determined on the basis of need.



Animal Crossing
**W 14**



Animal Crossing
**W 14**

### 15. Signals Ahead Sign (W 15)

Intended for use in advance of any traffic control signal location where physical conditions prevent drivers from having a continuous view of at least two signal indications. Also, it should be used at a location where road users would not expect such an installation. The symbol on the sign shall be in the three colors of signal lights the driver is approaching. The arrangement of the colors may be vertical or horizontal.



Signals Ahead
**W 15**



Signals Ahead
**W 15**

### 16. Low Flying Aircraft Sign (W 16-1)

Intended for use to give warning of aircraft flying over sections of road at low altitude, when taking off or landing at an airport.



Airport
**W 16-1**



Crosswind
**W 17-1**

### 17. Crosswind Sign (W 17-1)

Intended for use to give warning that a strong crosswind often affects a driver's control of a vehicle in this section of the road.

### 18. Two-Way Traffic Sign (W 18-1 )

Intended for use to give warning that a one-way road (or highway comprised of several one-way traffic roadways) is changing temporarily or permanently to carrying two-way traffic on the same roadway. This sign should be used as required at intervals to periodically remind drivers they are on a two-way roadway.



Two-Way Traffic
**W 18-1**

### 19. Approach to Intersection Sign (W 19)

Intended for use to give warning of an intersection for the road user. Other symbols may be used to show the nature of the intersection more clearly.



Cross Road
**W 19-1**



Side Road
**W 19-2**



Side Road
**W 19-3**

**Note:** *Other appropriate symbols which accurately show the highway conditions may be used on these Warning signs. These symbols shall show the same proportions as illustrated above.*

### 20. Stop Ahead Sign (W 20-1)

a. Intended for use on an approach to a STOP sign not visible for a sufficient distance to permit the driver to stop his vehicle at the STOP sign. Obstruction(s) causing the limited visibility may be permanent or intermittent.

b. In some cases, the Stop Ahead sign may be used for emphasis where the STOP sign is poorly observed.



Stop Ahead
**W 20-1**

### 21. Give Way Ahead Sign (W 21-1)

a. Intended for use on an approach to a Give Way sign not visible for a sufficient distance to permit the driver to stop his vehicle at the Give Way sign. Obstruction(s) causing the limited visibility may be permanent or intermittent.

b. In some cases, the Give Way Ahead sign may be used for emphasis where the Give Way sign is poorly observed.



Give Way Ahead
**W 21-1**

## 22. Traffic Rotary Sign (W 22-1)

a. Intended to warn by means of arrow indications that traffic keeps to the right.

b. The roundabout is a circular roadway design with multiple entrances and exits, which create separate potential vehicle conflicts. Diagrammatic Informative signs showing the configuration of the roundabout should precede this Warning sign.



Traffic Rotary
**W 22-1**

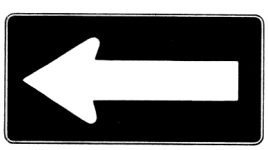
## 23. Large Arrow Sign (W 24)

a. Intended to be used to give notice of a sharp change of alignment in the direction of travel. It is not to be used where no change occurs in the direction of travel (ends of medians, center piers, etc.).

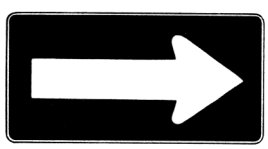
b. This sign shall be a horizontal rectangle with a standard size of 1200 mm by 600 mm, with a single large arrow or double head arrow.

c. This sign, when used, shall be erected on the outside of a bend or on the far side of an intersection, in line with and at right angles to approaching traffic.

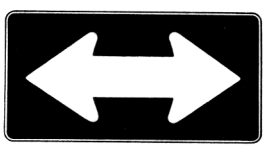
d. To be effective, the Large Arrow sign should be visible for at least 150 m and trial runs by day and night may be desirable to determine final positioning.



Left Arrow
**W 24-1**
1200x600



Right Arrow
**W 24-2**
1200x600



Double Arrow
**W 24-3**
1200x600

## 24. Dangerous Shoulder Sign (W 25-1)

a. Intended to warn of a shoulder condition that presents a hazard to vehicles which may get off the pavement.

b. One sign shall be placed near the beginning of the soft-shoulder or shoulder drop-off condition, and other signs shall be placed at intervals throughout the length of the road where the condition exists.



Dangerous Shoulder
**W 25-1**

## 25. Narrow Bridge Sign (W 26-1)

Intended to warn of a structure having a curb-to-curb two-way roadway width of 5 m to 5.5 m or any bridge or culvert having a roadway clearance less than the width of the approach pavement. Additional protection should be provided by the use of object markers, delineators, and pavement markings. Bridges or culverts having less than a 6 m span and the above width also shall be treated as narrow bridges and shall be signed and delineated accordingly.



Narrow Bridge
**W 26-1**

Advance signing is needed to warn approaching drivers of the specific hazard. This can be done by installing a Narrow Bridge symbol Warning sign or a One-Lane symbol Warning sign at about 800 m in advance of the narrow structure. Depending on the degree of hazard, two advance Warning signs, one located 2 km and another located at 800 m in advance of the structure, may be warranted in special cases.

### 26. One-Lane Bridge Sign (W 27-1)

a. Intended for use on two-way roadways to warn of a structure where the following conditions occur:

(1) A curb-to-curb roadway width of less than 5 m.

(2) A clear roadway width of less than 5.5 m when trucks constitute a high proportion of the traffic.

(3) When the alignment is poor on the approach to a structure having a clear roadway width of 5.5 m or less.

b. Additional protection should be provided by the use of object markers, delineators and pavement markings.

c. In the case of the One-Lane Bridge sign, a supplemental Informative sign (I 10-1) may be used to indicate priority movement. The white arrow, indicating the direction having priority, shall point upward and the other arrow (red) shall point downward. Should the regulation of one-way traffic be required, the Priority Over Oncoming Traffic sign (R-12-1) may be used.



One-Lane Bridge
**W 27-1**



Priority Over
Oncoming Traffic
**I 10-1**

### 27. Suggested Speed Plate Sign (W 28-1)

a. Intended for use to supplement Warning signs. The standard size of the Suggested Speed plate shall be 450 mm by 900 mm. Suggested Speed plates used with 900 mm and larger Warning signs shall be 600 mm by 1100 mm.

b. The plate shall carry the message (65) km/h in black on a white background. The speed shall be shown in multiples of 10 kilometers per hour but always ending in the Arabic numeral five. The plate may be used in conjunction with any standard Warning sign to indicate the maximum recommended speed at a hazardous location. It shall not be used in conjunction with any other sign, nor shall it be used alone. When used it shall be mounted on the same assembly and below the standard Warning sign.




Suggested Speed
**W 28-1**

c. This sign shall not be erected until the recommended speed has been determined by accepted traffic engineering procedures. Because changes in surface characteristics, sight distance, etc. may alter the recommended speed, each location should be periodically checked and the speed plate corrected if necessary.

### 28. Tunnel Sign (W 29-1)

This sign shall be placed in advance of a tunnel entrance (portal) to inform the driver extra care should be used when traveling through the tunnel. When the tunnel is more than 75 m in length, an Informative sign should follow this sign carrying the message, "Turn on Lights" (I 7-1).



Tunnel
**W 29-1**



Divided Road Begins
**W 31-1**



Divided Road Ends
**W 32-1**

**29. Rumble Strip (Jiggle Bars) Sign (W 30-1)**

a. This sign may be placed in advance of a pavement section that has a series of raised strips, which have been installed in accordance with the approved standard.

b. These strips are placed at (1) approaches to towns to complement step-down speed zones, (2) approaches to STOP signs where the sign is not readily discernable, and (3) at other locations where deemed desirable.



Rumble Strip
**W 30-1**

**30. Divided Highway (Road) Sign (W 31-1)**

Intended for use on the approaches to a section of highway (not an intersection or junction) where the opposing flows of traffic are separated by a physical barrier.

**31. Divided Highway (Road) Ends Sign (W 32-1)**

Intended for use at the end of a section of physically divided highway (not an intersection or a junction), as a warning of two-way traffic ahead.

**32. Merge Sign (W 33)**

a. Intended for use to warn motorists merging movements may be encountered in advance of a point where two roadways converge and no turning conflict occurs.

b. The sign should be erected on the side of the major roadway where merging traffic will be encountered and in a position not to obstruct the driver's view of vehicles on the entering roadway.

c. Where two roadways of approximately equal importance converge, a sign should be placed on each roadway.



Merge
**W 33-1**



Merge
**W 33-2**

### 33. Low Clearance Sign (W 35-1)

a. Intended to warn vehicle operators of clearances less than the maximum vehicle height permitted plus 300 mm. It shall be erected in advance of the structure having the restricted clearance.

b. Where the clearance is less than the legal limit, a sign to that effect should be placed at the nearest intersecting road or a wide point in the road at which a vehicle can detour or turn around. The Regulatory sign R 7-2 should be placed on each structure with clearance restrictions.

c. In the case of an arch or other structure under which the clearance varies greatly, two or more signs should be used as necessary on the structure itself, to give information as to the clearance over the entire roadway.




.ow Clearance
**W 35-1**

### 34. Fire Station Sign (W 36-1)

a. Intended to warn motorists a fire station is located adjacent, or in close proximity, to the highway, and they may encounter the fire equipment entering the highway on an emergency run.



Fire Station
**W 36-1**

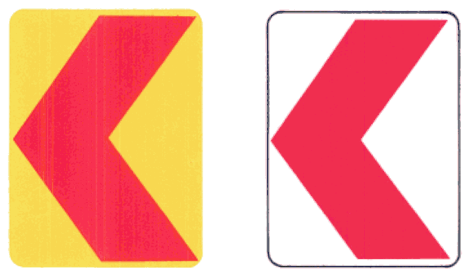
b. The sign should be installed regardless of whether or not an emergency traffic signal is in place.

c. If an emergency traffic signal is used, then the sign should be equipped with a hazard identification beacon which shall be actuated from a nonilluminated condition at the same time as the emergency traffic signal is changed to steady yellow (See Section 4.05).

### 35. Chevron Alignment Sign (W 37-1)

a. Type A is to be used in Work Areas.

b. Type B is intended to provide additional emphasis and guidance for vehicle operators to changes in the horizontal alignment of the roadway.



Type A Type B

Chevron Alignment
**W 37-1**
450x600

### 36. Other Warning Signs

Warning signs other than those specified may be required under special conditions. Such signs shall conform with the general specifications for shape, color, and placement of Warning signs.

## 2.03 Regulatory Signs

### A. Application of Regulatory Signs

1. Regulatory signs inform highway users of various restrictions indicating the applicability of legal requirements which would not otherwise be apparent. These signs shall be erected whenever needed to fulfill this purpose and shall be erected at those locations where restrictions apply.

2. The sign message shall clearly indicate the requirements imposed by the restriction and shall be easily visible and legible to the vehicle operator.

3. Regulatory signs may be accompanied by an educational plaque, in Arabic, placed below the symbol sign.

### B. Classification of Regulatory Signs

These signs are classified in the following groups:

1. Right-of-way series.
   a. STOP Sign.
   b. Give Way Sign.
2. Speed series.
3. Movement and Exclusion series.
4. Parking series.
5. Mandatory series.

### C. Design of Regulatory Signs

1. These signs are round.

   a. Speed, Movement, Exclusion and Parking series signs have a black legend on a white background and a red border.

   A red diagonal slash indicates a total prohibition for the condition illustrated. No red slash indicates only the condition shown.

   b. Mandatory series signs have a white legend on a blue background.

   c. Special Prohibitions Imposed on Moving Vehicles signs have a black rim containing a dark gray diagonal band and message. The remainder of the background is white.

2. The exceptions to the standard shape and color are with the STOP sign and the Give Way sign, respectively. The STOP sign is an octagonal shape having a red background with white border and message. The Give Way sign is an equilateral triangle with one point downward. The background color is white and the border is red.

3. All Regulatory signs shall be reflectorized or internally illuminated to show the same shape and color both by day and night.

### D. Sign Designations, Usage and Dimensions

#### 1. STOP Sign (R 1-1)

a. This sign shall be octagonal and shall bear the word message, STOP, in Arabic only. This sign is intended for use where traffic is required to stop.

b. A STOP sign may be warranted at an intersection where one or more of the following conditions exist:

(1) Intersection of a less important road with a main road where application of the general right-of-way rule is unduly hazardous.

(2) Unsignalized intersection on a street having signals at other nearby intersections.

(3) Other intersections where a combination of high speed, restricted view, and serious accident record indicate a need for control by the STOP sign.

c. STOP signs shall not be erected at intersections where traffic control signals are operating. STOP signs may, however, be used to control unsignalized, separated right-turn lanes.

d. STOP signs shall not be erected indiscriminately at intersections. Allowing STOP signs at such crossings tends to lessen compliance at locations where the signs are completely compatible with the condition they are covering.

e. Portable or part-time STOP signs shall not be used, except for maintenance or emergency purposes.

f. STOP signs shall not be used for speed control.




Stop
R 1-1
900x900

#### 2. Give Way Sign (R 2-1)

a. This sign shall bear no symbol or inscription. Its shape indicates the approaching driver must yield to traffic on other approaches to an intersection. Vehi-

cles controlled by a Give Way sign shall stop when necessary to avoid interference with traffic which has the right-of-way.

b. The Give Way sign may be warranted:

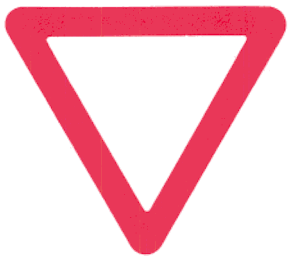
(1) On a minor road at the entrance to an intersection where it is necessary to assign right-of-way to the major road (but a stop is not necessary at all times) and where the safe approach speed on the minor road exceeds 20 km/h.

(2) On the entrance ramp to an expressway, or arterial street or highway.

(3) Within an intersection with a divided roadway where a STOP sign is present at the entrance of the first roadway, and further control is necessary at the entrance to the second roadway, and where the median width between the two roadways exceeds 10 m.

(4) To control vehicles on a separate or channelized right-turn lane, without an adequate acceleration lane.

(5) At any intersection where a special problem exists and an engineering study indicates the problem can be corrected by the Give Way sign.



Give Way
**R 2-1**
900x900x900

### 3. Maximum Speed Limit Signs (R 3-1)

a. The Speed Limit sign shall display the limit established by the proper authority, after an engineering and traffic investigation has been made in accordance with established traffic engineering practices.

b. The following factors should be considered to determine the proper numerical value for a speed limit, based on the engineering and traffic investigation:

(1) Road surface characteristics, shoulder condition, grade, alignment, and sight distance.

(2) The 85 percentile speed and pace speed.

(3) Roadside development and culture, and roadside friction.

(4) Safe speed for curves or hazardous locations.

(5) Parking practices and pedestrian activity.

(6) Reported accident experience for a recent 12-month period.

c. This sign gives notification of a speed limit. The Arabic figure(s) appearing on the sign shall indicate to the nearest 10 km/h, the maximum speed but always ending in Arabic numeral five.

d. To indicate a speed limit applicable only to trucks (R 22-1) or to vehicles weighing more than a specified amount (R 7-4), an inscription comprising that specified amount shall be placed on an additional panel below the sign.




Speed Limit
**R 3-1**
900 Diameter




Speed Limit
**R 3-1**
900 Diameter




Speed Limit—Vehicles
Weighing More than Amount
**R 3-1/7-4**
900x1800



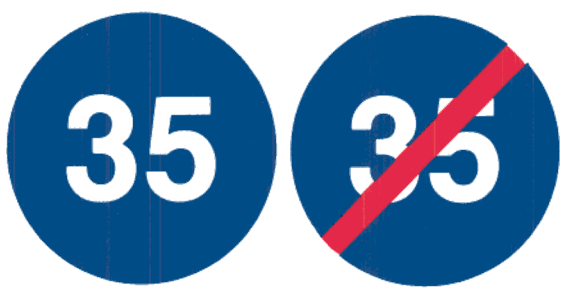

Truck Speed Limit
**R 3-1/22-1**
900x1800

e. The exit speed signs are intended for use where engineering investigations of roadway, geometric, or operating conditions show the necessity of advising drivers of the maximum recommended speed on a ramp. The sign should be posted along the deceleration lane or along the ramp so it is visible in time for the driver to make a safe slowing and exiting maneuver. Where an additional speed indication is needed on the ramp well beyond the gore, a standard Warning sign with a Suggested Speed plate is to be used.

**4. Compulsory Minimum Speed and End of Compulsory Minimum Speed Signs (R 4)**

a. This sign is placed at the entrance of the highway notifying drivers to travel at not less than the speed specified (R 4-1).

b. The End of Compulsory Minimum Speed sign means the compulsory minimum imposed by sign R 4-1 is no longer in effect. This sign is identical to sign R 4-1, except that it shall be crossed by an oblique red bar running from the upper right edge to the lower left edge (R 4-2).




Compulsory Minimum
**R 4-1**
900 Diameter

End Compulsory
Minimum Speed
**R 4-2**
900 Diameter

**5. Entry Prohibited Sign (R 5-1)**

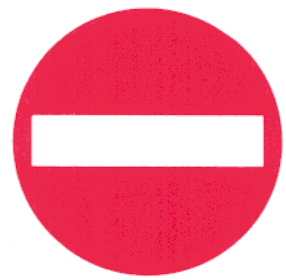
a. This sign is a red disk with a white horizontal bar.

b. This sign gives notification that entry by all vehicles is prohibited.

c. To prohibit traffic from entering a restricted road section, the Entry Prohibited sign should be conspicuously placed in the most appropriate position at the exit from a one-way roadway or ramp. The sign should normally be mounted on the right-hand side of the roadway, but a second sign on the left-hand side of the roadway may be justified for additional emphasis.

d. The Entry Prohibited sign should be used to mark roads closed to all traffic (except authorized vehicles) because of work area operations or a temporary emergency. It should not be used where traffic is maintained or a route is detoured several kilometers in advance of the actual construction or blockage.

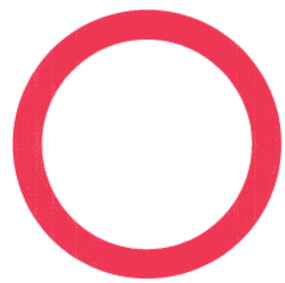
e. Where the sign faces through traffic, it shall be preceded by an Advance Road Closed Warning sign, and if applicable, an Advance Detour Warning sign (See Part 5).



Entry Prohibited
**R 5-1**
900 Diameter

**6. Closed to All Vehicles in Both Directions Sign (R 6-1)**

This sign is an open circle and bears no symbols. This sign gives notification all vehicular traffic is prohibited in both directions.



Closed Both
Directions
**R 6-1**
900 Diameter

**7. No Entry by Any Vehicle Except Two-Wheeled Motorcycles Without a Side Car Sign (R 6-2)**

This sign gives notification only two-wheeled motorcycles (without side cars) are permitted to enter. All other power-driven vehicles are prohibited. Silhouette indicates vehicle whose entry is prohibited.



Motorcycles Only
**R 6-2**
900 Diameter

### 8. No Entry by Motorcycles Sign (R 6-3)

This sign gives notification that entry by all motorcycles is prohibited. Silhouette indicates vehicle whose entry is prohibited.



Motorcycles
Prohibited
**R 6-3**
900 Diameter

### 9. No Entry by Cycles Sign (R 6-4)

This sign gives notification that entry by cycles is prohibited. Silhouette indicates conveyance whose entry is prohibited.



Cycles Prohibited
**R 6-4**
900 Diameter

### 10. No Entry by Mopeds Sign (R 6-5)

This sign gives notification that entry by mopeds is prohibited. Silhouette indicates vehicle whose entry is prohibited.



Mopeds Prohibited
**R 6-5**
900 Diameter

### 11. No Entry by Goods Vehicles Sign (R 6-6)

a. This sign gives notification that entry by goods vehicles is prohibited. Silhouette indicates vehicle whose entry is prohibited.

b. The inscription consists of a tonnage figure, either in a light color on the silhouette of the vehicle or on an additional panel placed below the sign. This means the prohibition shall apply only if the permissible maximum weight of the vehicle or combination of vehicles exceeds that figure.

c. A red slash is used when all goods vehicles are prohibited. When a tonnage figure (3 tons) is placed on the sign to indicate a prohibition for vehicles exceeding that weight, no slash is to be used.




Goods Vehicles
Prohibited
**R 6-6**
900 Diameter

**12. No Entry by Any Power-Driven Vehicle Drawing a Trailer Other Than a Semi-Trailer or a Single-Axle Trailer Sign (R 6-7)**

a. This sign gives notification that entry by any power-driven vehicle drawing a trailer other than a semi-trailer or a single-axle trailer is prohibited. Silhouette indicates vehicle whose entry is prohibited.

b. The inscription is a tonnage figure, either in a light color on the silhouette of the trailer or on an additional panel placed below the sign. It shall mean the prohibition applies only if the permissible weight of the trailer exceeds that figure.



Drawn Trailer
Prohibited
**R 6-7**
900 Diameter

**13. No Entry by Pedestrians Sign (R 6-8)**

This sign gives notification that entry by pedestrians is prohibited. Silhouette indicates a walking pedestrian whose entry is prohibited.



Pedestrian
Prohibited
**R 6-8**
900 Diameter

**14. No Entry by Animal-Drawn Vehicles Sign (R 6-9)**

This sign gives notification that entry by animal-drawn vehicles is prohibited. Silhouette indicates the type of conveyance and the animal.



Animal Carts
Prohibited
**R 6-9**
900 Diameter



Hand Carts
Prohibited
**R 6-10**
900 Diameter

**15. No Entry by Handcarts Sign (R 6-10)**

This sign gives notification that entry by handcarts is prohibited. Silhouette indicates the general type of cart.

**16. No Entry by Power-Driven Agricultural Vehicles Sign (R 6-11)**

This sign gives notification that entry by agricultural vehicles is prohibited. Silhouette indicates a tractor or other agricultural vehicle.



Farm Equipment
Prohibited
**R 6-11**
900 Diameter

**17. No Entry by Power-Driven Vehicles Sign (R 6-12)**

This sign gives notification that entry by power-driven vehicles is prohibited. Silhouette indicates the classes of vehicles in this category. Signs showing more than two silhouettes may not be set up outside built-up areas.



Motor Vehicles
Prohibited
**R 6-12**
900 Diameter



All Vehicles
Prohibited
**R 6-13**
900 Diameter

**18. No Entry by Power-Driven Vehicles or Animal-Drawn Vehicles Sign (R 6-13)**

This sign gives notification that entry by power-driven or animal-drawn vehicles is prohibited. Silhouette indicates classes of vehicles and conveyances in this category. Signs showing more than three silhouettes may not be set up in built-up areas.

**19. No Entry by Vehicles Having an Overall Width Exceeding ( ) Meters Sign (R 7-1)**

This sign gives notification of prohibition of vehicles with widths exceeding ( ) meters. The sign illustrates the number of meters, and that the measurement is horizontal.




Restricted Clearance
**R 7-1**
900 Diameter




Restricted Clearance
**R 7-2**
900 Diameter

**20. No Entry by Vehicles Having an Overall Height Exceeding ( ) Meters Sign (R 7-2)**

This sign gives notification of prohibition of vehicles with heights exceeding ( ) meters, and illustrates the maximum height in meters. These signs should be placed on entrances to facilities with clearance restrictions. Also, these signs should be placed on each structure with clearance restrictions.

**21. No Entry by Vehicles Exceeding ( ) Tons Laden Weight Sign (R 7-3)**

This sign gives notification of prohibition of vehicles exceeding ( ) tons laden weight. The sign illustrates the number of tons and an insignia for tons.




Restricted Loads
**R 7-3**
900 Diameter




Restricted Loads
**R 7-4**
900 Diameter

**22. No Entry by Vehicles Having a Weight Exceeding ( ) Tons on One Axle Sign (R 7-4)**

a. The sign gives notification of prohibition of vehicles having a weight exceeding ( ) tons on any one axle.

b. The sign illustrates an axle, a downward arrow, and an insignia for tons.

**23. No Entry by Vehicles or Combinations of Vehicles Exceeding ( ) Meters in Length Sign (R 7-5)**

This sign gives notification of prohibition of vehicles or combinations of vehicles exceeding ( ) meters in length. The sign illustrates a vehicle, number of meters, and that the measurement is horizontal.




Long Vehicles
Prohibited
**R 7-5**
900 Diameter

### 24. No (Left) (Right) (U) Turn Signs (R 8)

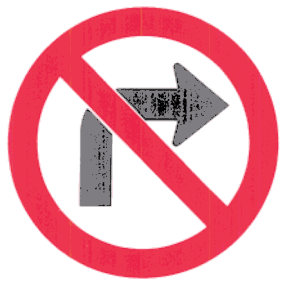
a. This sign gives notification that turning is prohibited (either to the left or to the right). The turn arrow appears with an oblique red bar.

b. The sign should be placed where it will be most easily seen by drivers intending to turn.

c. The No U-Turn sign gives notification U-turns are prohibited. The U-turn arrow appears with an oblique red bar. The signs are to be used at or between intersections on highways, where such a maneuver is prohibited by regulation.



No Left Turn
**R 8-1**
900 Diameter



No Right Turn
**R 8-2**
900 Diameter



No U Turn
**R 8-3**
900 Diameter

### 25. Overtaking Prohibited Sign (R 9-1)

This sign gives notification of the general rules on overtaking established by the regulations of the Kingdom. In addition, it shows that the overtaking of power-driven vehicles other than two-wheeled mopeds and two-wheeled motorcycles without side cars is prohibited. Silhouettes illustrate two vehicles side by side, the one on the right side in black and on the left side (passing side) in red.



Overtaking
Prohibited
**R 9-1**
900 Diameter



Overtaking by
Trucks Prohibited
**R 9-2**
900 Diameter

### 26. Overtaking by Goods Vehicles Prohibited Sign (R 9-2)

a. This sign gives notification goods vehicles exceeding ( ) tons are prohibited from overtaking other vehicles.

b. Silhouette illustrates two vehicles side by side, a smaller vehicle and a larger goods vehicle. The small vehicle on the right side is in black, and the larger vehicle on the left side (passing side) is in red.

### 27. Use of Audible Warning Devices Prohibited Sign (R 10-1)

This sign, if not placed near the sign identifying the built-up area, shall be accompanied by an additional panel showing the distance over which the prohibition applies. Silhouette illustrates a horn device with an oblique red bar.



No Horns
**R 10-1**
900 Diameter

### 28. Passing Without Stopping Prohibited Sign (R 11-1)

a. This sign gives notification of the proximity of a custom house at which a stop is compulsory. The word "Customs" should appear, preferably in two or more

languages depending on needs at any given entry point.

b. This sign may also be used to notify drivers that passing without stopping is prohibited for other reasons. In these cases, the word "Customs" shall be replaced by another brief inscription indicating the reason for the required stop.




Customs
**R 11-1**
900 Diameter

**29. Priority for Oncoming Traffic Sign (R 12-1)**

a. On a narrow section of road where passing is difficult or impossible, traffic may have to be regulated. If drivers can clearly see the whole length of the section, by night and day, such regulations may be carried out by giving a priority to traffic moving in one direction rather than by installing traffic signals. When used, this sign shall face traffic which does not have priority. It shall mean that entry into the narrow section is prohibited so long as it is not possible to pass through that section without requiring oncoming vehicles to come to a stop.

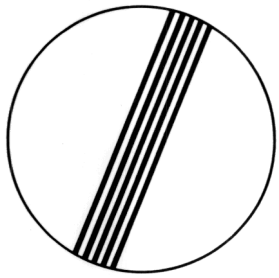


Priority for
Oncoming Traffic
**R 12-1**
900 Diameter

b. The arrow indicating the direction having priority shall be black, and the arrow indicating the other direction shall be red.

**30. End of All Special Prohibitions Imposed on Moving Vehicles Signs (R 13)**

This sign shall be placed at the point where all special prohibitions imposed on moving vehicles by prohibitory signs cease to apply. Examples of these signs would be for ending a speed limit or ending prohibition for overtaking. The sign shall have a black rim and bear a diagonal band sloping downward from right to left consisting of parallel black lines.



End All Prohibitions
**R 13**
900 Diameter




End Speed Limit
**R 13/3-1**
900 Diameter



End of Overtaking
Prohibited
**R 13/9-1**
900 Diameter



End of Overtaking
by Trucks Prohibited
**R 13/9-2**
900 Diameter

### 31. Parking Prohibited and Parking Restricted Signs (R 14)

a. R 14-1 indicates places where parking and stopping are prohibited at all times.

b. R 14-2 indicates places where restricted parking is available with the specific limitation being shown on a supplemental plaque mounted below the symbol sign.



Parking and Stopping Prohibited
**R 14-1**
900 Diameter



Parking Restricted
**R 14-2**
900 Diameter

### 32. Pass This Side Sign (R 15-1 and R 15-2); Pass Either Side Sign (R 15-3)

These signs are placed on an island or before an obstacle on the highway, and it means that vehicles must pass on the side(s) of the island or obstacle indicated by the arrow(s).



Pass This Side
**R 15-1**
900 Diameter



Pass This Side
**R 15-2**
900 Diameter



Pass Either Side
**R 15-3**
900 Diameter

a. These signs should be used at the ends of medians, parkways, loading islands, refuge islands, traffic islands, and at underpass piers where traffic is required to keep to the right (or left). The Pass This Side or Pass Either Side signs may not always be necessary at intermediate ends of divisional islands, and medians and should not be used with other signs that obviously mark locations where motorists know they must pass on the right.

b. These signs shall have a standard size at least 900 mm on local roads. On expressways and arterial highways, the size shall be 1200 mm. A smaller size of 600 mm is permissible for use on narrow medians at median openings to serve entering cross traffic and to remind drivers of the regulation.

c. A certain amount of flexibility must be allowed in the mounting height for Pass This Side or Pass Either Side signs. Where the obstruction is in or so near the lane of traffic that a sign at a normal minimum height may be obscured by vehicles, a second sign of the same design may be mounted above the standard sign with its bottom edge at a height of 2.5 m to 3 m above the pavement. In this case the lower sign may be placed somewhat below the normal minimum height.

d. On a median, the Pass This Side or Pass Either Side signs should be mounted not more than 15 m beyond the approach end. On a pedestrian island or intersection channelizing island, it should be mounted at the approach end or as close as practicable. The sign should be mounted on the face of or just in front of a pier or other obstruction in the center of the roadway. Where appropriate, a Pass This Side sign with the arrow pointing downward and left may be used.

### 33. One-Way Sign (R 16-1)

This Arrow symbol sign shall be used when required to indicate streets or roadways upon which vehicular traffic is allowed to travel in one direction only. The sign shall be standard, and a minimum size of 900 mm by 300 mm with either a right or left arrow.




One-Way R
**R 16-1**
900x300



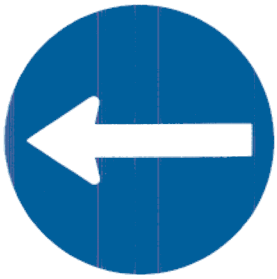

One-Way L
**R 16-1**
900x300

a. These signs shall be placed on the far right-hand and the far left-hand corners of the intersection to face traffic entering or crossing the one-way street. Where the intersection is signalized, the signs should be placed near the appropriate signal faces. One-Way signs shall also be placed parallel to the one-way street directly opposite the exits from alleys and other public ways. A One-Way sign shall always be used, where applicable, and may be supplemented by a Turn Prohibition sign (R 8).

b. One-Way signs shall be placed opposite exits from major traffic generators onto divided highways or onto one-way service roads, where no median crossing occurs at that point.

### 34. Mandatory Movement (Lane-Use Control) Signs (R 17)

a. The signs shall have a round shape with white symbols on a blue background.



Mandatory Movement
**R 17-1L**
900 Diameter



Mandatory Movement
**R 17-1R**
900 Diameter



Mandatory Movement
**R 17-2**
900 Diameter



Mandatory Movement
**R 17-3**
900 Diameter



Mandatory Movement
**R 17-4**
900 Diameter



Mandatory Movement
**R 17-5**
900 Diameter



Mandatory Movement
**R 17-6L**
900 Diameter



Mandatory Movement
**R 17-6R**
900 Diameter



Mandatory Movement
**R 17-7L**
900 Diameter



Mandatory Movement
**R 17-7R**
900 Diameter

b. Mandatory signs shall be placed in the immediate vicinity of the point where the obligation begins and may be repeated if deemed necessary.

c. These signs indicate the directions to be followed at an intersection. The Mandatory Movement sign shall show a single arrow for a single movement or they shall show a straight-through and a curved arrow indicating that either of the movements is permissible.

d. Overhead Mandatory Movement signs may be used to illustrate a specific condition which may not be visible to motorists. The Mandatory Movement signs are not to be used for lane control. This control, particularly the multiple-lane turn, is needed where volumes are high and an overhead installation can be justified. Use of an overhead sign for one approach lane does not mean installation of overhead signs for the other lanes of that approach is needed.

e. When post-mounted Mandatory Movement signs are used, one sign should be placed at the intersection. A second Mandatory Movement sign should be placed at an adequate distance in advance of the intersection so motorists can select the appropriate lane before reaching the ends of the lines of waiting vehicles. Roadway markings should be used to supplement post-mounted signs and may be used with overhead signs.

### 35. Traffic Rotary Sign (R 18-1)

This sign shows the prescribed direction of movement of traffic around a rotary circle.



Traffic Rotary
**R 18-1**
900 Diameter

### 36. Cycle Path Sign (R 19-1)

This sign shall be placed at the entrance to a cycle path to notify cyclists they must use the path. The sign also notifies drivers of other vehicles they are not entitled to use the path. If permitted by the Kingdom's "Traffic Regulations," drivers of mopeds may also use the path.



Cycle Path
**R 19-1**
900 Diameter

### 37. Foot Path Sign (R 20-1)

This sign is placed at the entrance to a foot path, notifying pedestrians they must use the path. It also notifies other road users they are not allowed to use the path.



Foot Path
**R 20-1**
900 Diameter

### 38. Path for Riders on Animals Sign (R 21-1)

This sign is placed at the entrance of a path used by animal riders only and notifies other road users they are not permitted to use that path.



Ridden Animal Path
**R 21-1**
900 Diameter

## 2.04 Informative Signs

### A. General Characteristics

Informative signs should be designed to be easily readable, permitting drivers to make timely and proper responses. This means high visibility, large lettering, and short legends for quick comprehension. Standard shapes and colors are required so the signs can be promptly recognized. This group of signs includes several categories, all of which convey useful information to road users. The categories are as follows: Advance Direction signs, Direction signs, Route Marker signs, Place Identification signs, Confirmatory signs, Useful Information signs, Facility signs, and Parking signs. Certain signs will bear inscriptions in Arabic and English.

### B. Scope of Sign Standards

Standards for collector and local roads are prescribed in Section 2.05 of this Manual. Standards for expressways and for arterial highways are combined in Section 2.06 of this Manual. Collector highways call for an intermediate level of signing more advanced than prescribed for local roads, but less demanding in the requirements and specifications than expressway and arterial signing standards.

### C. Principles of Signing

1. The signing must furnish drivers with clear instructions for orderly progress to their destinations.

2. Sign installations are an integral part of the highway facility and must be planned concurrently with the development of highway location and geometric design. Plans for signing must be analyzed during the earliest stages of preliminary design and details correlated as final design is developed.

3. Informative signs may be used to show Kingdom, province, city, and village jurisdictional boundaries. Where these signs interfere with signing for interchanges or intersections or other equally critical points, Informative signs indicating boundaries will be omitted or relocated to a more suitable position. On all such signs the design should be simple and dignified, devoid of any tendency toward advertising. The signs should be designed to look similar to all other highway signing.

### D. Functions of Informative Signs

Informative signs serve distinct functions as follows:

1. Give directions to destinations or to streets, at intersections or interchanges.

2. Furnish advance notice of the approach to intersections or interchanges.

3. Direct drivers into appropriate lanes in advance of diverging or merging movements.

4. Indicate access to general motorist services, rest, scenic, recreational areas, and holy sites.

5. Provide other information of value to the driver.

### E. Application

Informative signs are essential to guide vehicle operators along streets and highways; inform them of intersecting routes; direct them to cities, towns, villages, or other important destinations; and identify nearby geographical, geological, historical and religious points of interest. Generally, these signs are designed to give information which will help the driver along his way in the most simple, direct manner possible.

### F. Size of Signs

1. For most Informative signs the legend is so variable, no rigidly standardized sign size can be established. The sign size must be determined primarily by the length of the message, size of the lettering and spacing necessary for proper legibility. On signs with dual language messages, the letter size of the English legend shall be approximately two-thirds of the Arabic letter size. The Arabic sizes will be determined first, and the English size will be based on the Arabic sizes.

2. A sign mounted over a roadway lane may have to be limited in horizontal dimension to the width of the lane, so another sign may be placed over an adjacent lane. The necessity to maintain proper vertical clearance may place a further limitation on the size of the overhead sign and the message which can be accommodated.

### G. Size of Lettering

1. For Informative signs with varying legends, sign legibility is a direct function of letter size. The legibility distance must give the driver sufficient time to read the sign before passing it. Although under the best conditions an Informative sign message can be read in a brief glance, a reasonable safety factor must be allowed for inattention, blocking of view by other vehicles, unfavorable atmospheric conditions, inferior eyesight, or other causes for delayed or slow reading.

2. The minimum sizes specified in Table A, Appendix should be exceeded where unusual conditions indicate a need for greater legibility.

**H. Style of Lettering and Legend Spacing**

1. Using standardized letter style and arrow designs helps to assure uniform and effective application. The message dimensions of all expressway and arterial highway signs shall be determined first and the outside sign dimensions secondarily.

2. All names of places, streets, and highways on Informative signs shall be in both Arabic and English. English names generally shall be composed of lower case letters with initial upper case letters. The Arabic style shall be Naskh.

**I. Amount of Legend**

1. Regardless of letter size, the legend on an Informative sign must be kept to a minimum to be legible at a glance during the few moments a driver can turn his eyes from the road. Informative signs should be limited to six lines of principal legend (three lines in Arabic and three lines in English).

2. "Principal legend" refers mainly to place names, route number (if used) and street names. Symbols, action information, cardinal directions and exit numbers which make up other lines of the message should also be kept to a minimum.

**J. Abbreviations**

Abbreviations are to be kept to a minimum but can be useful when destination messages are excessively long.

**K. Arrows and Symbols**

1. Arrows are used on many Informative signs to indicate the directions toward designated routes or destinations. Upward pointing arrows may be pointed at any appropriate angle to convey a clear comprehension of the direction to be taken. At right-angle intersections a horizontal arrow is appropriate. On a roadside sign a directional arrow for a straight-through movement shall point upward. For a bend the arrow should be pointed upward so as to best describe the direction in which the route leaves the intersection and at an angle related to the sharpness of the bend.

2. Where a long, single panel is mounted on an overhead structure for the purpose of giving straight-through information common to all lanes, downward arrows can be used. The downward arrow should point to the lane which they pertain. (See Figure 2-5).

3. Design and application of arrows for arterial and expressway highway Informative signs shall be the same as that specified for local roads (See Figure 2-6). Sections 2.05 and 2.06 include specific information on selection of arrow configurations for the various sign applications. For added legibility, it is recommended the widths across the barbs of the arrow be at least equal to the height of the largest letters on the sign, and for short downward pointing arrows on overhead signs, about 1¾ times the letter height.




**Figure 2-5**
**Typical overhead informative sign showing lane assignment arrows.**

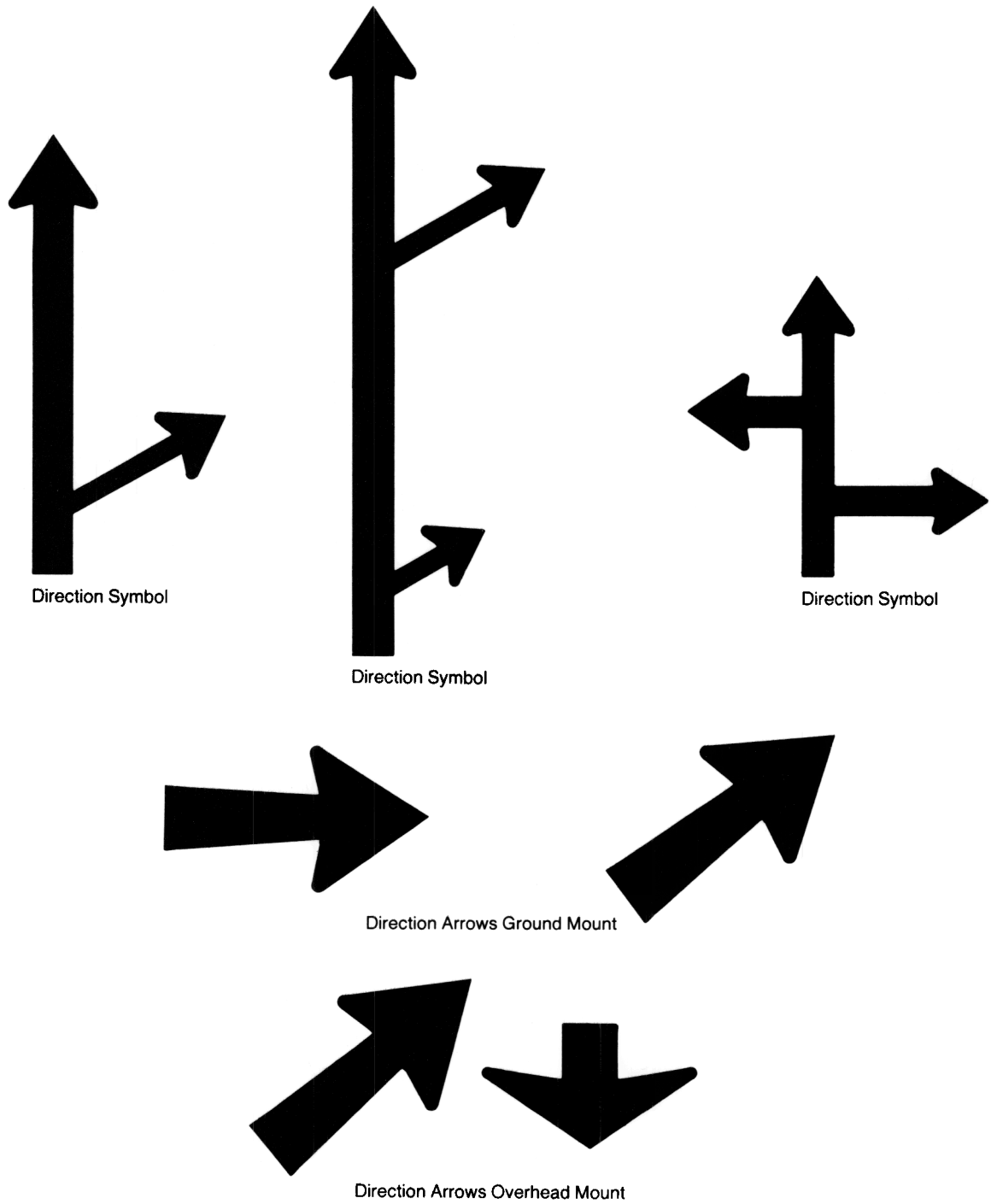



**Figure 2-6**
**Typical Informative sign arrow configurations.**

4. Arrows may be placed below the other sign legend on a separate panel or to one side of it. At an exit, an arrow should be placed at the side of the sign, which reinforces the movement of the exiting traffic.

**L. Interline and Edge Spacing**

1. Interline spacing of English upper case letters should be approximately three-fourths the average of upper case letter heights in adjacent lines of letters. Interline spacing of Arabic letters should be the same or greater as the letter heights in adjacent lines of letters.

2. The spacings to the top and bottom borders should be approximately equal to one-half the basic letter height of the adjacent line of letters. The lateral spacing to the vertical borders should be essentially the same as the height of the largest letter in the adjacent lines of letters.

**M. Sign Borders**

Signs containing destinations shall have a border of the same color as the legend, to outline their distinctive shape to make them easily recognizable and to give them a finished appearance. The border width should generally not exceed the stroke width of the Arabic lettering; however, a minimum border width of 30 mm should be used. For Informative signs larger than 2 m by 3 m, the border shall have a width of 50 mm. On unusually large signs, a border of 75 mm may be appropriate. In general, border widths should be proportional to sign size, and the corners of the sign border shall be rounded.

**N. Color and Reflectorization**

1. Informative signs on all highways shall have white letters, symbols, and borders on a blue background.

2. Letters, numerals, symbols, and borders shall be reflectorized as a minimum.

3. All overhead Informative signs shall be illuminated where possible.

4. Reflectorization shall be either by background reflectorization, or by using reflector button or reflective sheeting copy on an opaque background.

**O. Viewing Factors**

Proper placement of signs, either overhead or at the roadside, can greatly enhance the effectiveness of an installation. Sign faces should always be oriented to minimize specular glare. Decisions on the placement of signs, both roadside and overhead should be related to site conditions. Where highway design features and other appurtenances are affected, sign placement should be jointly planned for best service and safety. Signs should be located to be seen far enough in advance to allow drivers to read and comprehend the message.

**P. Vertical Clearance**

1. In ground installations, directional Informative signs shall be erected at a minimum height of 2 m above the edge of the pavement to the bottom of the sign. If a sign is mounted below another sign, the major sign shall be at least 2.5 m and the secondary sign at least 1.5 m above the level of the pavement edge. (See Figure 2-1)

2. When signs are positioned a minimum of 9 m away from the pavement edge to increase roadside safety, the vertical clearance of such signs may be reduced to 1.5 m above the pavement edge. (See Figure 2-1)

**Q. Horizontal Clearance**

1. To provide a clear roadside recovery area for out-of-control vehicles, liberal horizontal clearances should be provided for roadside signs and overhead sign supports. In no case shall any part of the sign or the sign structure, which is within the applicable vertical clearance dimension and exposed to traffic, be less than 1 m beyond any shoulder or travel lane prepared for normal or emergency travel of vehicles.

2. Advantage should be taken of the longitudinal location of existing guardrail, overcrossing structures, and similar conditions to lessen the exposure of signs and sign supports to traffic. Breakaway or yielding supports should be located as far from the traveled portion of the roadway as feasible.




Primary
I 1-1
900x900 (Primary)




Other Primary and Secondary
I 1-2
600x600

**R. Route Markers (I 1)**

1. Route markers shall be used to identify and mark all numbered highways in the Kingdom. The markers for each classification of streets and highways shall be distinctive as far as the symbol is concerned. All markers shall be square in shape with the symbol superimposed on the square. Route markers as well as any auxiliary markers which accompany the route markers shall be reflectorized. The marker symbols shall be green and white with black Naskh style numerals. Auxiliary markers shall be the same color combination of the route marker which they supplement.

2. Distinctive markers are used on the various categories of highways classified according to Highway Design Manual (HDM) Volume 1-1.05. Route numbers are assigned in accordance with that functional classification criteria. Expressway (primary system) route markers will carry a route number imposed on the outline of the Arabian peninsula (Figure I 1-1) and shall be green and white. On secondary highways, the marker will be in green and white (Figure I 1-2). On feeders the symbol will be circular shaped in green and white (Figure I 1-3).

3. Route numbering selection shall use north to south and east to west directional routing and shall include even numbered designations for east and west routes and odd numbered designations for north and south routes. Cardinal direction markers shall be used as auxiliary markers with route numbering markers.

4. The MAKKAH trail marker is designed to provide pilgrims with route guidance on following a particular route to MAKKAH. It may be erected at strategic locations along major routes to indicate the direction to MAKKAH.



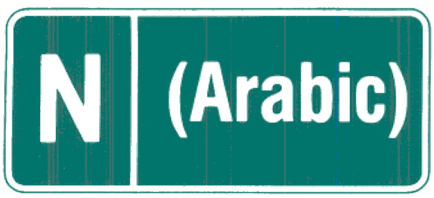

Feeders
I 1-3
600x600



MAKKAH Trail Marker
I 1-4
600x600

## S. Cardinal Direction Markers (I 2)

Cardinal Direction markers shall consist of a single plate with the Arabic word for direction on the right two-thirds of the sign and the letter N, S, E, or W on the left. The two sections are divided by a vertical line. The colors shall correspond to the route markers.



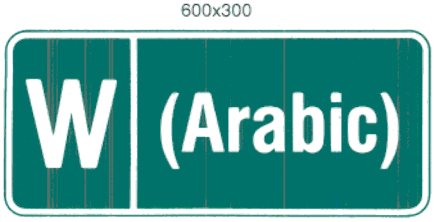

I 2-1
600x300




I 2-2
600x300




I 2-3
600x300




I 2-4
600x300

## T. Advance Bend Arrow (I 3)

1. The Advance Bend Arrow marker displays a right or left arrow, with the shaft bent at a right angle or at a 45° angle.

2. These Advance Bend arrows are used with route markers in lieu of any junction sign. When placed below the marker, this arrow shows the direction that the route takes at its intersecting point. In some instances a vertical arrow could be used if one route continues straight through and the other route leaves at some angle.

3. The colors of the Advance Bend Arrows shall correspond to the colors of the route markers.



I 3-1R



I 3-2R



I 3-1L



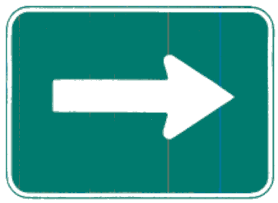
I 3-2L



I 3-1LR

## U. Directional Arrow (I 4)

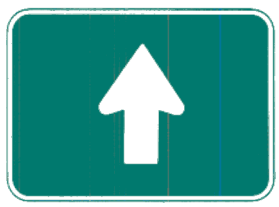
The Directional Arrow marker displays a single-or double-headed arrow, pointing in the general direction that a route may follow. The colors of the Directional Arrows shall correspond to the colors of the route markers.



I 4-1R



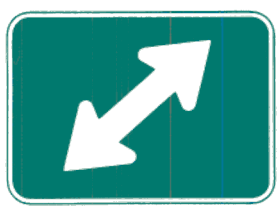
I 4-2R



I 4-3



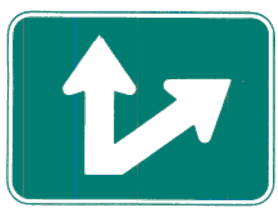
I 4-4



I 4-5R



I 4-6R



I 4-7R

## V. Directional Assembly

Various uses of directional assemblies are illustrated in Figures 2-7, 2-8, and 2-9.

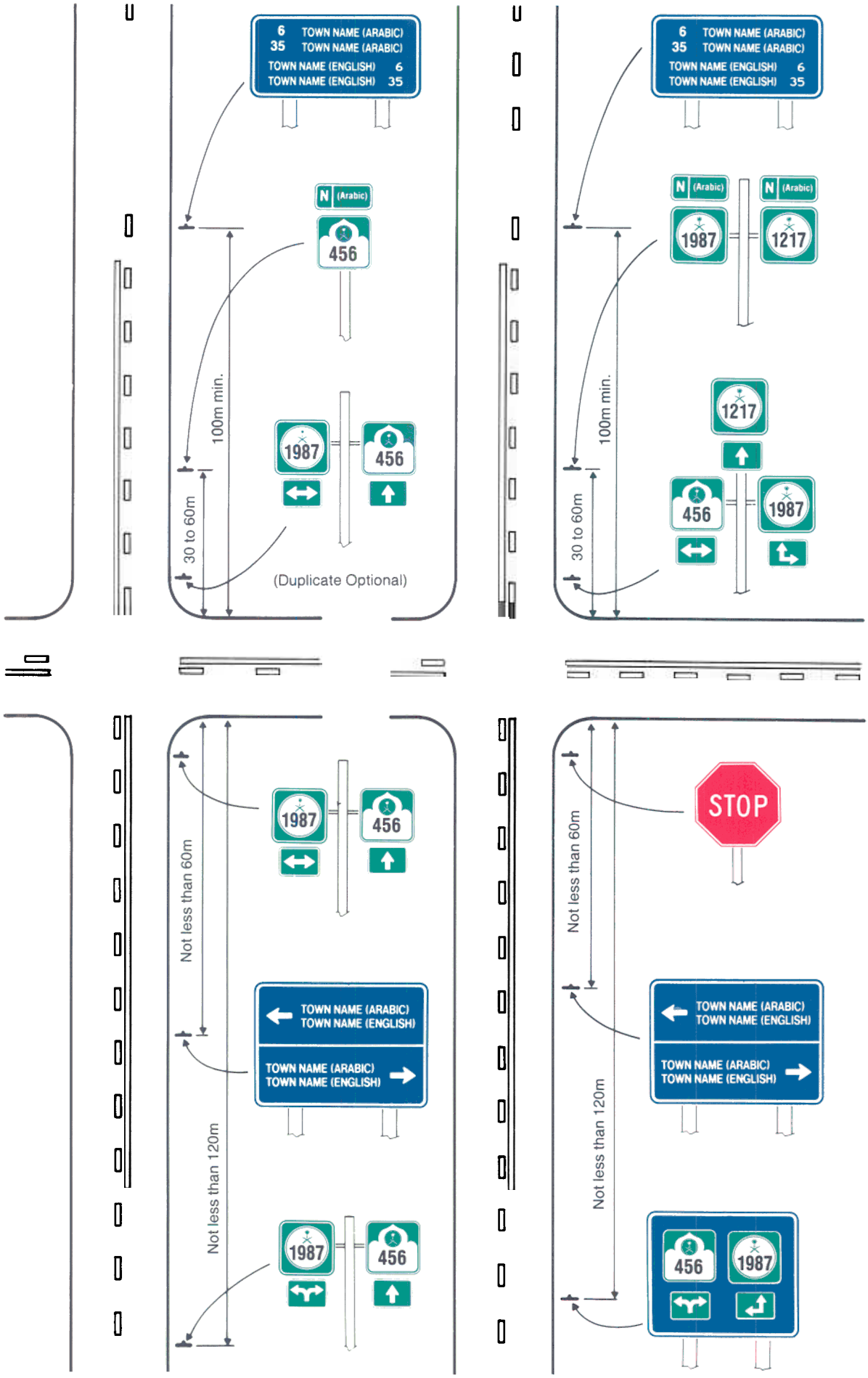



Figure 2-7
Typical route markings at rural intersections
(for one direction of travel only).

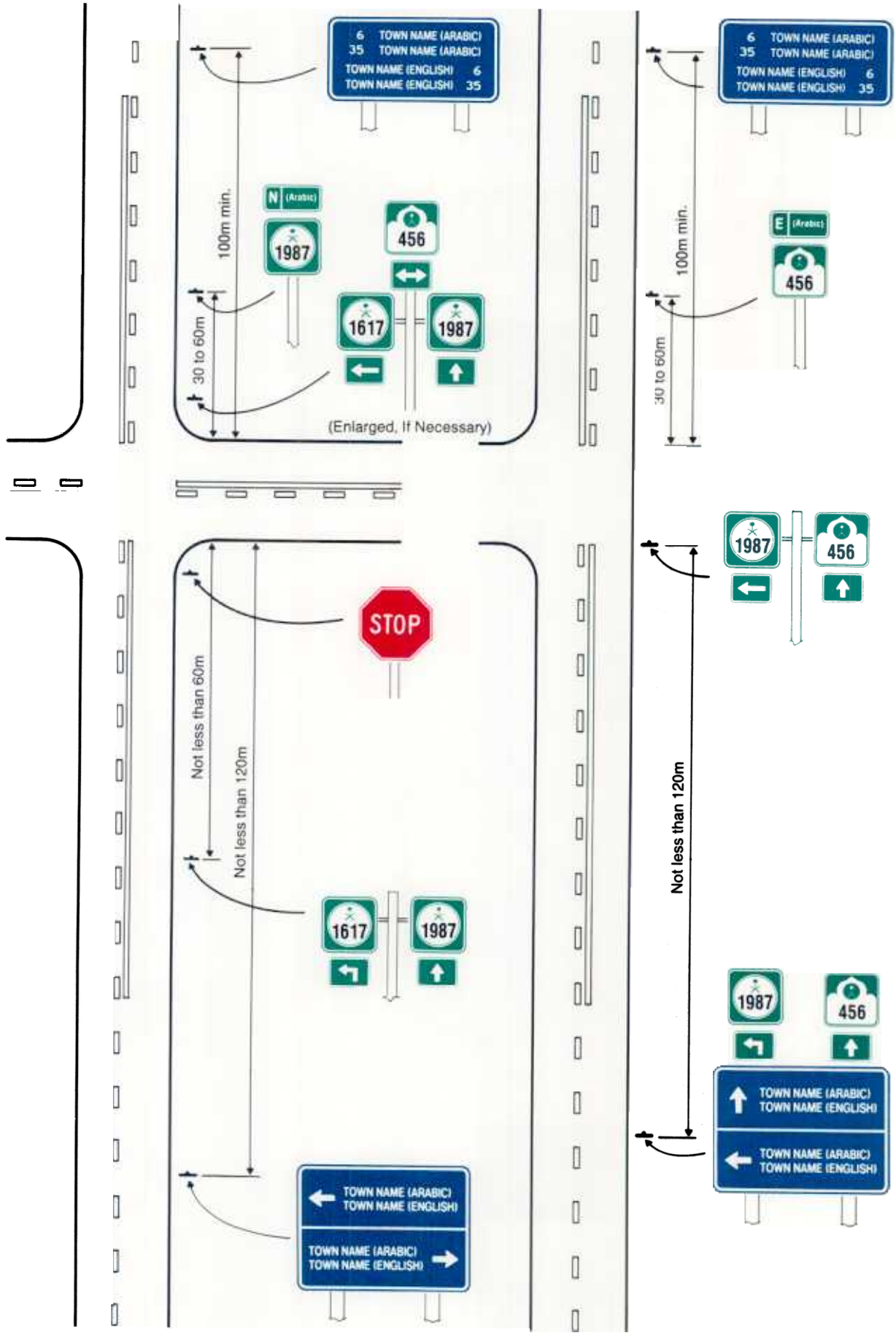



**Figure 2-8**
**Typical route markings at rural intersections**
**(for one direction of travel only).**

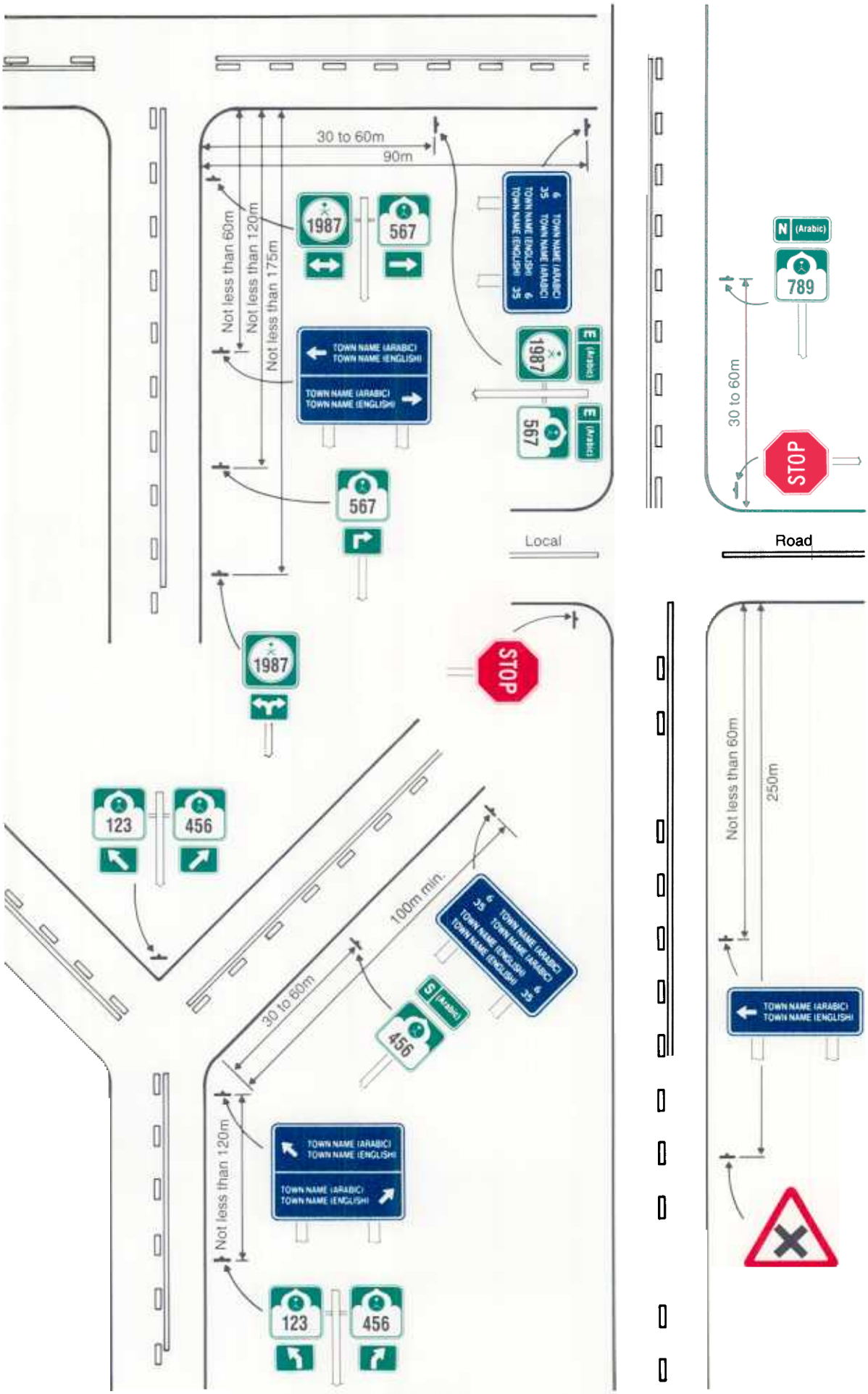



Figure 2-9
**Typical route marking at rural intersections (for one direction of travel only).**

## 2.05 Informative Signs—Collector and Local Roads

### A. Scope of Collector and Local Road Informative Sign Standards

Standards for Collector and Local Road Informative Signs prescribed shall apply to any highway or street other than an expressway or arterial highway.

### B. Lettering Style

The Arabic letter and number style shall be Naskh. All Arabic letters and numbers depicted on the figures throughout this manual are for illustration purposes only. However, when the English letter height exceeds 200 mm, names of places on Informative signs should have an initial upper case letter followed by lower case letters.

### C. Size of Lettering

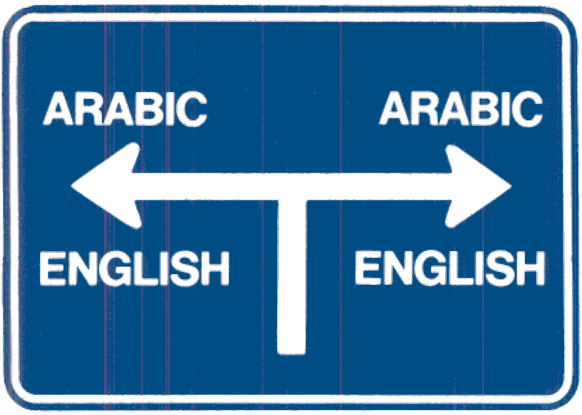
Arabic letters and numbers shall be the largest and have the predominate place on the sign. The English legend shall be smaller than the Arabic, as specified herein.

On collector or local roads where volumes are heavier and speeds are higher, the legend shall be in Arabic letters at least 200 mm in height and in English letters at least 175 mm high. On less important local roads and urban streets where volumes are lighter and speeds are lower the legend shall be in Arabic and English letters at least 150 mm high. Sign panels shall be large enough to accommodate the required legend without crowding.

### D. Advance Direction Signs

1. Various types of Advance Direction signs are illustrated in Figure 2-10. These are diagrammatic designs and indicate the type of highway geometric configuration which the driver can expect to encounter when approaching the decision point. The Advance Direction signs must be carefully designed to afford the maximum degree of clarity and must be located based on approach speeds.

2. These signs shall be placed a distance from the intersection to be effective for day and night conditions. The location should take into consideration the road and traffic conditions, including the normal speed of vehicles and the distance at which the sign is visible. The distance will be about 150 m on arterial highways and other roads carrying high speed traffic. If necessary, repeat signs can be used with the distance figures being modified to fit.



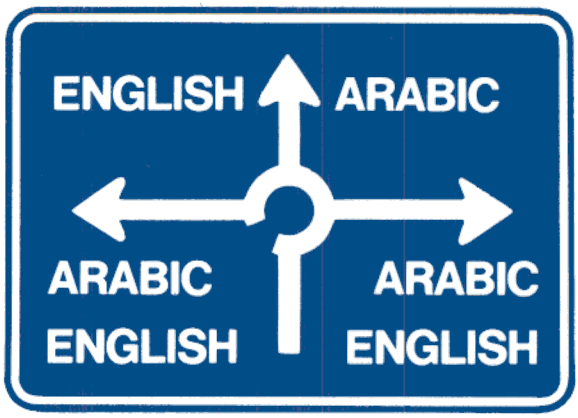







**Figure 2-10**
**Advance direction diagrammatic signs.**
**See Sec. 2.04 N for background color**

## E. Direction Signs

1. Various Direction signs are illustrated below. One direction sign may bear the maximum of three names of destinations. Destination names in each direction shall be grouped together.

2. When distances are shown, the numbers giving the distances shall be the same height as the place name. On rectangular signs, the distances are placed after the place name.

3. A Direction sign gives information either just preceding the decision point to continue through or turn right or left, or at the intersection.

4. Arrows pointing vertically and arrows pointing left shall be at the extreme left and arrows pointing to the right shall be at the extreme right of the sign. For added legibility, it is recommended the width across the barbs of the arrow be at least equal to the height of the largest letters on the sign, and for short downward pointing arrows on overhead signs, about 1¾ times the letter height. (See page 2-34 for detailed information on arrow size.)

5. As a general rule, the directional arrows should be horizontal or vertical, but at an irregular intersection a sloping arrow will sometimes convey a clearer indication of the direction to be followed.

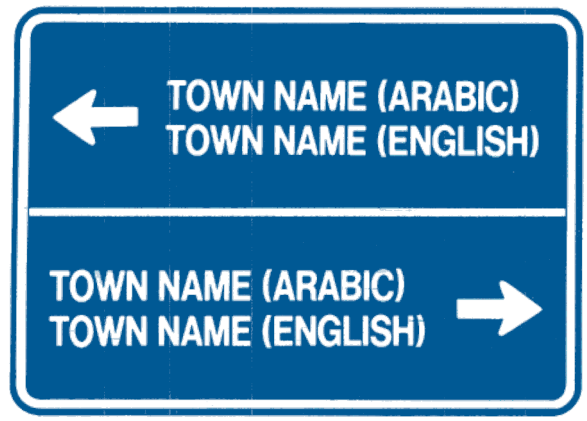
6. Reading from the top of the sign to the bottom the order for displaying destinations is straight through, left, and right.

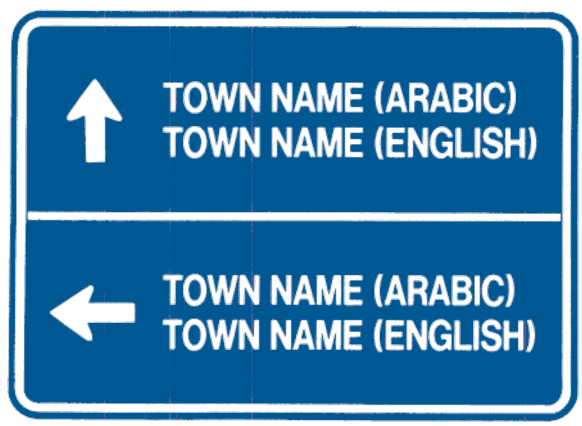


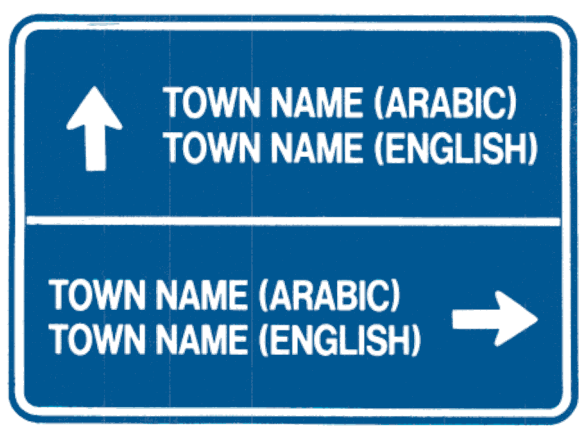







**See Sec. 2.04N for background color**

**Note:** *The three signs illustrated above may be combined into one sign.*

## F. Place Identification Signs

These signs are used to show the frontier between the Kingdom and another country or the boundary between two administrative divisions of the Kingdom. The signs are also used to designate built-up areas, wadis, mountain passes, and historical landmarks.




## G. Confirmatory Signs

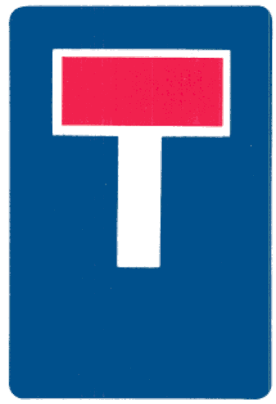
1. These signs confirm the direction of a road mainly at the exit point from a large built-up area or beyond the intersection with another numbered highway.

2. No more than three places can be identified. Distances also may be shown.

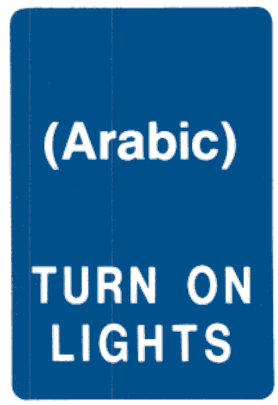



## H. Useful Information Signs

Useful Information signs provide general information which is not included in facilities signing; the parking series; traffic signal operation; and rest, recreational, and cultural areas signing.



No Through Road
**I 6-1**
600x900




Turn On Lights
**I 7-1**
600x900

## I. Facilities Signs (I 8)

Facilities signs provide information to the traveler on how to find services, both personal and for the vehicle. Service signing covers gas, food, lodging, repairs, first aid, and sickness needs.



Hospital
**I 8-1**
600x900



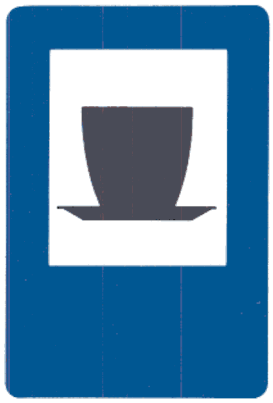
First Aid Station
**I 8-2**
600x900



Hotel
**I 8-3**
600x900



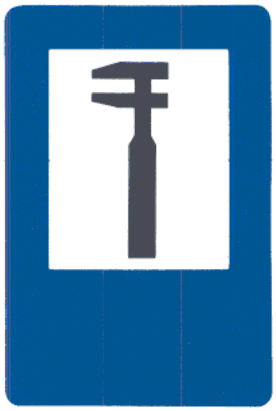
Restaurant
**I 8-4**
600x900



Refreshments
**I 8-5**
600x900



Gas
**I 8-6**
600x900



Mechanic
**I 8-7**
600x900



Telephone
**I 8-8**
600x900



Picnic Site
**I 8-9**
600x900



Camping Site
**I 8-10**
600x900

## J. Parking Signs (I 9)

These signs indicate where parking is available: on the street, off the street and any parking with special instructions.



Parking
**I 9-1**
600x900



Side Parking
**I 9-2**
600x900

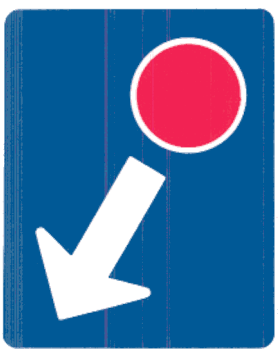


Parking With
Special Instructions
**I 9-3**
600x900

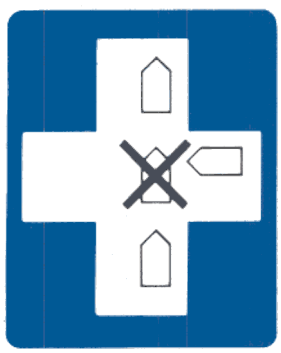
## K. Traffic Signal Signs (I 11)

Traffic Signal signs in this series are often desirable or necessary for instruction of pedestrians and drivers. Traffic Signal signs are used in several situations:

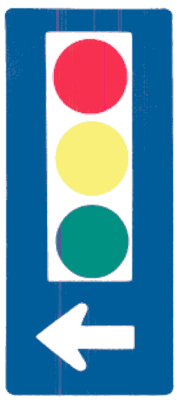
1. Indicate a stopping point. (Figure I 11-1)
2. Guard against blocking an intersection when waiting driver is waiting for a green signal. (Figure I 11-2)
3. Identify certain signals and indicate what the driver must do. (Figure I 11-3)
4. Instruct pedestrians to push button for signals to cross the street. (Figure I 11-4)



Stop Here
on Red
**I 11-1**
600x750



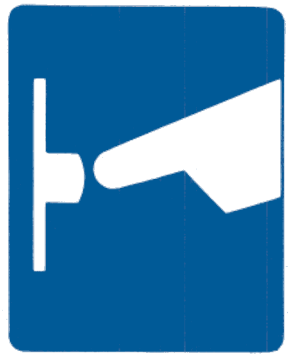
Do Not Block
Intersection
**I 11-2**
600x750



Left Turn
Signal
**I 11-3**
600x750



**I 11-3A**



Push Button for
Walk Signal
**I 11-4**
225x300

## L. Special Signs for Steep Grades (I 12)

1. This group of signs covers conditions where an escape ramp exists and where no escape ramp exists. Special Informative signs or signs in the Warning series shall be used to fit the conditions as outlined.

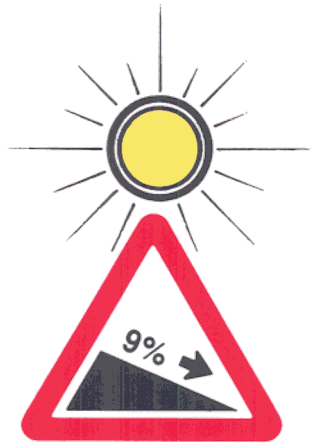
2. Runaway truck ramps are desirable for the safe deceleration and stopping of runaway vehicles on long, steep downgrades where installation is practical.

3. The Advance Warning signs to be used on the runaway truck ramps are to be located in advance of the gore area and at the entrance onto the escape ramp. The advance signing could begin at the summit in conjunction with a brake check turnoff or pullout area, if provided. As a minimum the advance signs should begin at 2 km in advance of the exit, a repeat sign at 1 km, and then, the exit direction sign at the gore.

4. Regulatory signs are to be placed in the general area of the exit to the ramp to keep vehicle drivers from using the escape area for parking. Signs containing the message or symbol, Runaway Vehicles Only and/or No Parking Any Time; and No Stopping Any Time, are to be used to prohibit attempted misuse of the ramp area.

5. The Informative sign that shall be used is a diagrammatic sign, which is designed for truckers. This large sign would be erected at a turnoff or pullout area at the summit so that the truck driver could study the alignment and would also be advised, in Arabic, of the percentage of descending grade, the length of the descent, and the emphasis of the need to gear down.

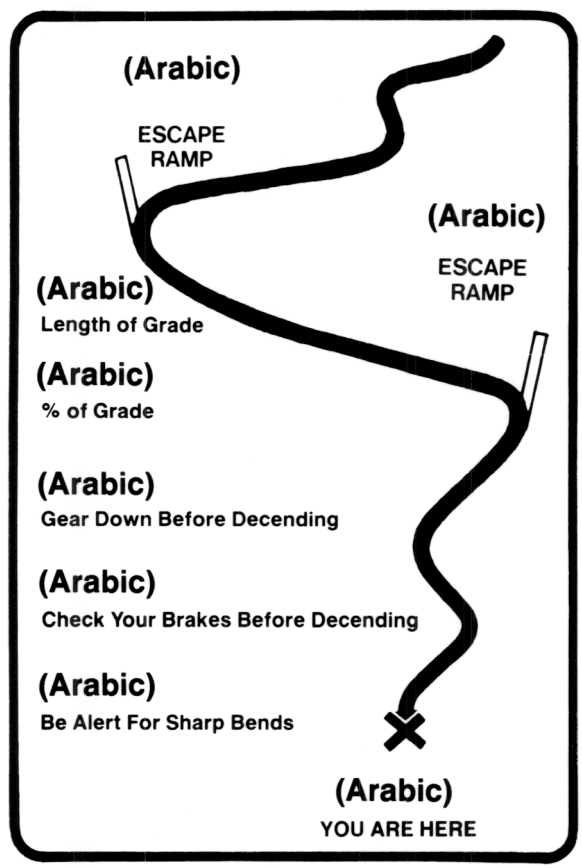
6. Examples of typical sequence signing where an escape ramp exists are as follows (W 2):




Descent
**W 2-2**
1100x1100




Descent
**W 2-1**
1100x1100




Steep Grade
I 12

## M. Other Symbols

Other symbols as can be used are:



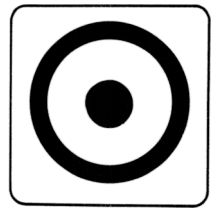
**Airport (I 12-1)**

This symbol gives information of the direction to an airport.

Normally the symbol is used without the name of the airport, but if there is more than one airport in the area, the names may be used in combination with the symbols.

The symbol shall be turned with the nose of the plane pointing at the direction to follow in order to reach the airport.

The color of the symbol shall be black on white background.



**City Center (I 12-2)**

This symbol gives information of the direction to a City Center.

The symbol is black on white background and in combination with the text "City Center".



**Industrial Area (I 12-3)**

This symbol gives information of the direction to an Industrial Area.

The symbol is black on a white background and shall be in combination with the name of the industrial area or with the word Industrial Area.

## 2.06 Informative Signs—Expressways and Arterial Highways

### A. Scope of Standards for Informative Signs on Expressways and Arterial Highways

1. Since many geometric design variables are found in existing expressways and arterial highways, a signing concept commensurate with prevailing conditions must be the prime consideration. Whenever possible, expressway and arterial highway signing should be planned at the design stage.

2. Standards for Informative signs prescribed shall apply to any expressway or arterial highway as applicable, unless specifically excepted elsewhere. These standards provide a uniform and effective system of highway signing which is adequate for high-volume, high-speed motor vehicle traffic on all modern expressways and arterial highways.

### B. General Characteristics of Signing

1. Expressway and arterial highway signing should always be considered and developed as a planned system of installations. Engineering study will be necessary for the proper solution of the problems of many individual locations. In addition, consideration of an entire route is necessary.

2. Drivers should be presented with consistent signing on the approaches to interchanges.

3. The standards prescribed for sign letter size are the same for both urban and rural areas. Space is often at a premium on urban sections, but the typical traffic pattern is also more complex for the driver to negotiate, and large easy-to-read lettering is just as necessary as on rural highways. The use of two languages on each panel on the sign board requires that destinations shall appear in Arabic on the top line and in English on the bottom line. This will require larger sign boards to achieve this desirable easy-to-read letter size.

### C. Size of Lettering and Legend Spacing

1. The prescribed numeral and letter sizes according to highway classification and component of sign legend appear in the Appendix.

2. All names of places, streets, and highways on expressway and arterial highways' Informative signs shall be composed of Arabic style letter and number, as designated by the Ministry of Communications. On signs with dual language messages, the letter size of the English legend shall be approximately two-thirds of the Arabic letter size. The Arabic letter sizes will be determined first and the English sizes will be adapted to the Arabic sizes.

### D. Arrows for Interchange Informative Signs

1. On exit direction signs (overhead or ground mounted), arrows to indicate a movement ahead or slightly right or left shall be upward slanting and located on the appropriate side of the sign.

2. Downward-pointing arrows are lane assignment arrows and shall be used only on overhead guide signs to prescribe the use of specific lanes for traffic bound for a destination or route that can be reached only by being in the lane(s) designated. A separate arrow should be centered over each lane for the signed destination or route.

### E. Interchange Classification

For expressway and arterial highway signing purposes, interchanges are classified as major and minor.

1. Major interchanges are subdivided into two categories:

   a. Interchanges with other expressway or arterial highways.

   b. Interchanges, other than those named in (a), with high-volume, multi-lane highways; and major rural routes where the traffic is heavy or includes many drivers unfamiliar with the area.

2. Minor interchanges include those where traffic is local and light, such as the interchanges with land service access roads.

### F. Designation of Destinations

1. "Control" destination points along the route must always be selected and then shown on the signs as the next major destination point. Destination legends should provide the drivers the best orientation possible. Continuity in successive sign messages and consistency with available map information is essential.

2. Selecting major destinations along the expressway or arterial route is important to the quality of service provided by these routes. Control destinations should be used in advance of the following:

   a. Interchanges between expressway and arterial routes.

   b. Separation points of overlapping expressway or arterial highway routes.

   c. On intersecting routes to guide traffic

entering the expressway or arterial highway route.

d. On "Pull Thru" signs (for a destination beyond an intersection or interchange).

e. On the bottom line of post interchange distance signs.

3. Post-interchange distance signs may be installed when additional information is needed beyond the interchange. These signs shall consist of two-or three-line messages carrying the names of significant destinations and distances to those points.

**G. Routing to a Given Destination**

A route diverging from an expressway or arterial highway route should not have any of the same destination names which are shown at that point for the expressway or arterial highway route. At any decision point, a given destination shall be indicated on or via only one route.

**H. Overhead Sign Installations**

1. Overhead signs have an application in lieu of or as an adjunct to ground signs (See Section 2.01).

2. Overcrossing structures can often serve for the support of overhead signs and may be the only practical location providing adequate viewing distance.

3. Overhead signs shall have a vertical clearance of not less than 5.5 m to the sign, light fixture, or sign bridge over the entire width of the pavement and shoulders.

4. Overhead sign installations shall be illuminated where possible, especially on highways with roadway lighting or high traffic volume. On expressways and arterial highways, all overhead signs not independently illuminated shall be reflectorized. In some instances the highway may be too remote from a power source to permit illumination. The illumination chosen should provide effective and reasonably uniform illumination of the sign face and message. Solar powered lighting might be used at remote locations. Where internal illumination is used, the sign colors shall appear essentially the same by night and day. When a sign is internally illuminated, the requirements for reflectivity do not apply.

5. Overhead reflectorized panels may contain either white reflective cutout letters and numerals placed on a blue reflectorized background or white embossed letters and numerals with white reflex reflectors on an opaque blue background.

**I. Number of Signs at an Overhead Installation**

1. When overhead signs are warranted, it is desirable to limit the number of signs at these locations to only those essential in communicating pertinent destination information to the motorist. Exit Direction signs for a single exit and the Advance Direction Informative signs will only need one panel with one or two destinations. The distance between successive signs should be considerably greater than the minimum where feasible allowing enough time for motorists to easily read them.

2. At other overhead locations it may be necessary to erect more than one sign to inform motorists of a multiple exit condition at an interchange. Where complex geometrics occur, it may be necessary to provide additional panels with confirmatory messages to guide the motorist properly. In no case should more than three signs or panels be displayed at any one location.

**J. Signs for Intersections at Grade**

Whenever there are intersections at grade within the limits of a minor highway, signs should be of a size compatible with the design of other signing on the arterial highway. Advance Direction Informative signs for intersections at grade may take the form of diagrammatic layouts depicting the geometrics of the intersection along with essential directional information.

**K. Interchange Numbering**

1. Interchange exit numbering along expressways or arterials provide valuable orientation for the driver and shall be used in signing each interchange exit. The general plan for numbering interchange exits is shown in Figs. 2-11 through 2-13.

2. Interchange exit numbers shall be shown with each Advance Direction Informative sign, the Exit Direction sign and the Gore sign. They may be used with supplemental Informative signs. The exit number is to be displayed on a separate panel at the top of the major sign.

3. Where numbered expressway or arterial routes overlap, continuity of interchange numbering shall be established for only one of the routes.

4. The exit number legend shall be white letters and numerals on a blue background.



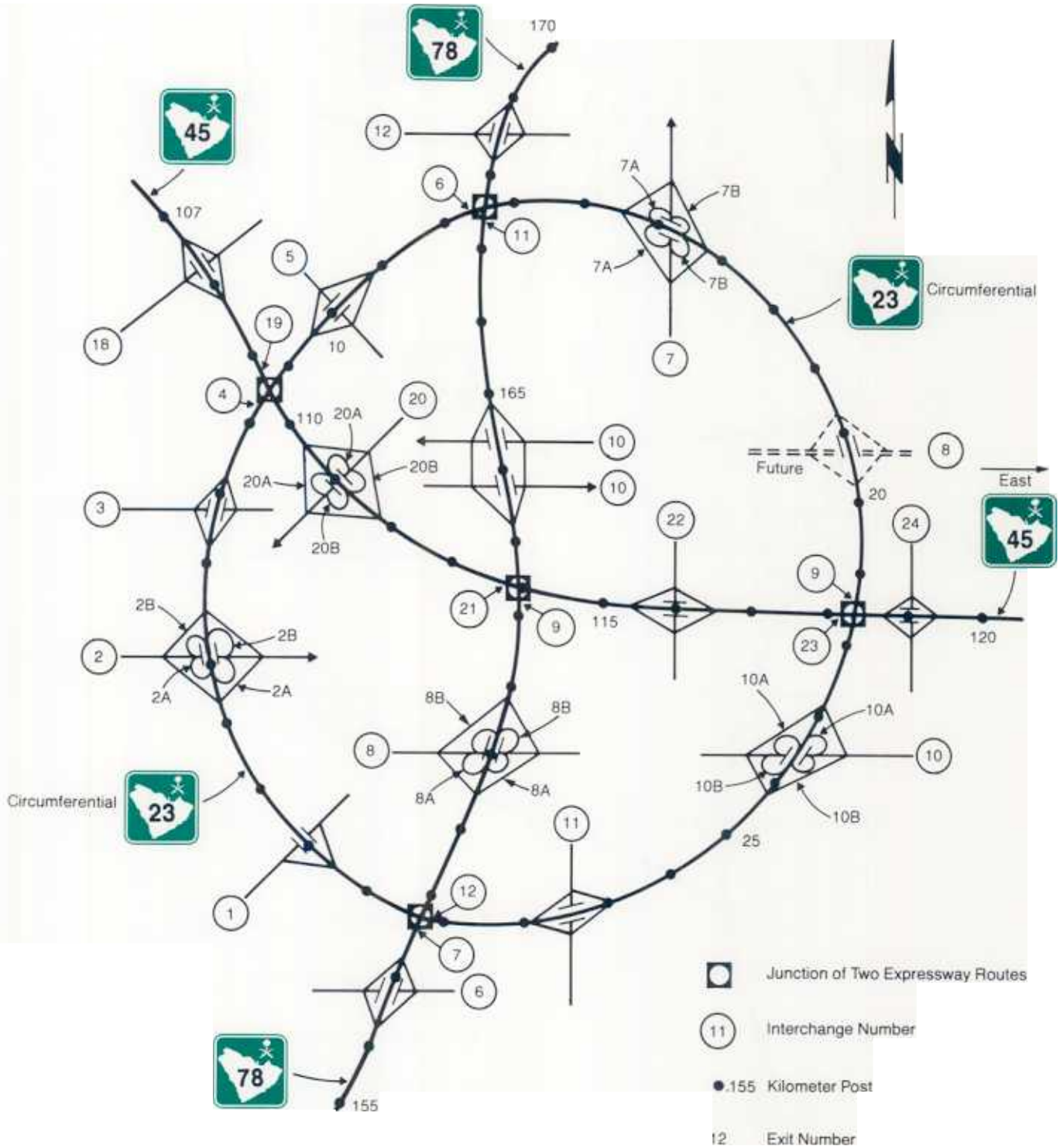



**Figure 2-11**
**Typical interchange numbering for mainline and ring routes.**

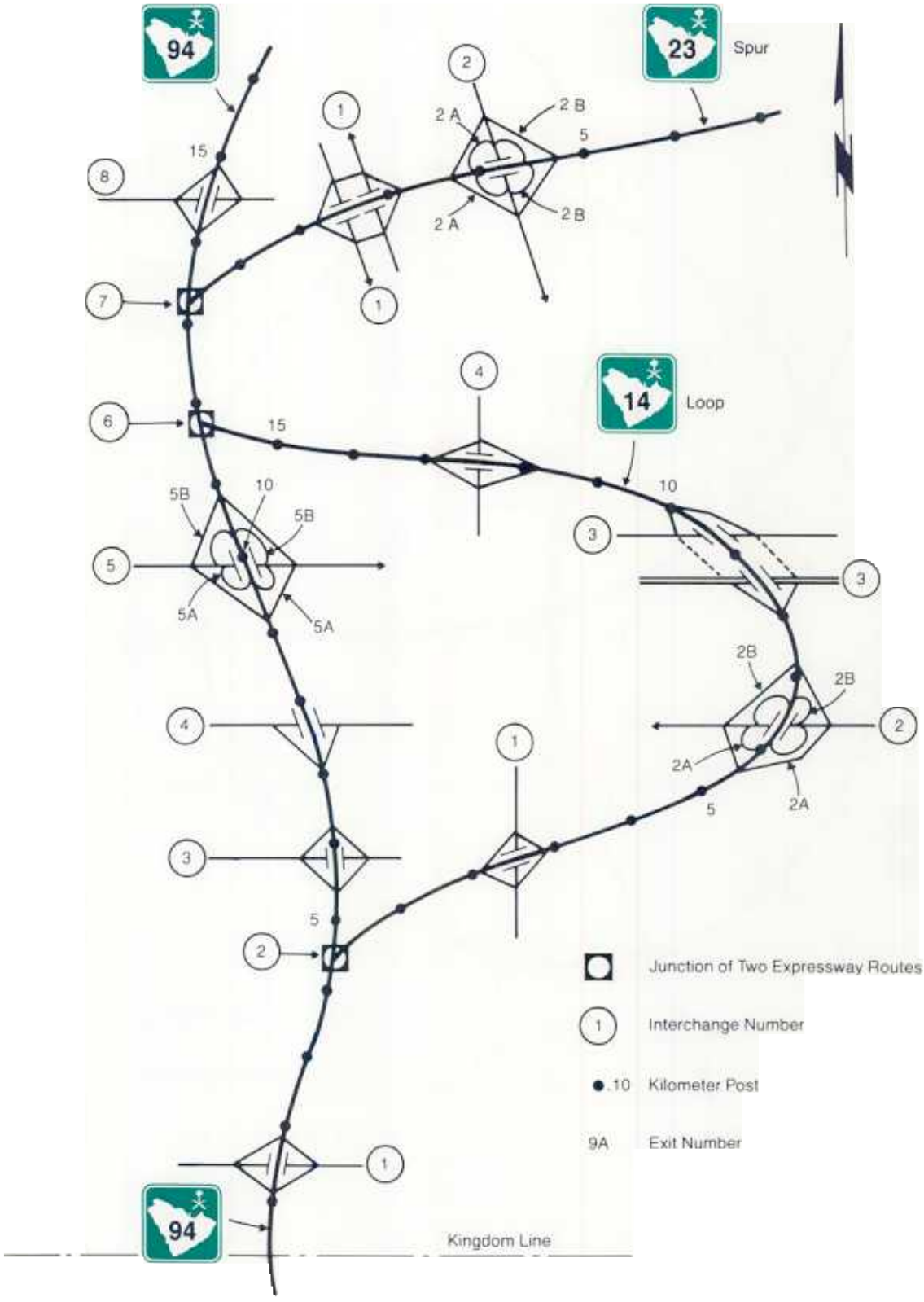



**Figure 2-12**
**Typical interchange numbering for mainline loop and spur routes.**

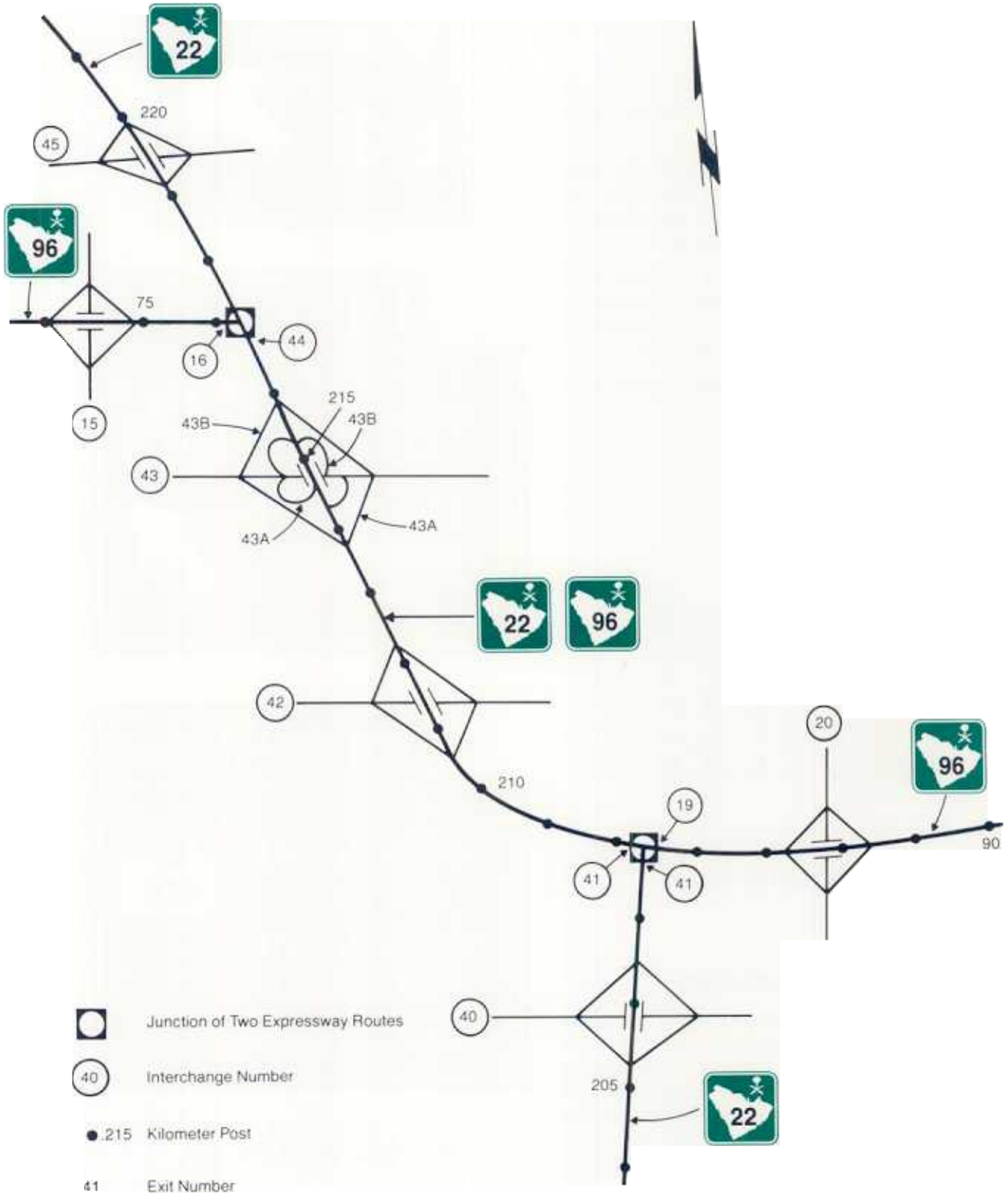



**Figure 2-13**
**Typical interchange numbering where expressway routes overlap.**

## L. Kilometer Posting

1. Kilometer signs will be installed on all classes of highways. Numbering will run from west to east and from south to north.

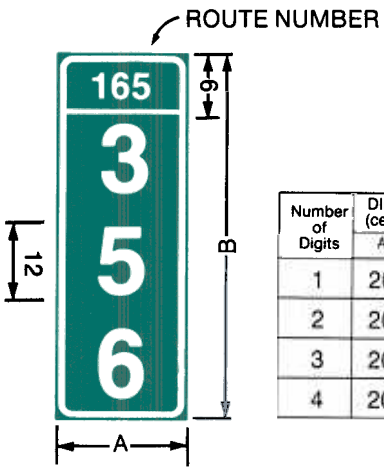
2. Kilometer posting also will be used on ring roads.

3. Kilometer posts shall be placed at exact kilometer stations measured along the center line.

4. On two-lane roads, a kilometer post shall be placed along the right shoulder only but with ascending-descending kilometers on either side, whichever is appropriate.

5. On multi-lane highways, a kilometer post shall be placed along both outside shoulders but with ascending or descending kilometers, whichever is appropriate.

6. The panels shall be located in line with the delineator posts.




| Number of Digits | DIMENSION (centimeters) A | DIMENSION (centimeters) B | Area Sq. Ft. |
|---|---|---|---|
| 1 | 20 | 60 | 0.12 |
| 2 | 20 | 60 | 0.12 |
| 3 | 20 | 60 | 0.12 |
| 4 | 20 | 80 | 0.16 |

KILOMETER MARKERS

## M. Interchange Informative Signs

1. Interchange Informative signs, in proper sequence, give all necessary route and destination information through interchanges (Fig. 2-24 through Fig. 2-35). New destination information should not be introduced into the major sign sequence for an interchange nor should information be dropped.

2. Informative signs placed in advance of an interchange deceleration lane should be spaced at least 250 m apart. This minimum spacing can be reduced, where necessary, to 200 m if operating speeds are 65 km/h or less.




**Figure 2-14**
**Interchange informative signs.**

## N. Advance Direction Signs

1. The Advance Direction sign gives notice well in advance of the exit point of the principal destinations served by the next interchange and the distance to that interchange. Where there is less than 2 km between interchanges, interchange sequence series signs should be used in lieu of the Advance Direction sign for the affected interchanges. (See Figure 2-14).

2. For major interchanges, two Advance Direction signs shall be used. The recommended location for their placement is approximately 1 km and 2 km from the theoretical gore. Use of these signs is shown in Figure 2-24.

For minor interchanges, one Advance Direction sign shall be used. The recommended location for placement is approximately 1 km from the theoretical gore. With both the major and minor types, a shifting of advance distances may be necessary to fit a specific condition.




**Figure 2-15**
**Supplemental direction sign.**

3. Supplemental direction signs (Figure 2-15) may be erected between major Advance Direction signs. These signs would show destinations, accessible from an interchange, which are not shown on the standard sequence signing. The Interchange number should be listed on each sign. (See Figure 2-24). Supplemental signing can reduce the effectiveness of other more important informative signing because of the possibility of overloading the driver's capacity to obtain and retain information transmitted.

## O. Exit Direction Signs

1. The Exit Direction sign repeats the route and destination information which was shown on the Advance Informative sign(s) for the next exit.

2. Exit Direction signs shall be used at all interchanges.

3. The sign shall carry the exit number, route number, cardinal direction and destination with an appropriate upward slanting arrow.




**Figure 2-16**
**Exit direction sign.**

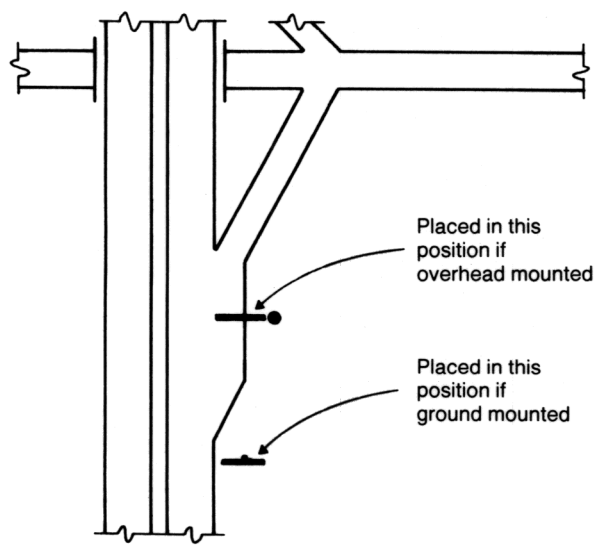



**Figure 2-17**
**Placement of exit direction sign.**

## P. Gore Signs

1. The Gore sign indicates the place of departure from the main-line roadway. There shall be consistent application of this type of sign.

2. The Gore sign shall be located in the area between the main roadway and the ramp at all exits.

3. The sign shall carry the word EXIT with an interchange number and an appropriate upward slanting arrow, which is aligned to approximate the angle of departure.




**Figure 2-18**
**Gore sign.**

## Q. Exit Only Panel

1. Major Informative signs for all lane drops (where the lane exits rather than continuing beyond the exit) at interchanges shall be mounted overhead. The Exit Only panel(s) shall be used on the Advance Direction signs and the Exit Direction signs for all interchange lane drops at which the through route continues ahead on the main-line. Advance Informative signs further than 1 km from the interchange shall contain the distance message. Advance Informative signs for lane drops within 1 km of the interchange shall not contain the distance message. Exit Only panels shall have black legend on a yellow reflectorized background.

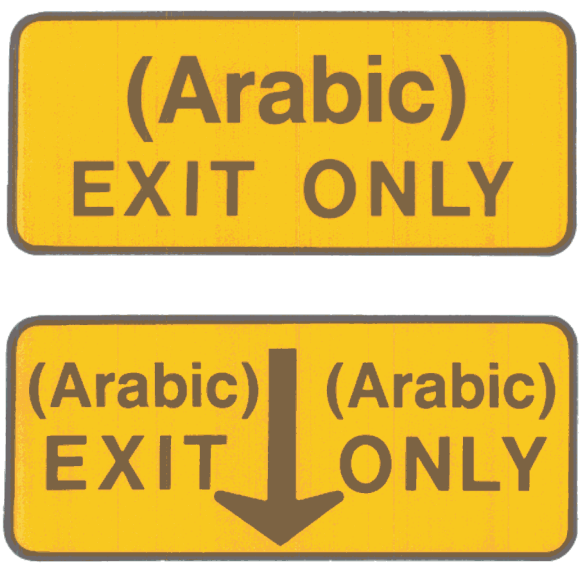



**Figure 2-19**
**EXIT ONLY panels.**

2. Wherever the through route exits on a lane which does not continue on the main-line, diagrammatic signs should be used without the Exit Only panel.

## R. Sign Spreading and Pull Thru Signs

1. Sign spreading is a concept in which major overhead Informative signs are so spaced that the ability of motorists to comprehend the information is not overloaded by having too many signs at one location. Where overhead signing is used, sign spreading should be used at all single exit interchanges and to the extent possible at multi-exit interchanges.

2. Sign spreading is accomplished as follows:

   a. The Exit Direction sign is the only overhead sign used in the vicinity of the gore. It is located over the roadway near the theoretical gore and may be on a sign bridge or cantilever structure over the exiting lane.

   b. The Advance Informative sign for the next interchange exit should be placed on the interchange overcrossing structure when the crossroad goes over the main-line. If the main-line goes over the cross-road, the sign should be placed on a cantilever over the lane or it may be ground mounted behind the guardrail leading to the bridge rail.

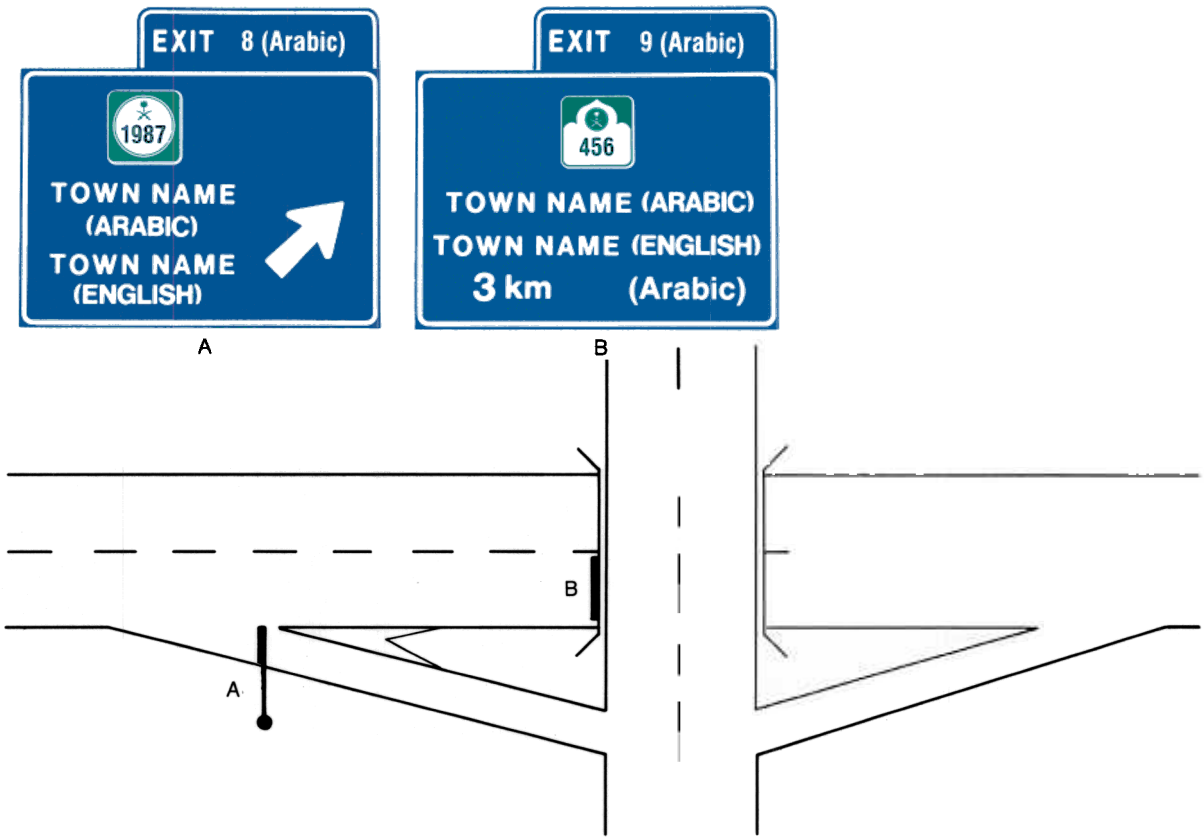



**Figure 2-20**
**Spreading of informative sign information.**

## S. Diagrammatic Signs

1. The use of diagrammatic signs in advance of intersections and interchanges have been shown to be superior to conventional signs for some applications. These signs are Informative signs which show a graphic view of the exit arrangement in relationship to the main highway. Diagrammatic signs should be used for several situations:

a. Advance guide sign location for left exits and for some interchanges between expressways.

b. Splits having off-route movements to the left.

c. Optional lane splits.

d. Exits with route discontinuity.

e. With left exit lane drops.

f. Two-lane exits with an optional lane.

g. Diagrammatic signs shall not be used at cloverleaf interchanges. Conventional signing is superior in this instance.

2. Diagrammatic signs shall be designed in accordance with the following criteria:

a. The graphic legend shall be of a plan view showing a simplified off-ramp arrangement.

b. Only one destination may be shown for each arrowhead, with a maximum of two destinations per sign.

c. The shaft for the exit ramp movement should be shorter than but not separated from the through movement graphic.

d. Arrow shafts should contain lane lines where appropriate.

e. Destinations, in Arabic and English, should be clearly related to the arrowhead.

f. A cardinal direction plaque may be used if desirable. It should generally be placed adjacent to the destination.




**Figure 2-21**
**Diagrammatic sign.**

## T. Rest Areas Signs

1. On the approach to rest areas, an Advance Direction sign shall be placed 2 km or 3 km in advance of the rest area. Between the advance Informative sign and the gore of the rest area exit, there may be a sign reading REST AREA, which shall carry either an arrow or the words NEXT RIGHT as part of the message.

2. At the rest area exit gore, there shall be a sign with a message REST AREA together with an arrow indicating the proper turn.

3. The word messages are to be in Arabic and English with the Arabic appearing on the top.




**Figure 2-22**
**Expressway rest area signs.**

## U. Recreational and Cultural Interest Area Signs

An example of signing for Recreational and Cultural Interest Areas is as follows:

1. Recreational and cultural interests are attractions or traffic generators, some of which are open to the general public for various purposes. Recreation areas are provided to refresh the body or mind. Cultural areas are provided for the training and refining of the mind and emotions.

2. Where recreational or cultural interest areas are a significant destination on a numbered highway route, special signs shall be posted for such areas. This shall be done where the access road to the interest area intersects the highway. The shape of the signs shall be rectangular, and the colors shall be white message on a brown background. The name of the area shall be in Arabic and English.

3. If the interest area is a major traffic generator, then it will be necessary to install an advance sign some distance ahead of the actual turnoff point. This sign will alert drivers to determine if they want to visit the interest area.




**Figure 2-23**
**Recreational and cultural interest area sign.**

## V. Typical Interchange Signing Applications

In the following figures, typical sign installations are illustrated. The caption under each illustration describes the signing function as follows:

1. Typical advance signing for single-exit major interchanges (Fig. 2-24).
2. Minor interchange (Fig. 2-25).
3. Diamond interchange (Fig. 2-26).
4. Urban diamond interchange (Fig. 2-27).
5. Partial cloverleaf interchange (Fig. 2-28).
6. Cloverleaf interchange (Fig. 2-29).
7. Series of closely spaced interchanges using sequence signs and sign spreading (Fig. 2-30).
8. Optional lane split (NO overlapping routes), (Fig. 2-31).
9. EXIT ONLY on right (right-hand interchange lane drop), (Fig. 2-32).
10. EXIT ONLY on left with diagrammatic (left-hand interchange lane drop), (Fig. 2-33).
11. Two-lane exit with optional lane (Fig. 2-34).
12. Two-lane exit with optional lane and route discontinuity (Fig. 2-35).
13. Split without optional lane having off route to left (Fig. 2-36).
14. Typical direction signs (Fig. 2-37 and Fig. 2-38).

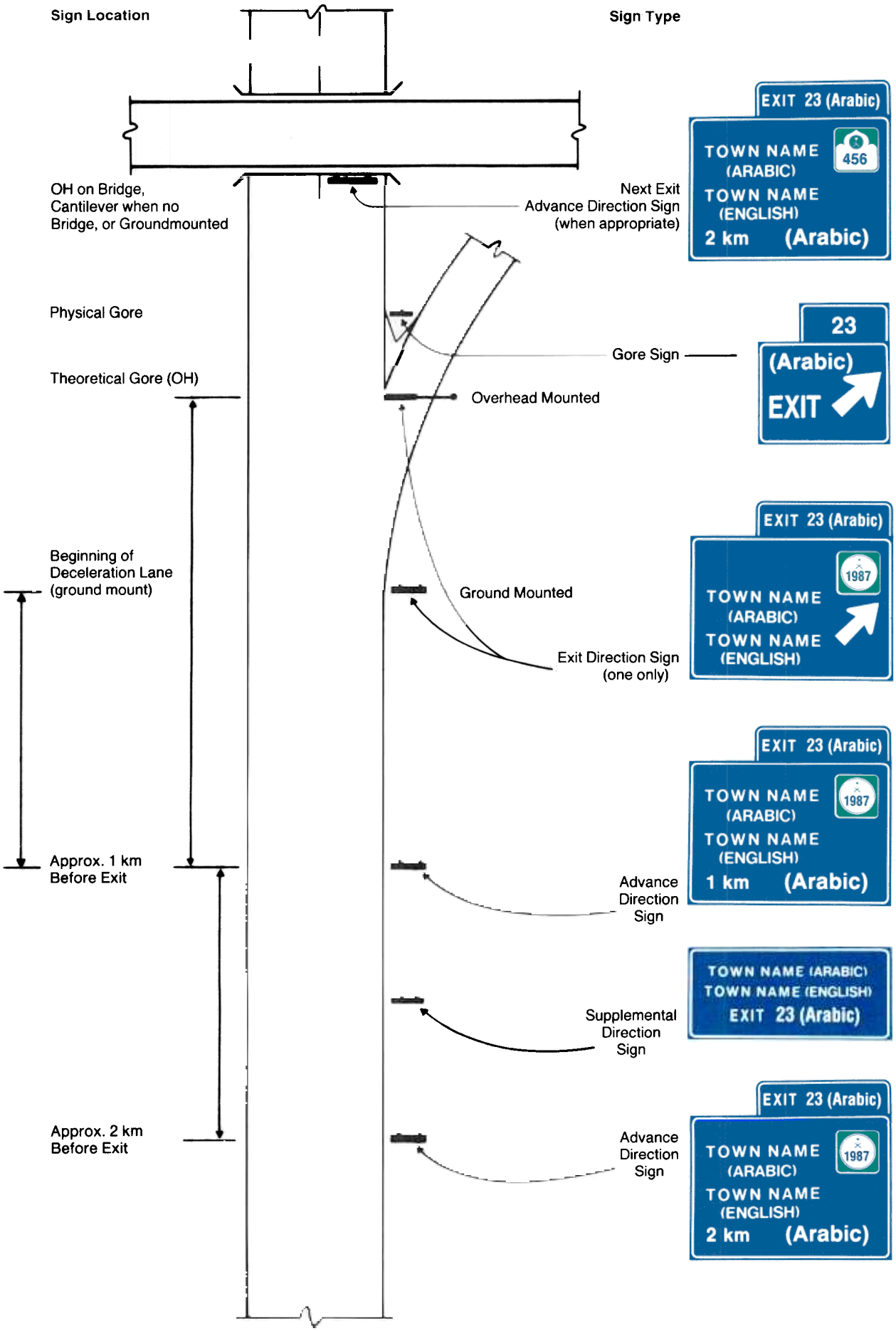



**Figure 2-24**
**Typical advance signing for single-exit major interchange.**

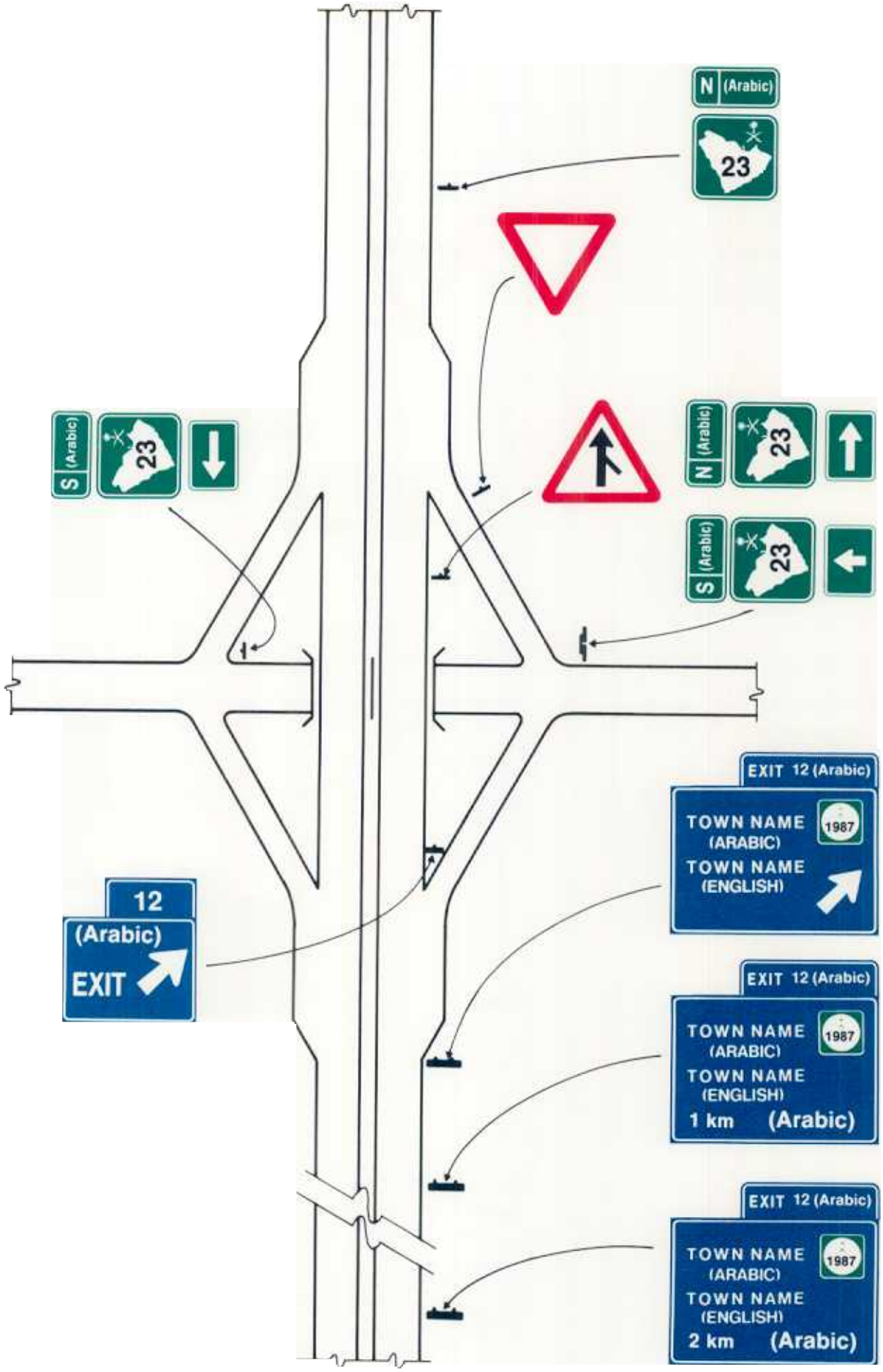



Figure 2-25
Minor interchange.

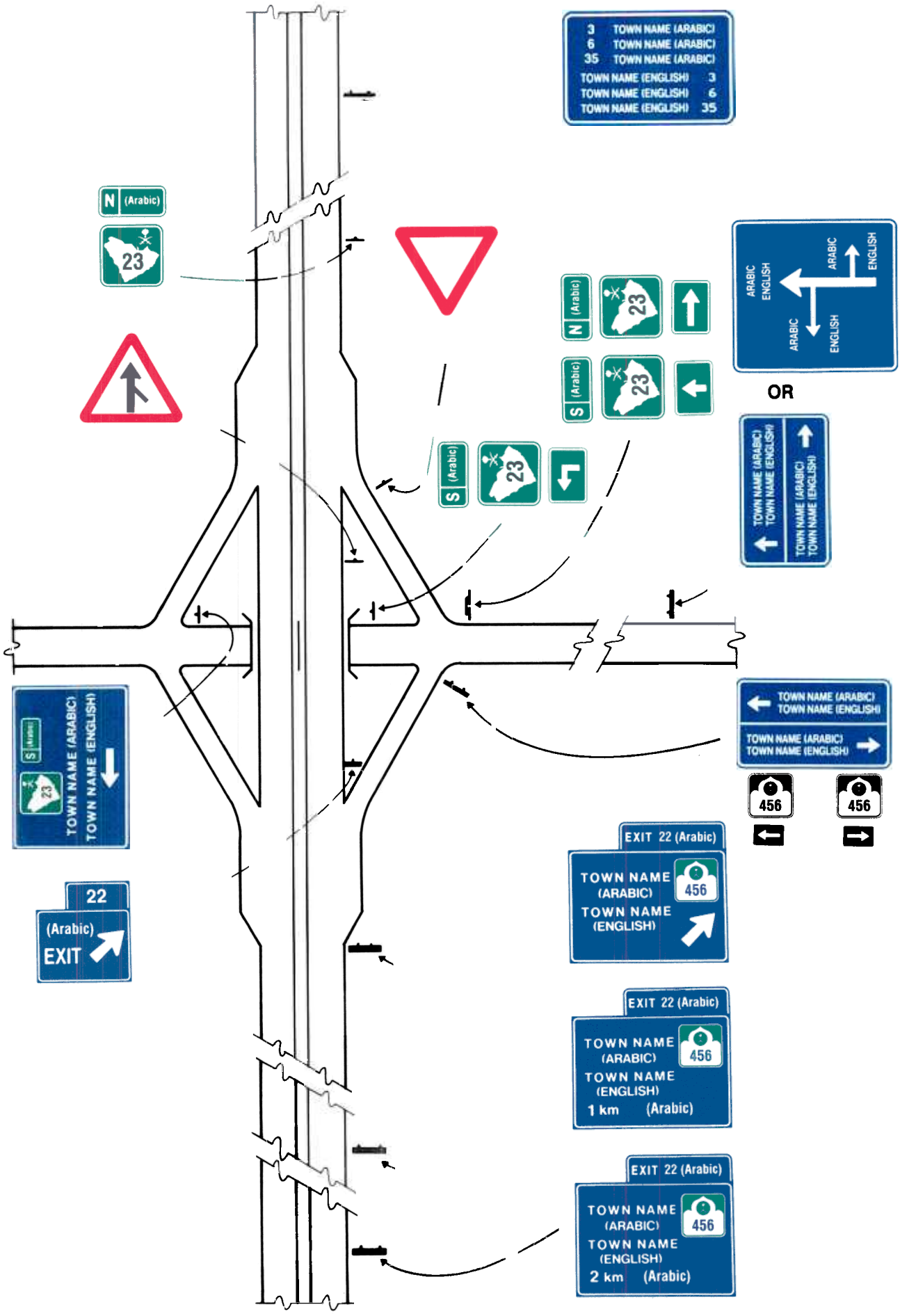
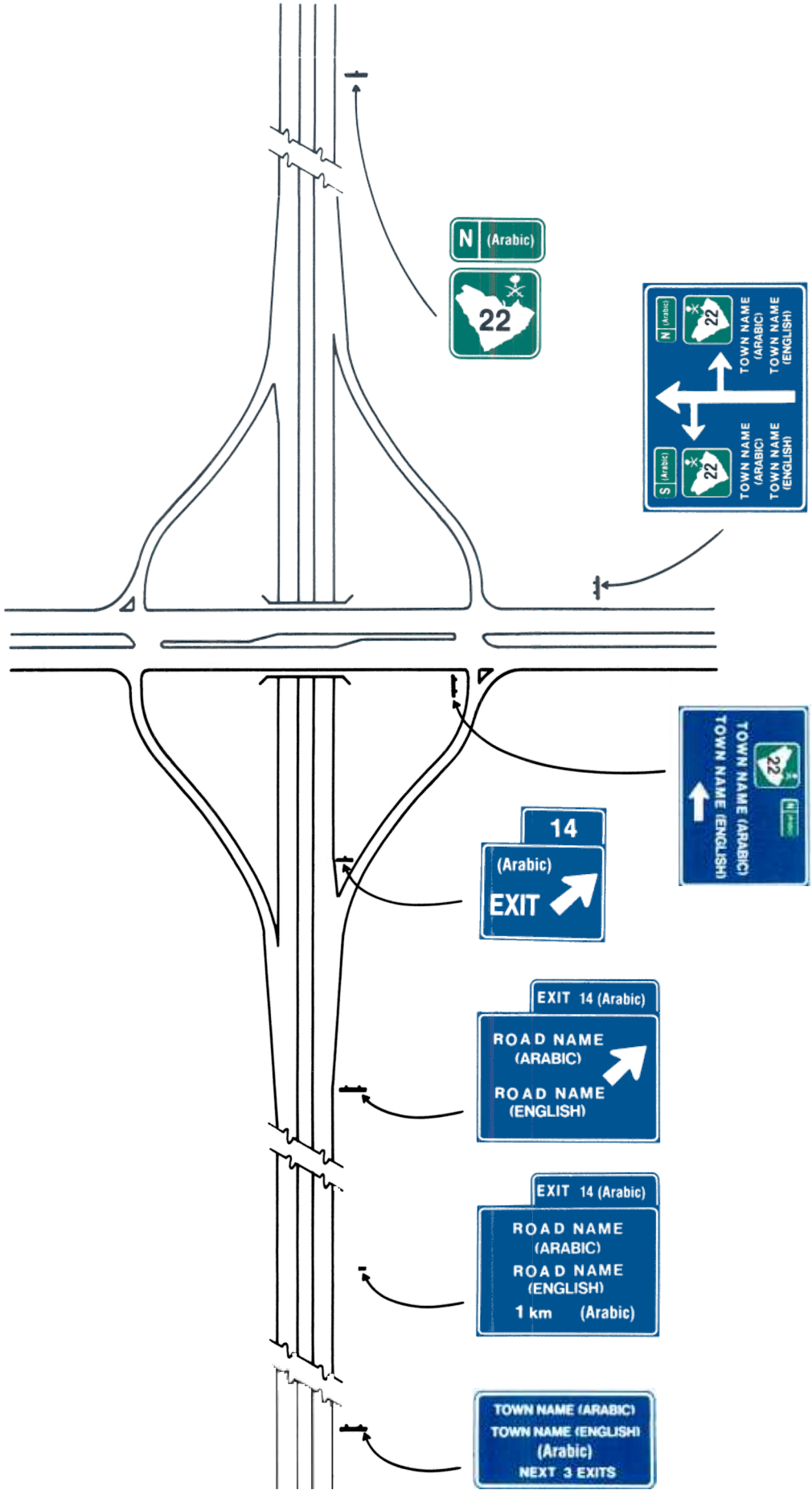
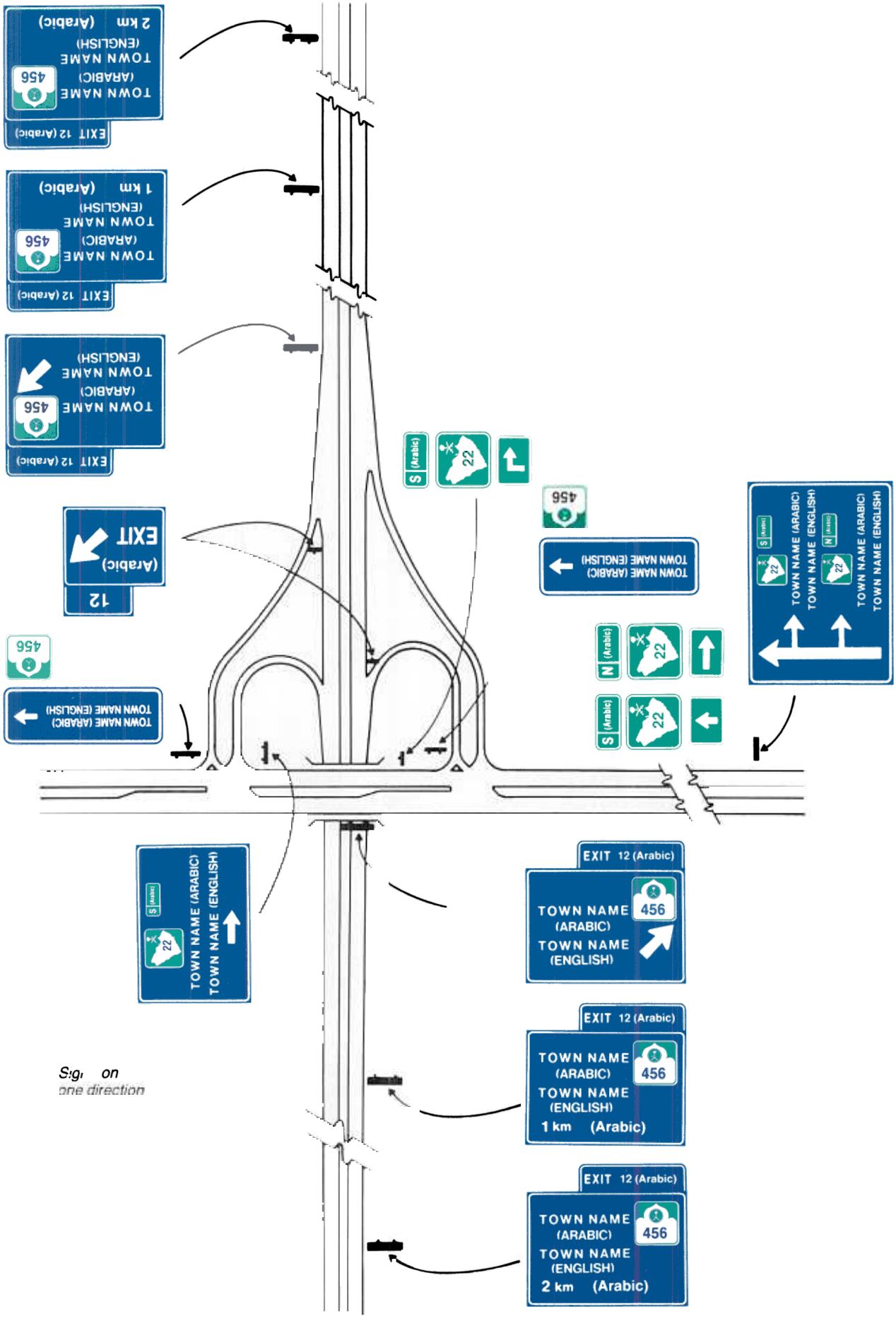



**Figure 2-26**
**Diamond interchange.**




Figur 27
Diamond interchange




Sig on
one direction

gu 28

Part al eaf in ha ge.

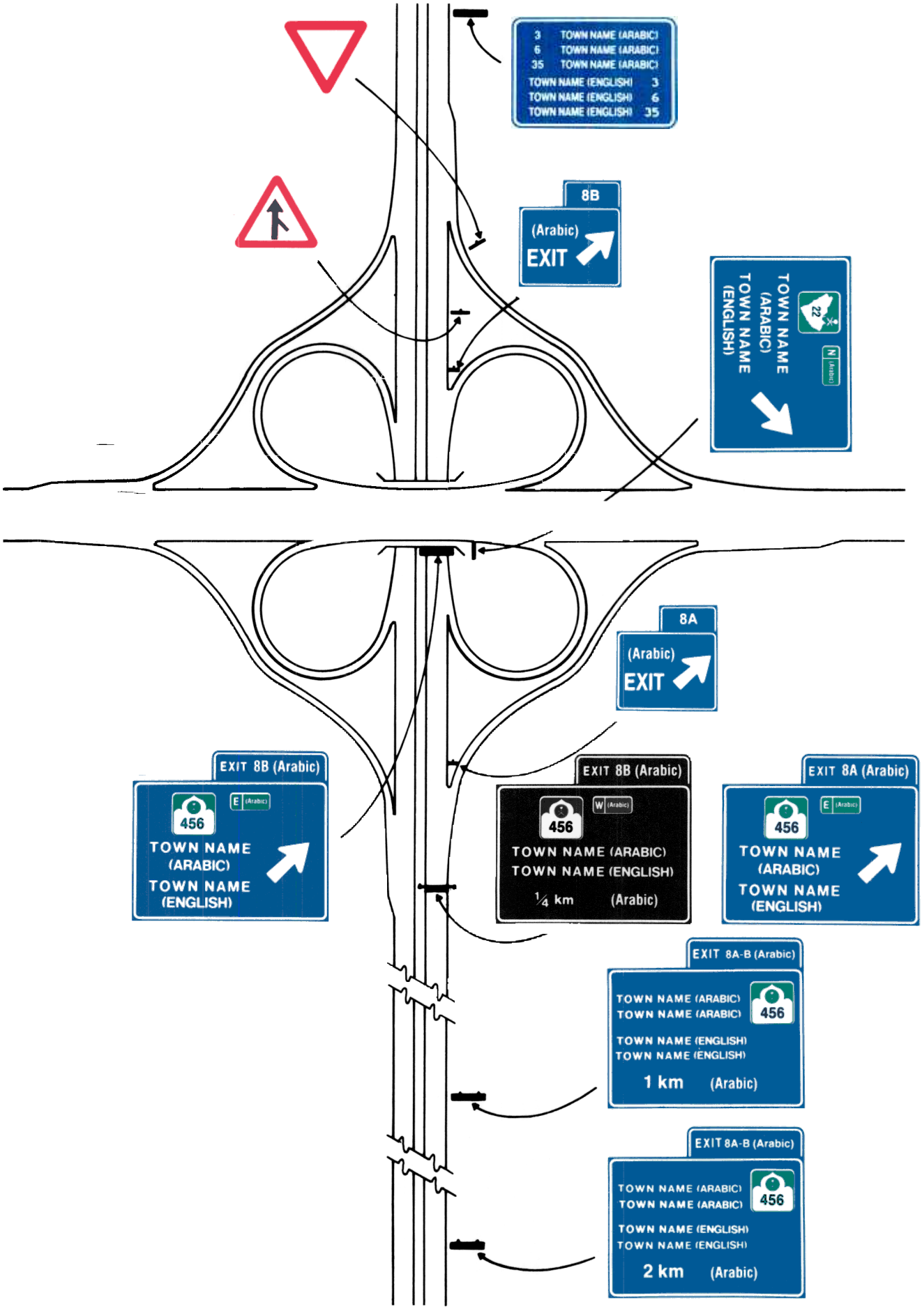



**Figure 2-29**
**Cloverleaf interchange.**

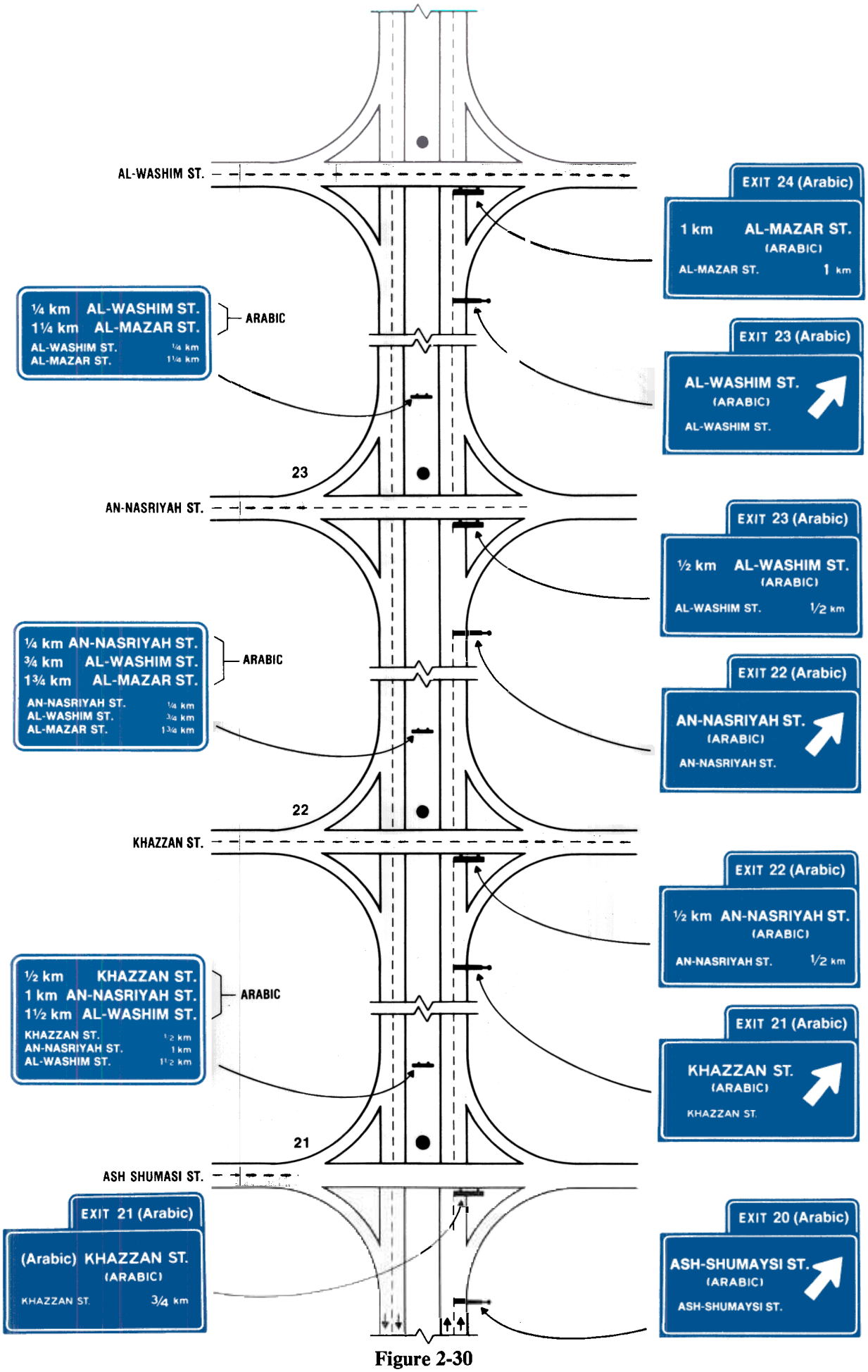



**Figure 2-30**
**Series of closely spaced interchanges using sequence signs and sign spreading.**

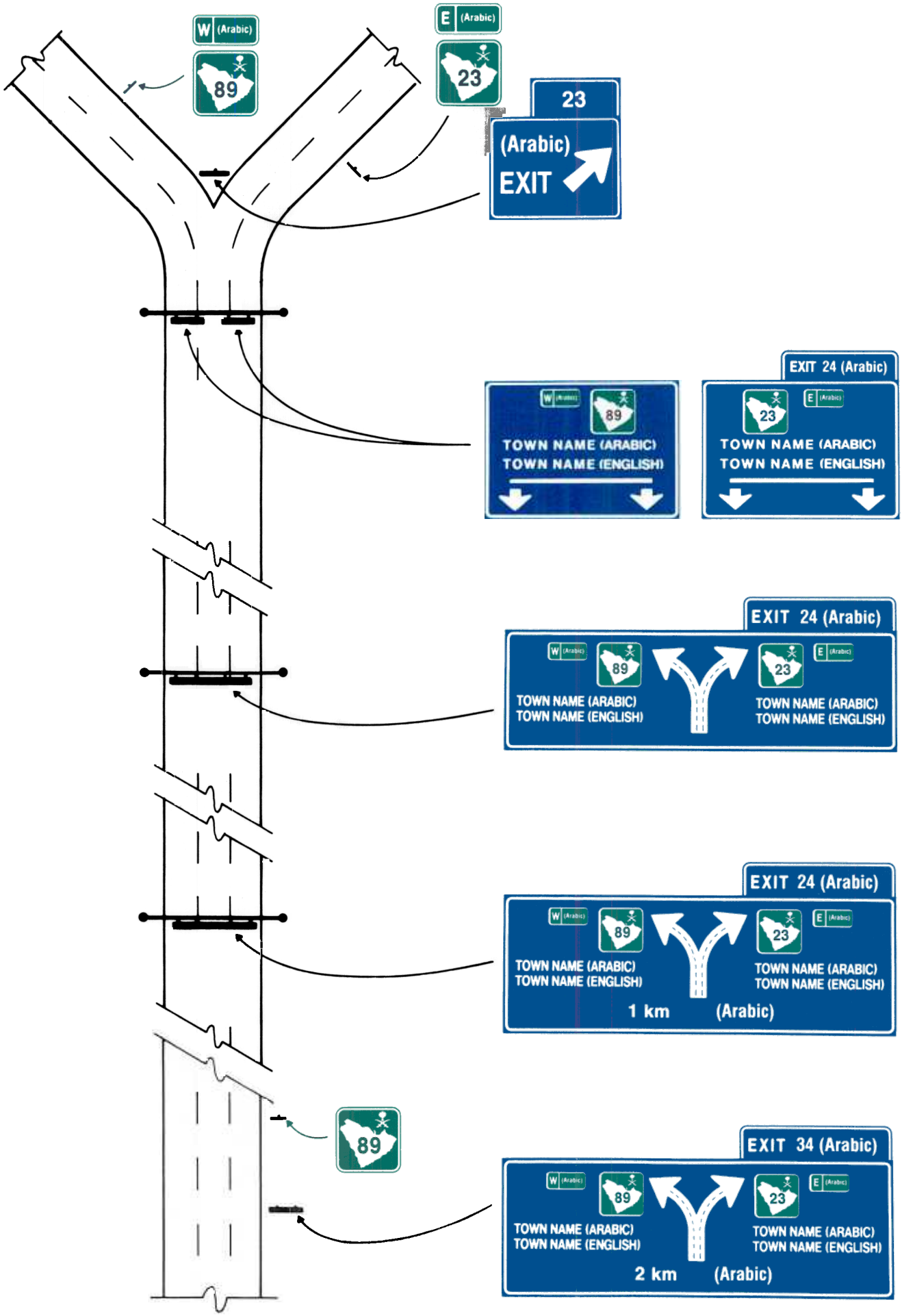



**Figure 2-31**
**Optional lane split (no overlapping routes).**

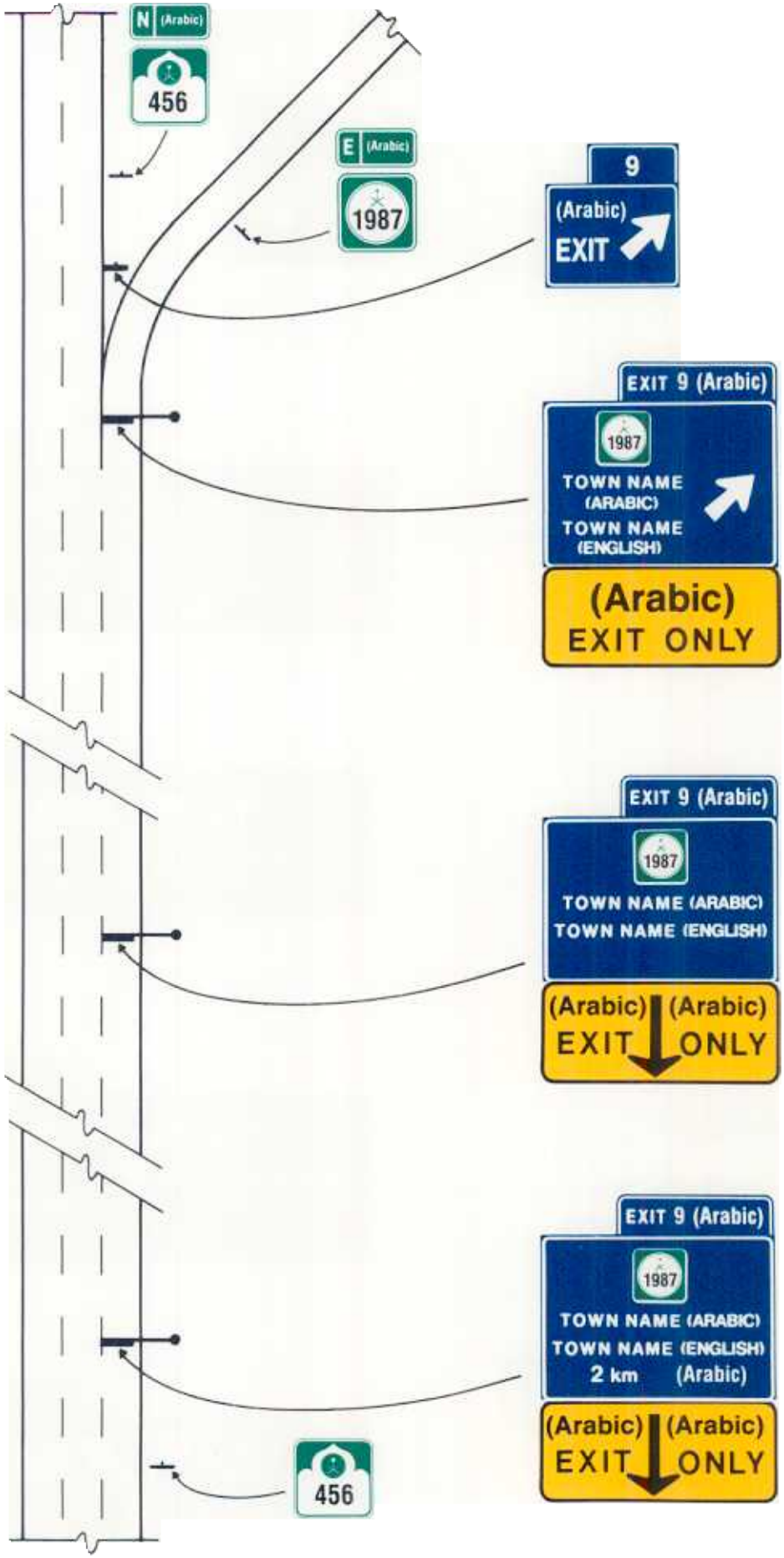



**Figure 2-32**
**EXIT ONLY on right (right-hand interchange lane drop).**

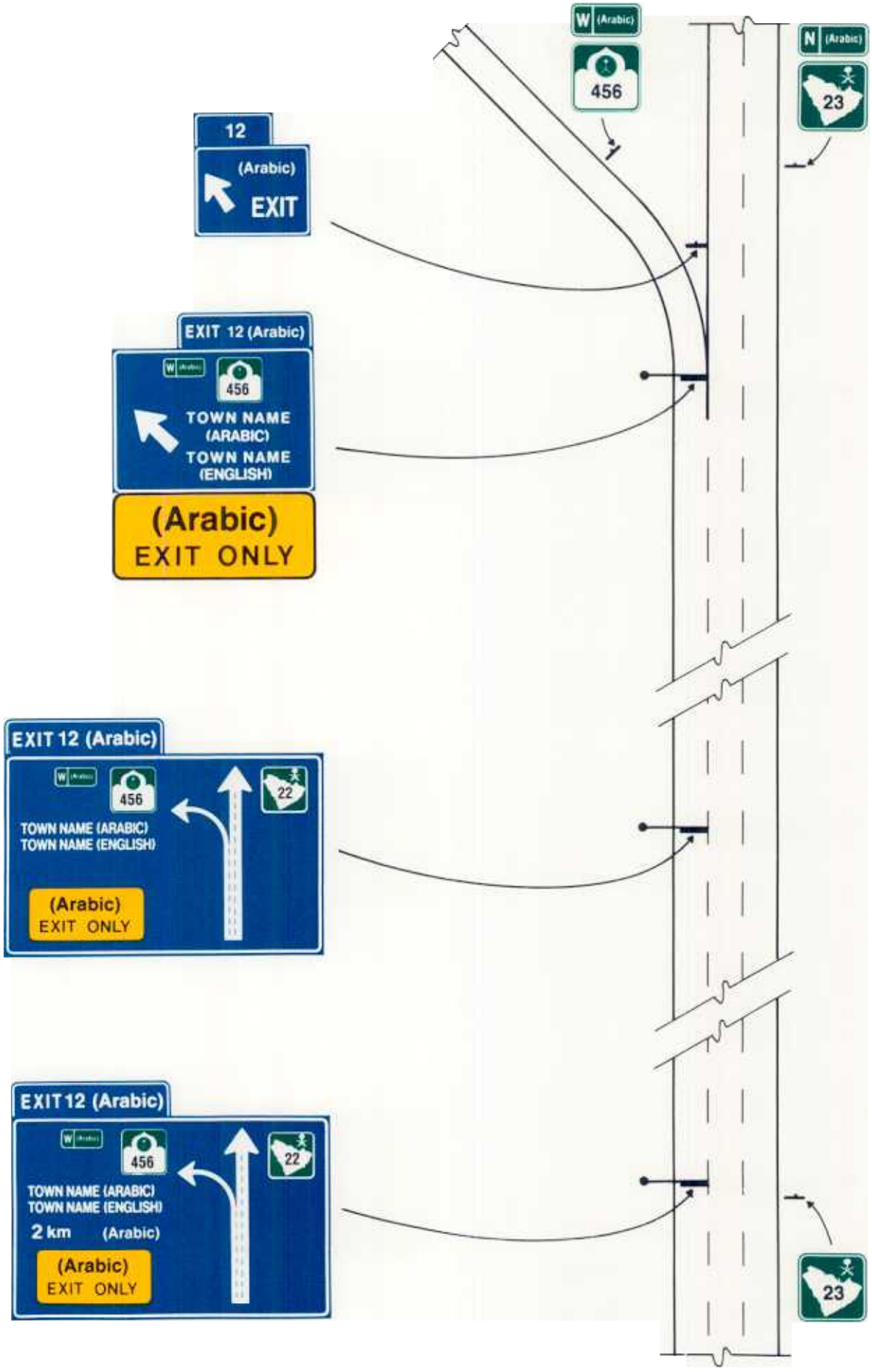



**Figure 2-33**
**EXIT ONLY on left with diagrammatic (left-hand interchange lane drop).**

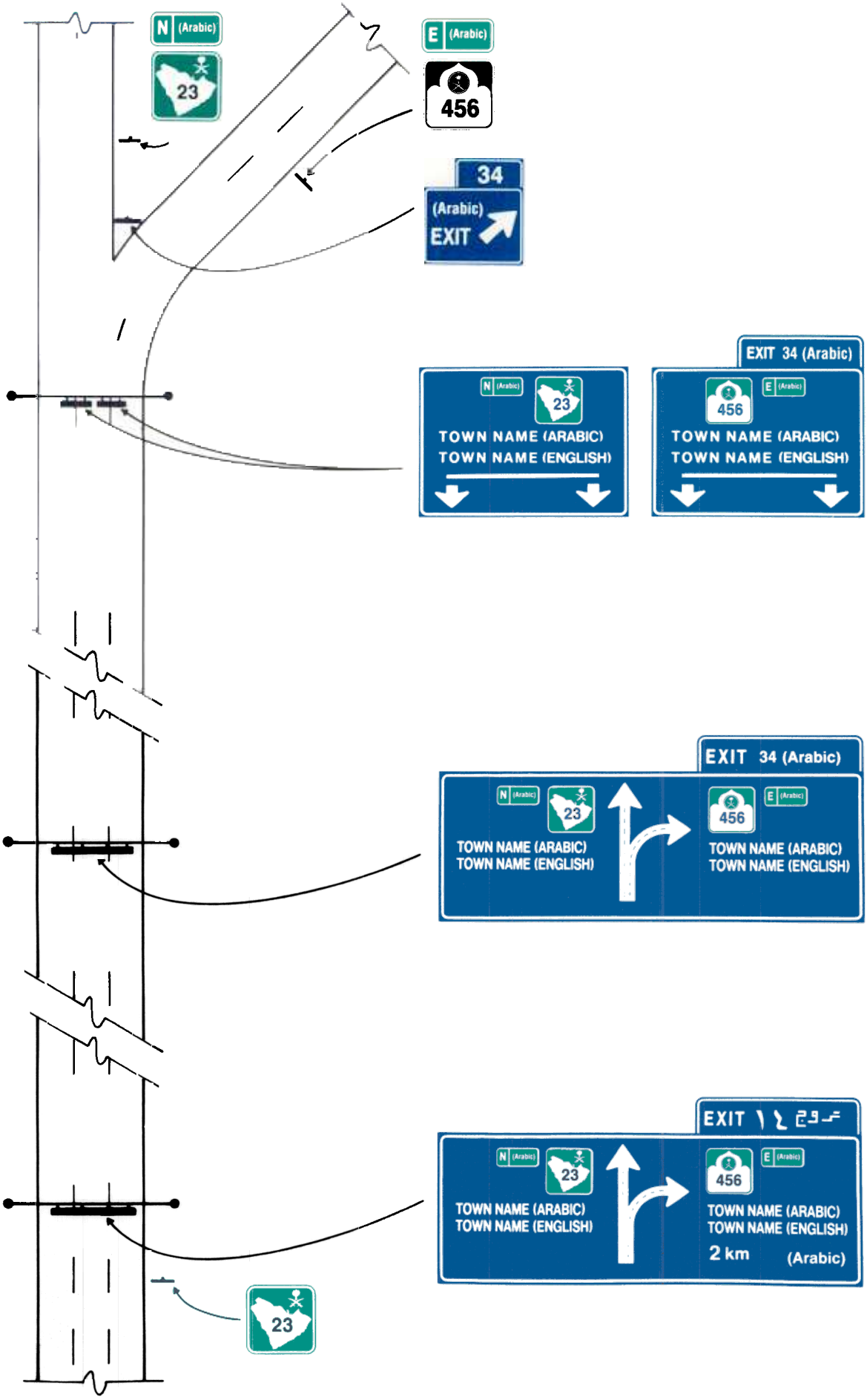



**Figure 2-34**
**Two-lane exit with optional lane.**

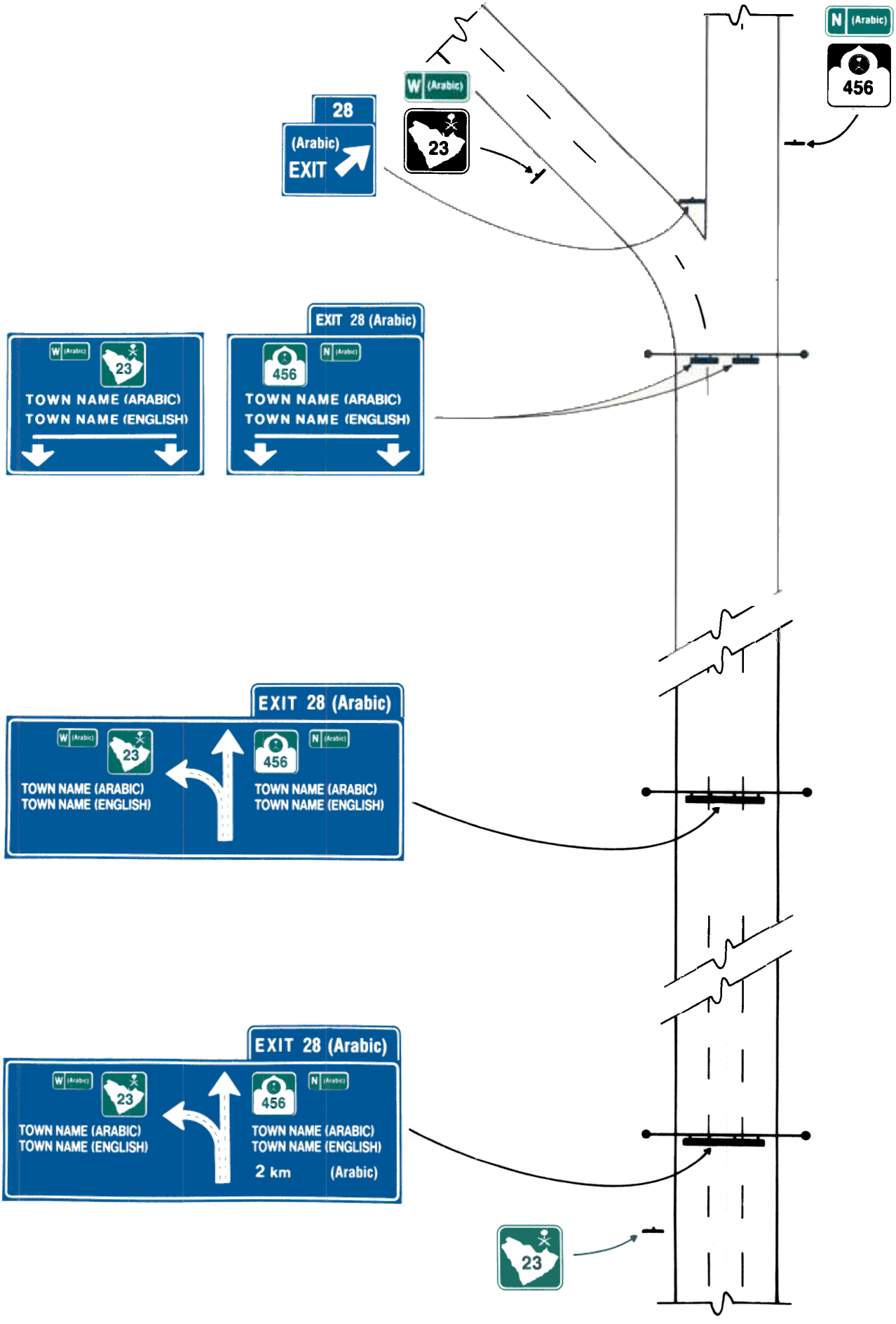
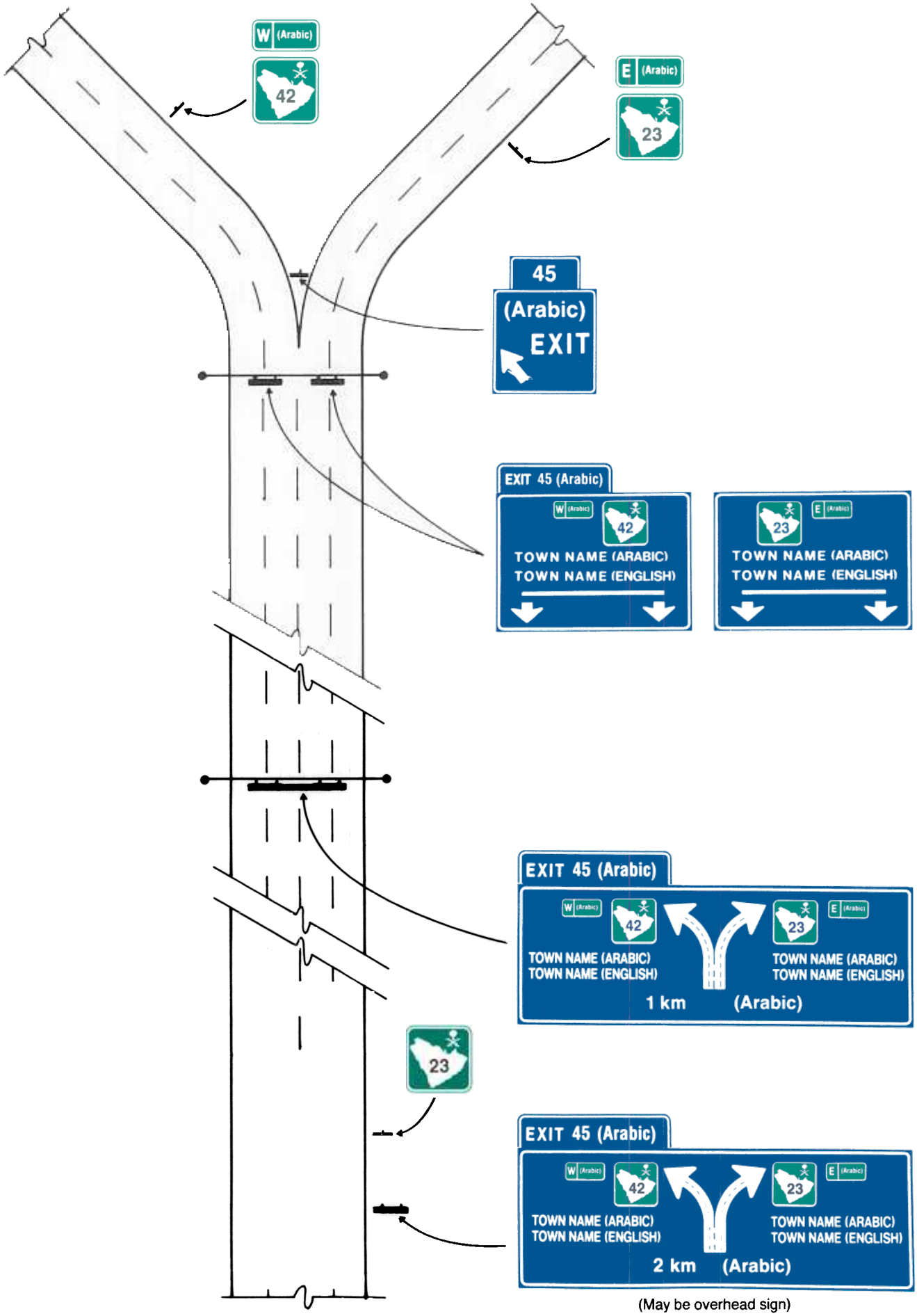



**Figure 2-35**
**Two-lane exit with optional lane and route discontinuity.**




(May be overhead sign)

**Figure 2-36**
**Split without optional lane having off route to left.**

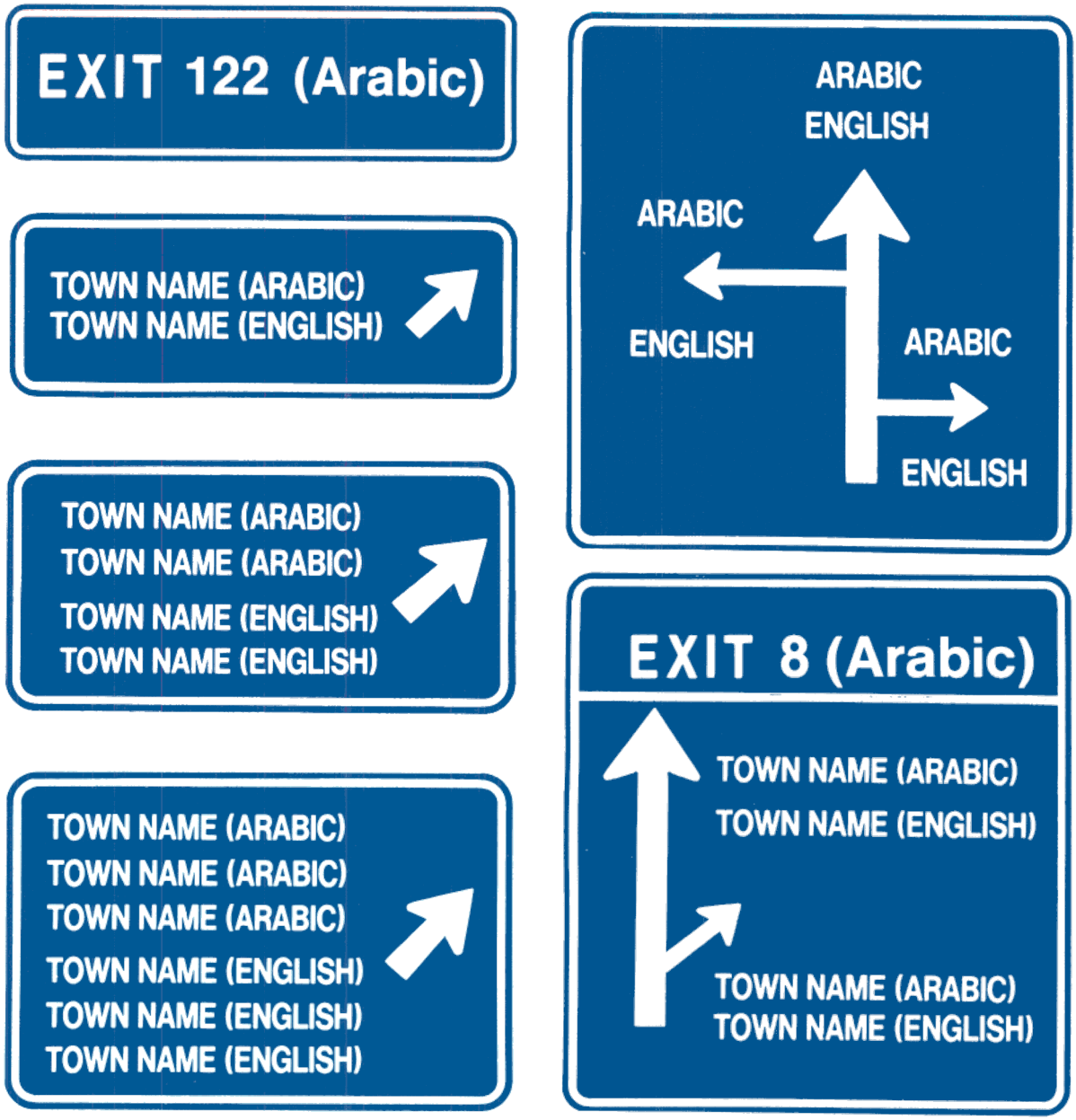
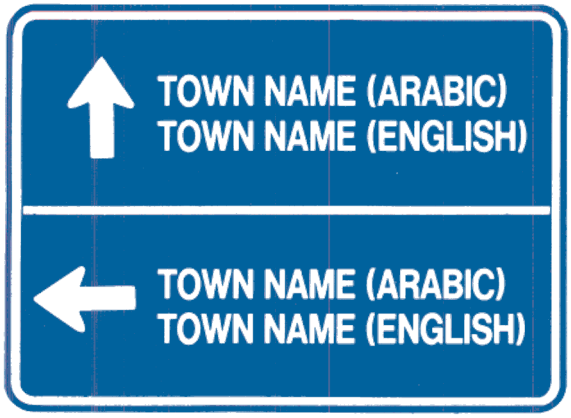
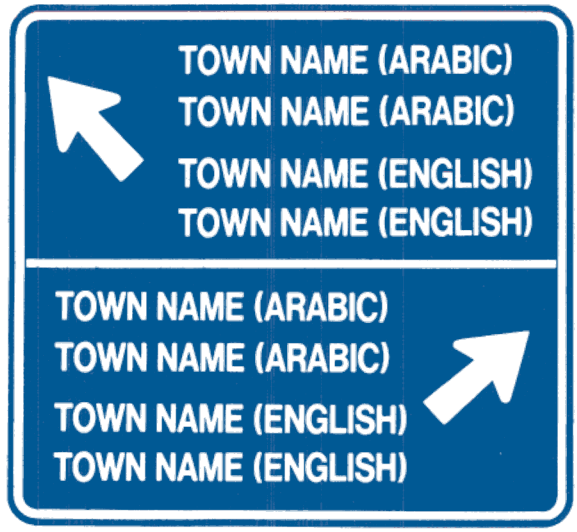
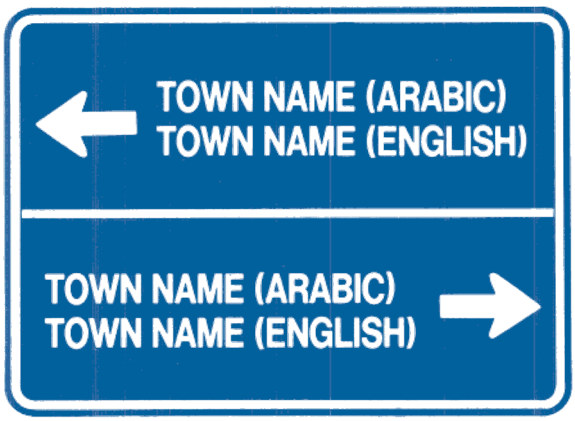
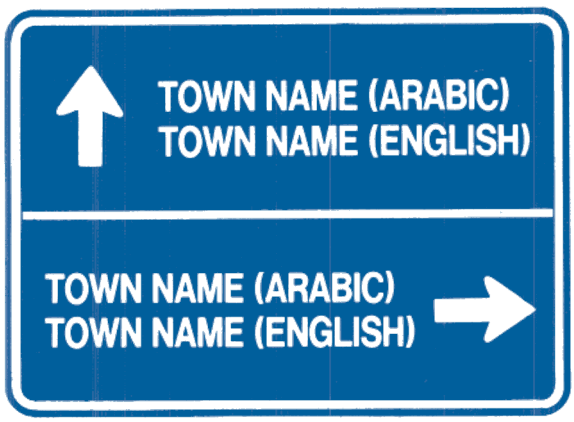


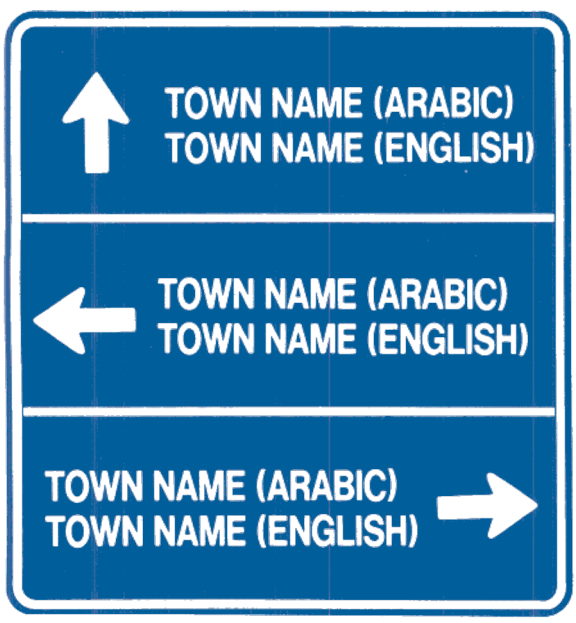

**Figure 2-37**
**Typical direction signs.**




gure 2-38
**Typical** directi signs.

# Part 3. Markings

## 3.01 General Principles

### A. Functions and Limitations

1. Markings have definite and important functions to perform in the overall area of traffic control. In some cases, markings are used to supplement the regulations or warnings of other devices such as traffic signs or signals. In other instances, markings can stand alone and do not need to be supplemented by other devices. The principal advantage of markings is that they convey guidance or information to the driver without diverting attention from the roadway.

2. Pavement markings have definite limitations. These may not be visible during sandstorms, fog, or rain. Also they may not be durable when subjected to heavy traffic.

### B. Standardization of Application

1. Each standard marking shall be used only to convey the meaning prescribed for it in this Manual.

2. Markings that must be visible at night shall be reflectorized unless ambient illumination assures adequate visibility.

### C. Materials

1. The most common material used for pavement markings is thermoplastic. Paint is frequently used for curb and object markings. However, other suitable marking materials are available. The materials used should provide the specified color throughout its useful life.

2. Individual raised pavement markers may be used to supplement longitudinal pavement markings. When used, raised pavement markers are arranged in patterns to simulate continuous or broken lines.

### D. Colors

1. Markings shall be white and yellow in color.

2. These colors shall conform to the standard colors used for roadway signs.

### E. General Principles—Longitudinal Pavement Markings

1. Longitudinal pavement markings shall conform to the following basic concepts:

a. Yellow lines delineate the separation of traffic flowing in opposing directions.

b. White lines mark the right edges of the pavement, delineate channelizing islands, and delineate lanes for traffic flowing in the same direction.

c. Yellow markings are used to show places where parking is prohibited or restricted.

d. A longitudinal marking consisting of a continuous line on the highway shall mean vehicles are not permitted to cross or straddle that line. A longitudinal marking consisting of two parallel continuous lines shall have the same meaning.

e. A longitudinal marking consisting of a broken line on the highway is permissive in character, and vehicles may cross over that line.

f. Width of line indicates the degree of emphasis.

### F. Widths and Patterns of Longitudinal Lines

The widths and patterns of longitudinal lines shall be as follows:

1. The normal width of lane lines is 120 mm (150 mm on expressways).

2. A wide line shall be at least twice the width of a normal line.

3. A double line consists of two normal width lines separated by a clearly discernible space of approximately 100 mm, indicated by the contrast in color between the lines and the pavement surface.

4. A broken line is formed by segments and gaps, usually in the ratio of 1:2. The standard broken line pattern for roads with speeds greater than 65 km/h is 6 m segments and 12 m gaps. For urban roads having speeds 65 km/h or less the standard pattern is 3 m segments and 6 m gaps.

5. A dotted line is formed by short segments (normally 1.0 m in length) followed by gaps (normally 1.0 m in length) when used at low speed intersections. For interchanges or high speed intersections the pattern should be 3 m segments and 3 m gaps.

6. Edge lines shall have a width of 200 mm.

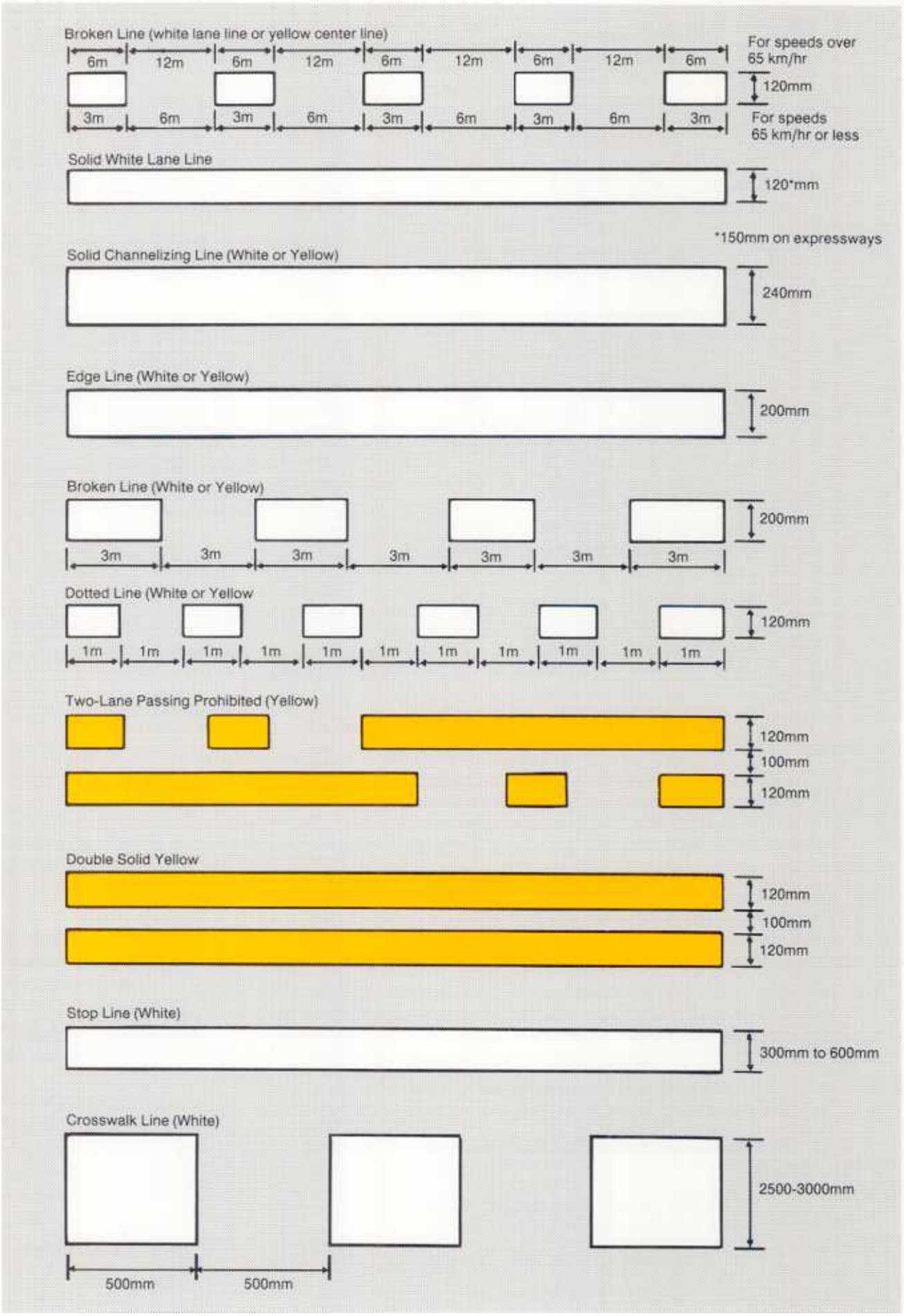



**Figure 3-1**
Typical **pavement marking lines** and patterns.

## G. Transverse Markings

1. Transverse markings, arrows, symbols, and inscriptions shall be white.

2. Transverse markings consist of one or more continuous lines across one or more traffic lanes.

3. Pedestrian crossings and STOP lines are uses of transverse markings.

## H. Curb Markings

1. Curb markings fall into two categories: roadway delineation and parking regulations.

2. Reflectorized unbroken yellow shall be placed on the curbs of islands located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction. Reflectorized unbroken white shall be used when traffic may pass on either side of the island.

3. Reflectorized yellow shall be placed on the curb or adjacent to the curb with a zigzag where restricted parking regulations apply. Standard signs shall accompany the markings.

## 3.02 Applications of Pavement and Curb Markings

### A. Center Lines

1. A center line separates traffic traveling in opposite directions. It need not be at the geometrical center of the pavement. Center lines provide important guidance to motorists and should be used on most paved roads. On roads where a continuous center line is not used, short sections may be used to control the position of traffic at specific locations, such as around bends, over hills, and on approaches to intersections, railroad crossings, and bridges.

2. The center line markings on two-lane, two-way highways shall be either

a. a normal broken yellow line where passing is permitted,

b. a double line consisting of a normal broken yellow line and a normal continuous yellow line where passing is permitted in one direction, or

c. a double line consisting of two normal continuous yellow lines where passing is prohibited in both directions.

3. The center line on undivided highways, where four or more lanes are always available, is always a double continuous yellow line.

4. On three-lane rural highways where a truck climbing lane has been added to a two-lane facility, two lanes should be designated for traffic in one direction and marked as illustrated in Figure 3-2.

5. Center lines are required on paved highways under the following conditions:

a. In rural districts on a two-lane pavement 6 m or more in width with prevailing speeds of greater than 60 km/h.

b. In residence or business districts on all through highways, and on other highways where significant traffic volumes exist.

c. On all undivided pavements of four or more lanes.

d. At other locations where an engineering study indicates a need.

e. On detours—permanent for long periods, temporary type for short periods (See Part 5).

Application of center lines are shown in various illustrations herein, particularly Figures 3-2, 3-3 and 3-4.

### B. Lane Lines

1. Lane lines separate lanes of traffic traveling in the same direction. These lines shall be used on all multi-lane highways and should be used at congested locations where the roadway will accommodate more lanes of traffic than would be the case without the use of lane lines.

2. Lane lines are usually normal width broken white lines which permit lane changing with care.

3. A normal solid continuous white line may be used as the lane line in critical areas where it is advisable to discourage lane changing. Typical locations for such applications are tunnels or bridges having width restrictions and interchange areas where lane changing disrupts traffic flow.

4. A continuous white line may be used to separate through traffic lanes from special secondary lanes, such as uphill truck lanes, left or right turn lanes, and transit bus lanes.

Applications of lane lines are illustrated in Figures 3-2, 3-3 and 3-4 .

### C. Pavement Edge Lines

1. Pavement edge line markings provide an edge-of-pavement guide for drivers. These lines have a unique value as a visual reference for the guidance of drivers during adverse weather and visibility conditions. The lines also may be used where edge delineation is desirable to reduce driving on paved shoulders or refuge areas of lesser structural strength than adjacent pavement. Edge lines shall not be continued through intersections and should not be broken for driveways.

2. Edge lines on undivided roads shall be white. Edge lines on divided roads shall be yellow on the left side and white on the right side.

### D. No-Passing Zone Markings

1. Where center lines are installed, no-passing zones shall be established at vertical and horizontal curves and elsewhere on two-lane highways where an engineering study indicates passing must be prohibited because of inadequate sight distances or other special conditions.

2. A no-passing zone shall be marked by either a one direction, no-passing marking or a two direction, no-passing marking as illustrated in Figure 3-2.

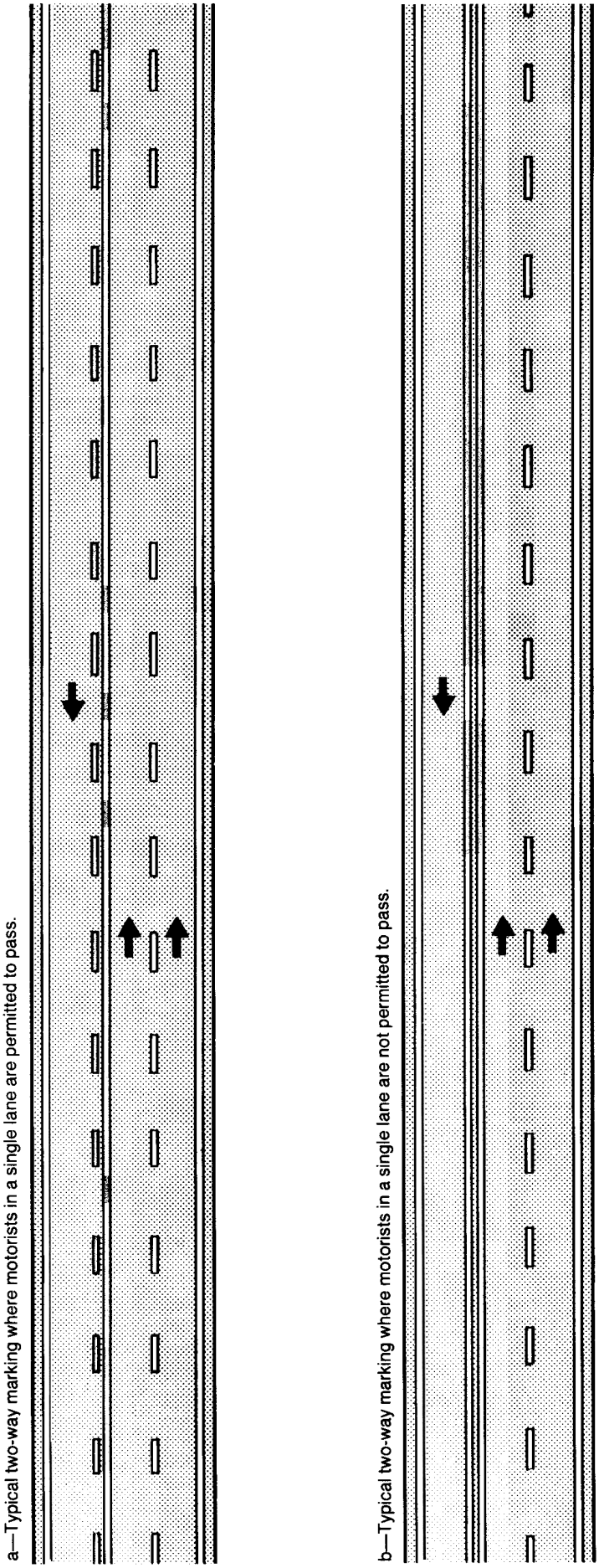
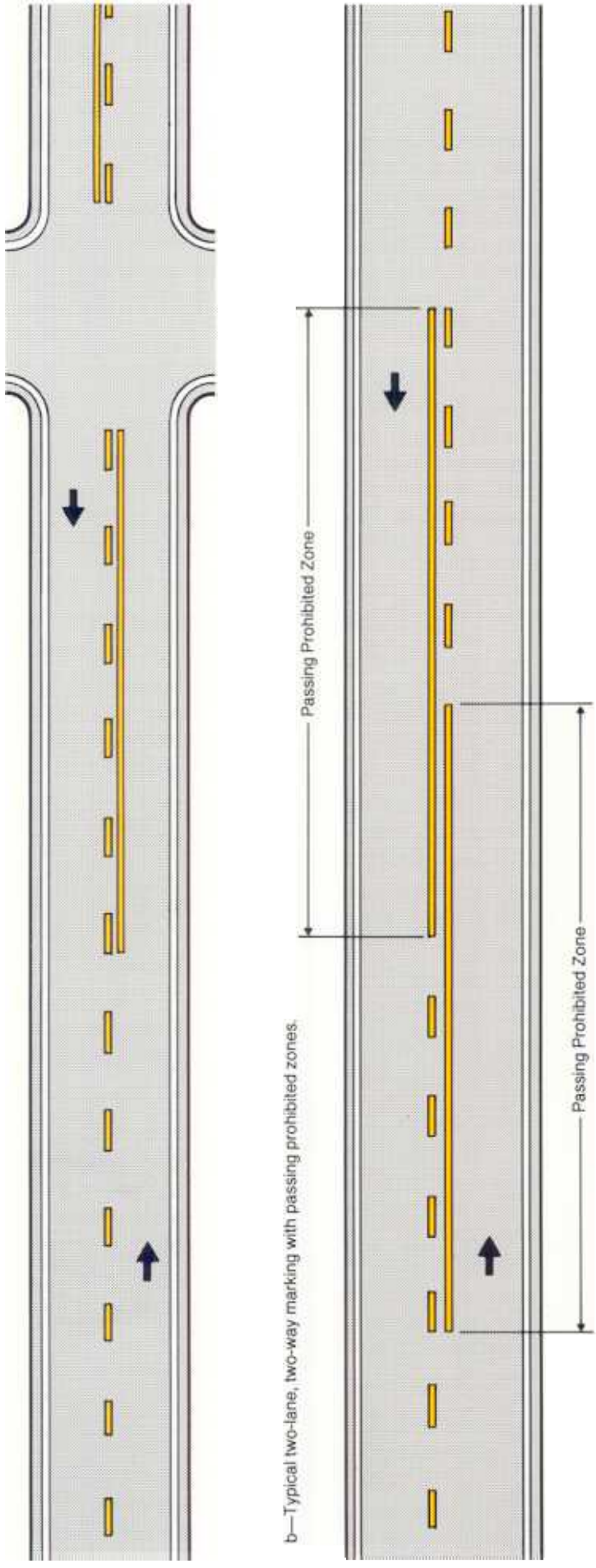



**Figure 3-2**
**Typical three-lane, two-way marking application.**




a—Typical two-lane, two-way marking with passing permitted.

b—Typical two-lane, two-way marking with passing prohibited zones.

**Figure 3-3**
**Typical two-lane, two-way marking application.**

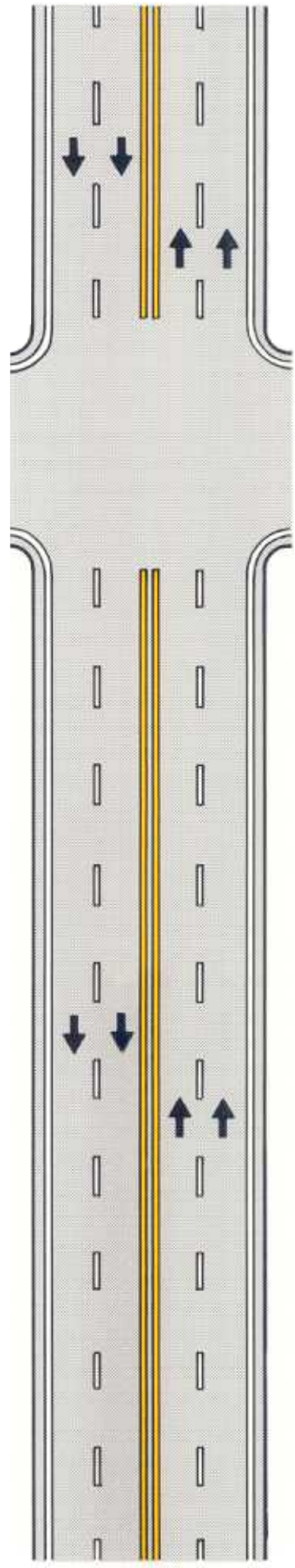


**Figure 3-4**
**Typical multi-lane, two-way markings.**

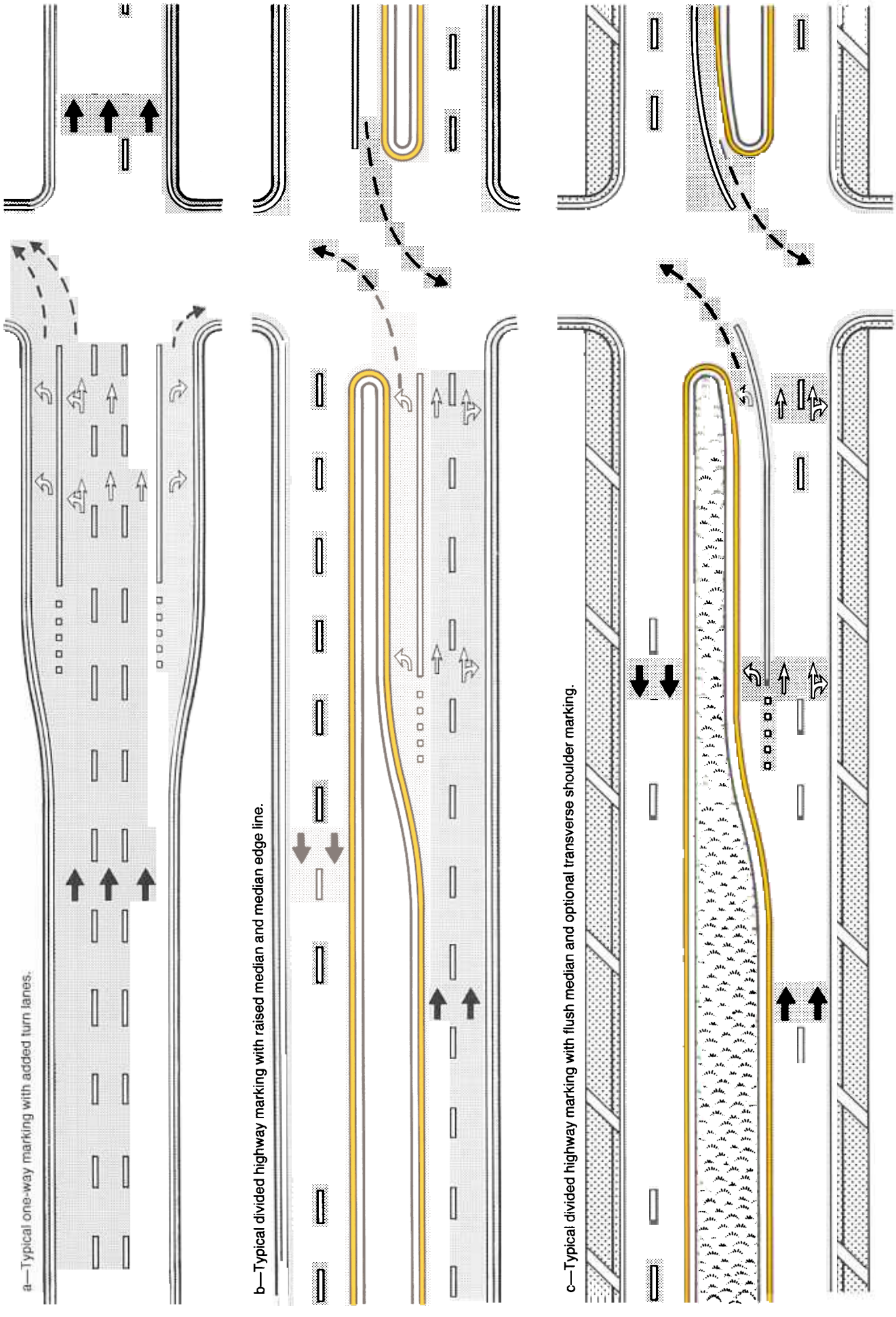



**Figure 3-5**
**Typical one-way and divided highway marking application.**

## E. Application of No-Passing Zone Markings

1. On a two-lane highway, the no-passing marking shall be parallel to and extended along the center line throughout the no-passing zone.

2. On a three-lane highway where the right lanes are being transitioned into one lane, a no-passing buffer zone shall be provided. This shall be done by transitioning the center line markings diagonally across the center lane to the beginning of the no-passing buffer zone, and thence along this location to the end of the buffer zone (Figure 3-6). The markings shall extend across the center lane on a diagonal for a distance (taper length). (See Table 3-1).

3. In addition to the pavement marking where prescribed, Overtaking Prohibited signs (Section 2.03 D 25) shall be used to emphasize the existence and extent of a no-passing zone.

4. Where the distance between successive no-passing zones is less than 120 m, the appropriate no-passing marking (one direction or two direction) should connect the zones.

5. The no-passing marking is also used on two-way roadways at pavement width transitions and on approaches to obstructions which must be passed on the right. It may also be used on approaches to railroad grade crossings and other locations where passing should be prohibited.

**Table 3-1**
**Taper Lengths in Meters for Required Lateral Movement**

| Speed km/h | Distance in Meters that Traffic is to be Moved R or L | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1.5 | 2.5 | 2.75 | 3.0 | 3.25 | 3.5 | 3.75 |
| 30 | 9 | 15 | 16 | 17 | 19 | 20 | 22 |
| 35 | 11 | 20 | 22 | 24 | 26 | 28 | 30 |
| 40 | 15 | 26 | 28 | 31 | 34 | 36 | 39 |
| 45 | 20 | 33 | 36 | 39 | 42 | 46 | 49 |
| 50 | 24 | 40 | 44 | 48 | 52 | 56 | 60 |
| 55 | 29 | 49 | 54 | 58 | 63 | 68 | 73 |
| 60 | 35 | 58 | 64 | 70 | 75 | 81 | 87 |
| 65 | 41 | 68 | 75 | 82 | 88 | 95 | 102 |
| 70 | 65 | 109 | 102 | 131 | 141 | 152 | 163 |
| 75 | 70 | 117 | 128 | 140 | 152 | 163 | 175 |
| 80 | 75 | 124 | 137 | 149 | 162 | 174 | 186 |
| 85 | 79 | 132 | 145 | 158 | 172 | 185 | 198 |
| 90 | 84 | 140 | 154 | 168 | 182 | 196 | 210 |
| 95 | 89 | 148 | 162 | 177 | 192 | 207 | 221 |
| 100 | 93 | 155 | 171 | 186 | 202 | 218 | 233 |
| 105 | 98 | 163 | 179 | 196 | 212 | 228 | 245 |
| 110 | 103 | 171 | 188 | 205 | 222 | 239 | 256 |
| 115 | 107 | 179 | 197 | 214 | 232 | 250 | 268 |
| 120 | 112 | 184 | 205 | 224 | 242 | 261 | 280 |

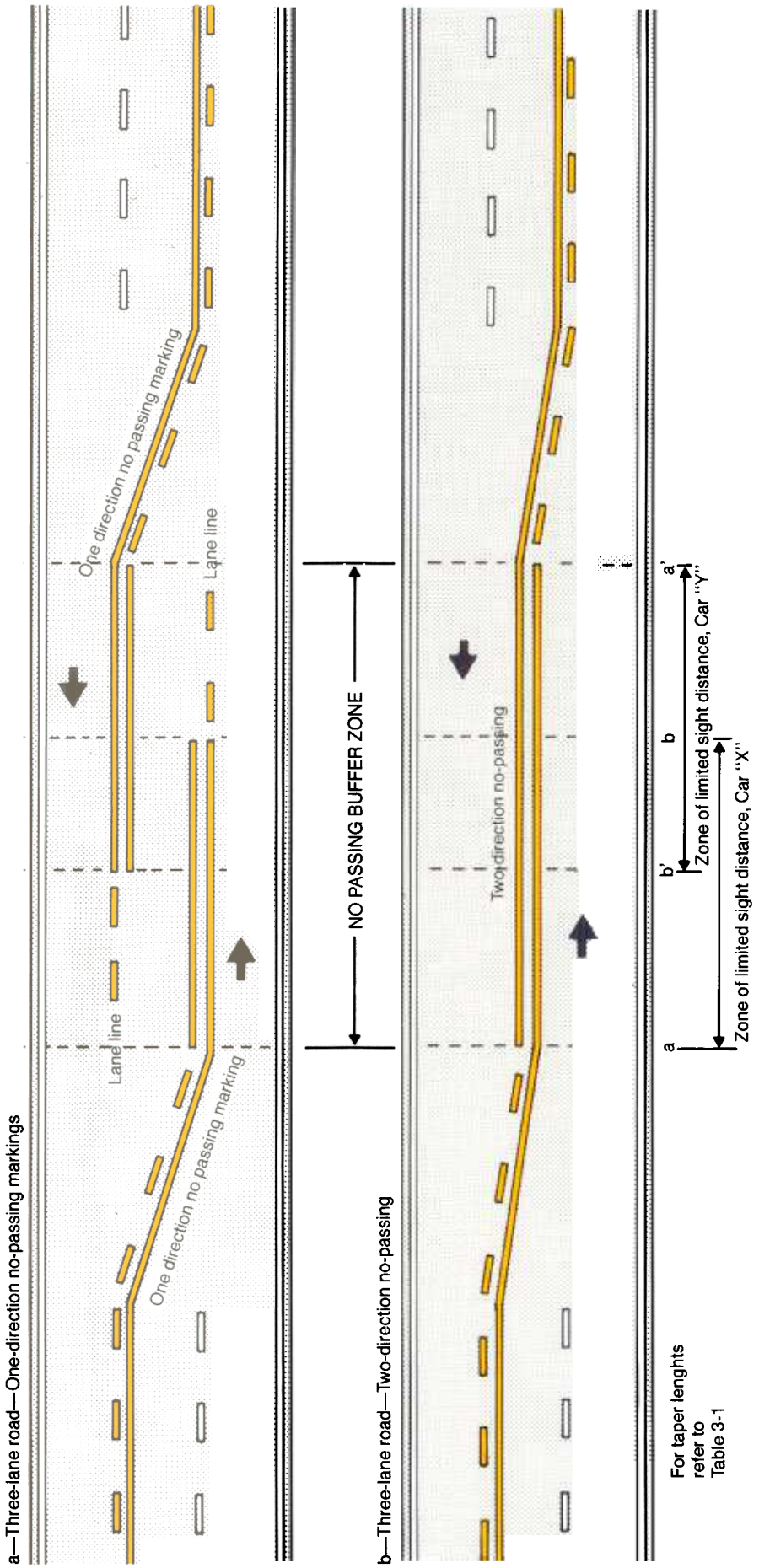
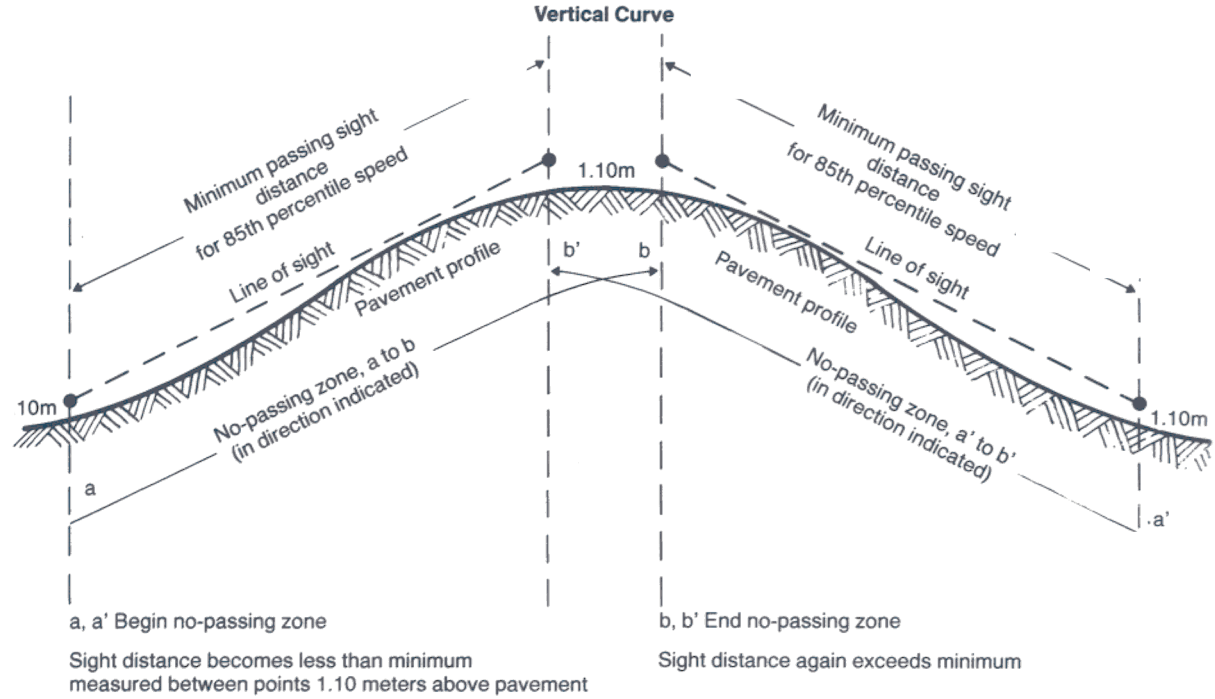
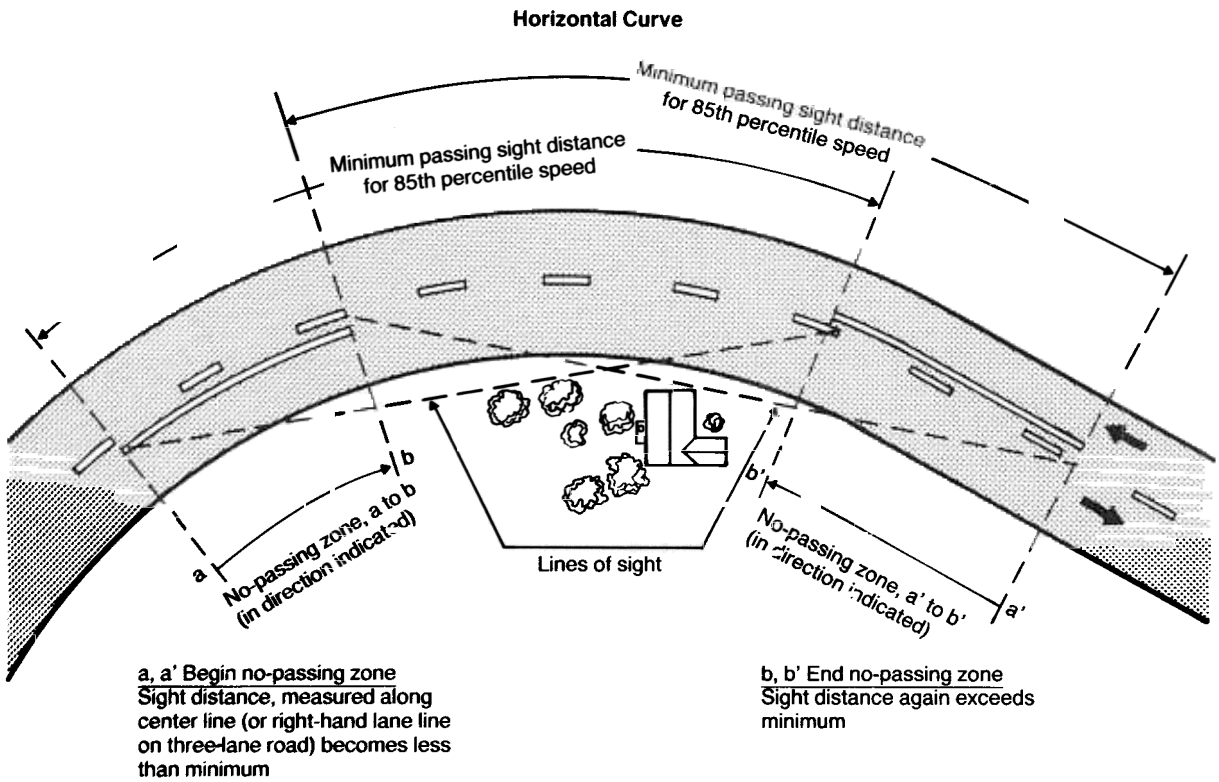



**Figure 3-6**
**Standard three-lane, two-way pavement marking for alternating preferred direction of two lanes.**



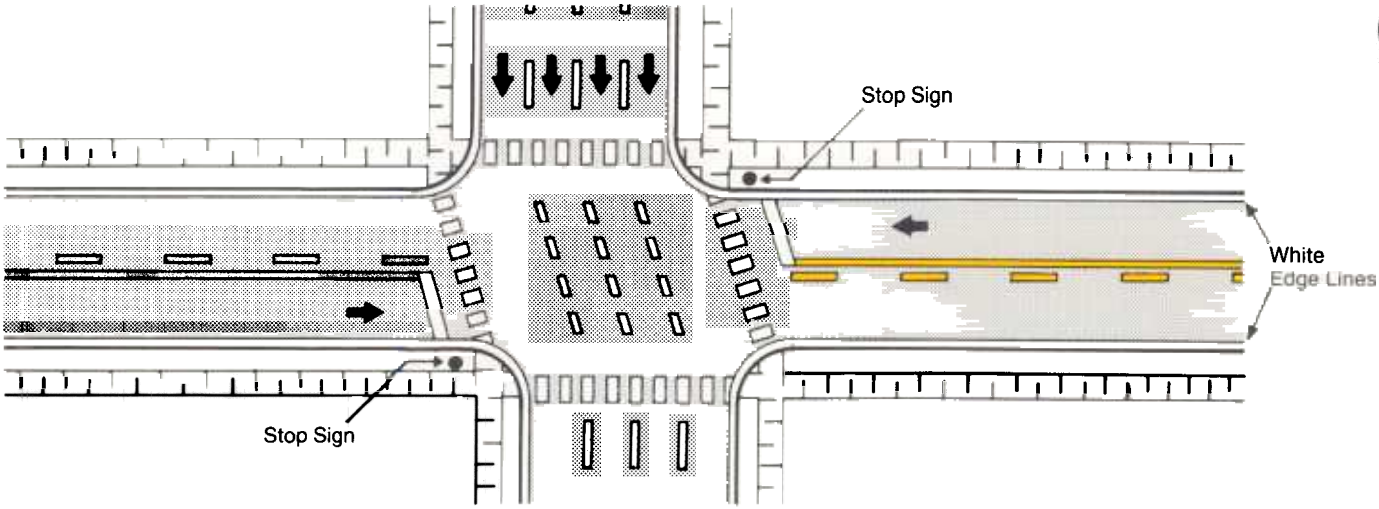

Note: No-passing zones in opposite directions may or may not overlap, depending on alignment.



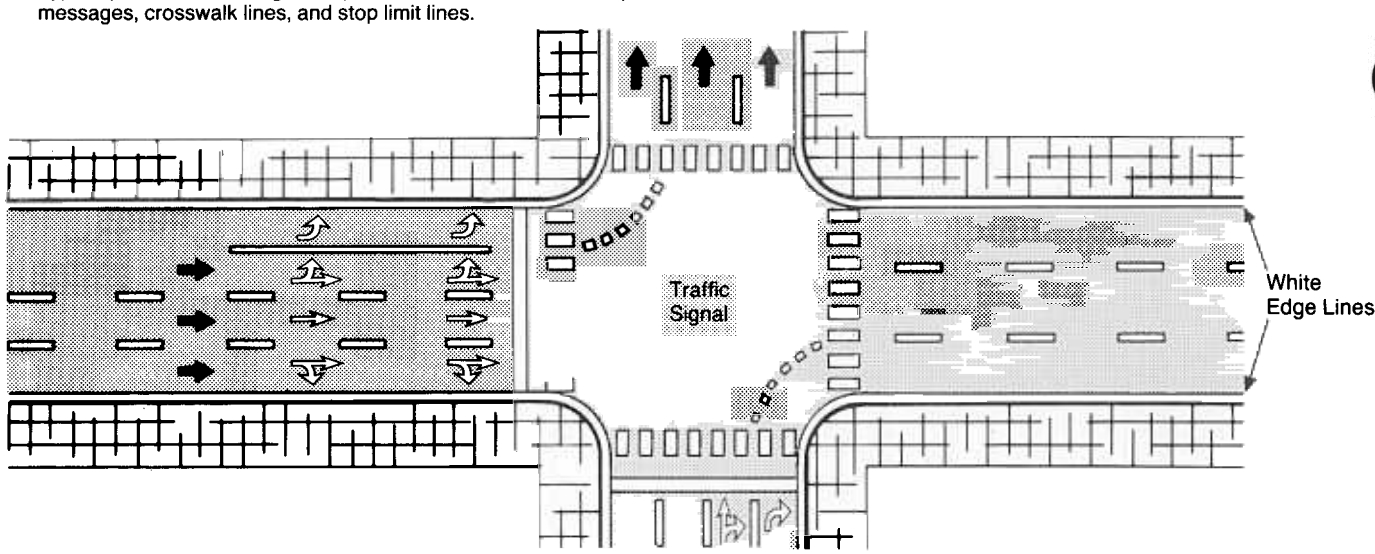

Note: No-passing zones in opposite directions may or may not overlap, depending on alignment.

**Figure 3-7**
**Method of locating and determining the limits of no-passing zones at vertical and horizontal curves.**

a—Typical pavement marking with offset lane lines continued through the intersection and optional crosswalk lines and stop limit lines.




b—Typical pavement marking with optional double turn lane lines, pavement messages, crosswalk lines, and stop limit lines.




c—Typical pavement marking with optional turn lane lines, crosswalk lines and stop limit lines.

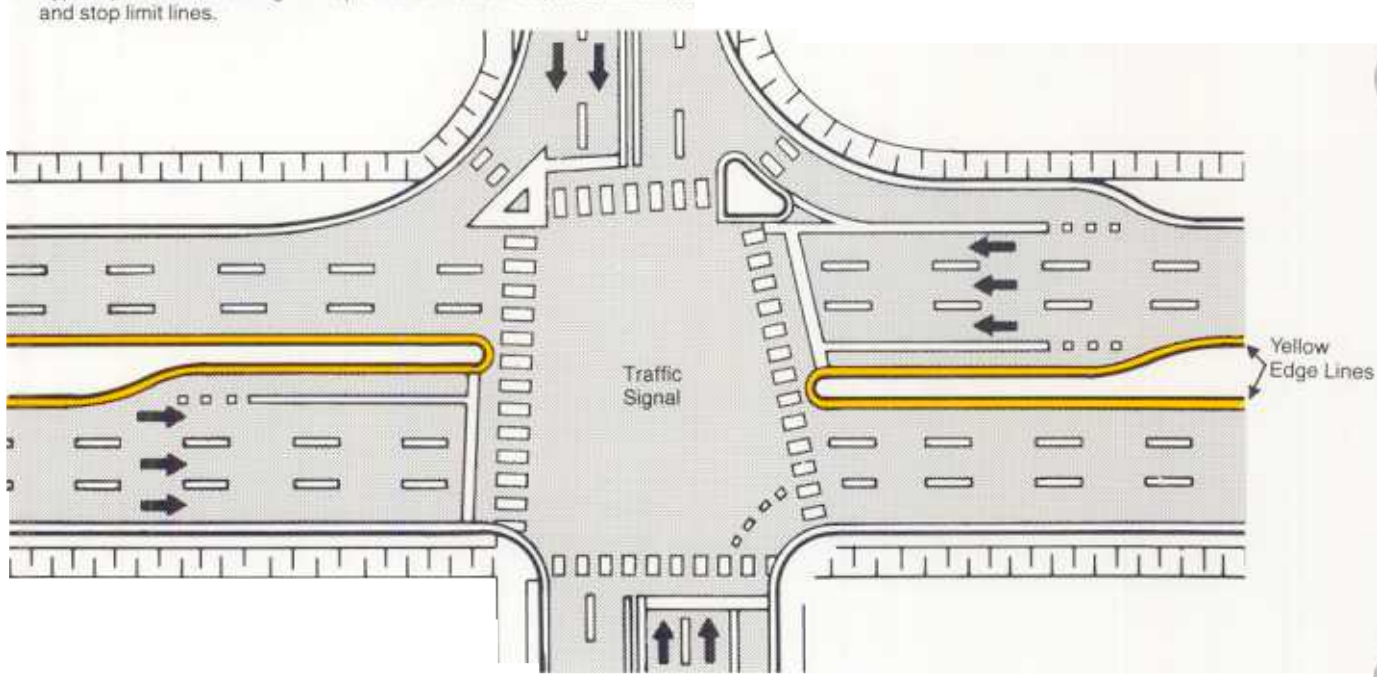



**Figure 3-8**
**Typical pavement marking application.**

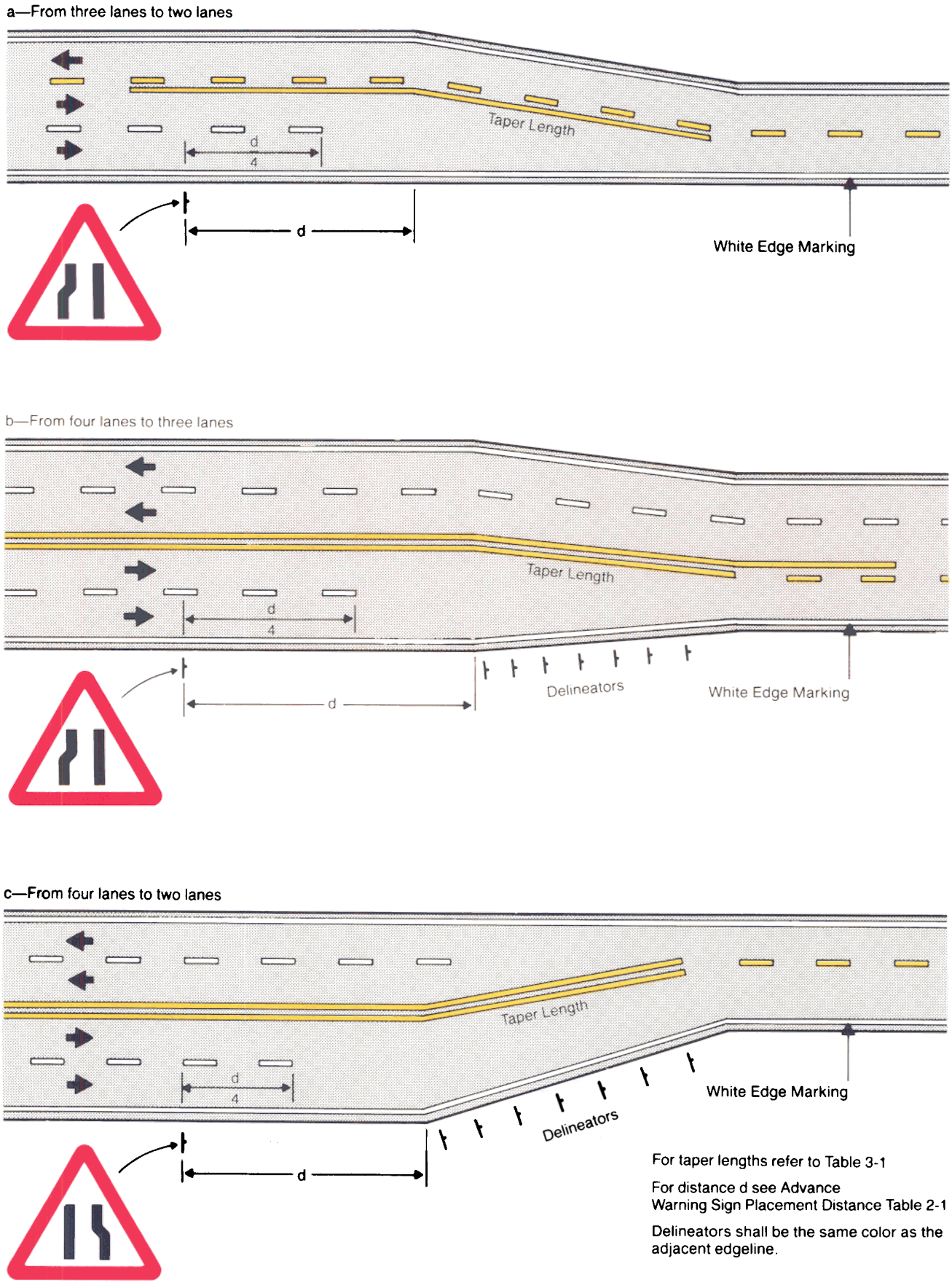



**Figure 3-9**
**Typical lane reduction transition markings and signs.**

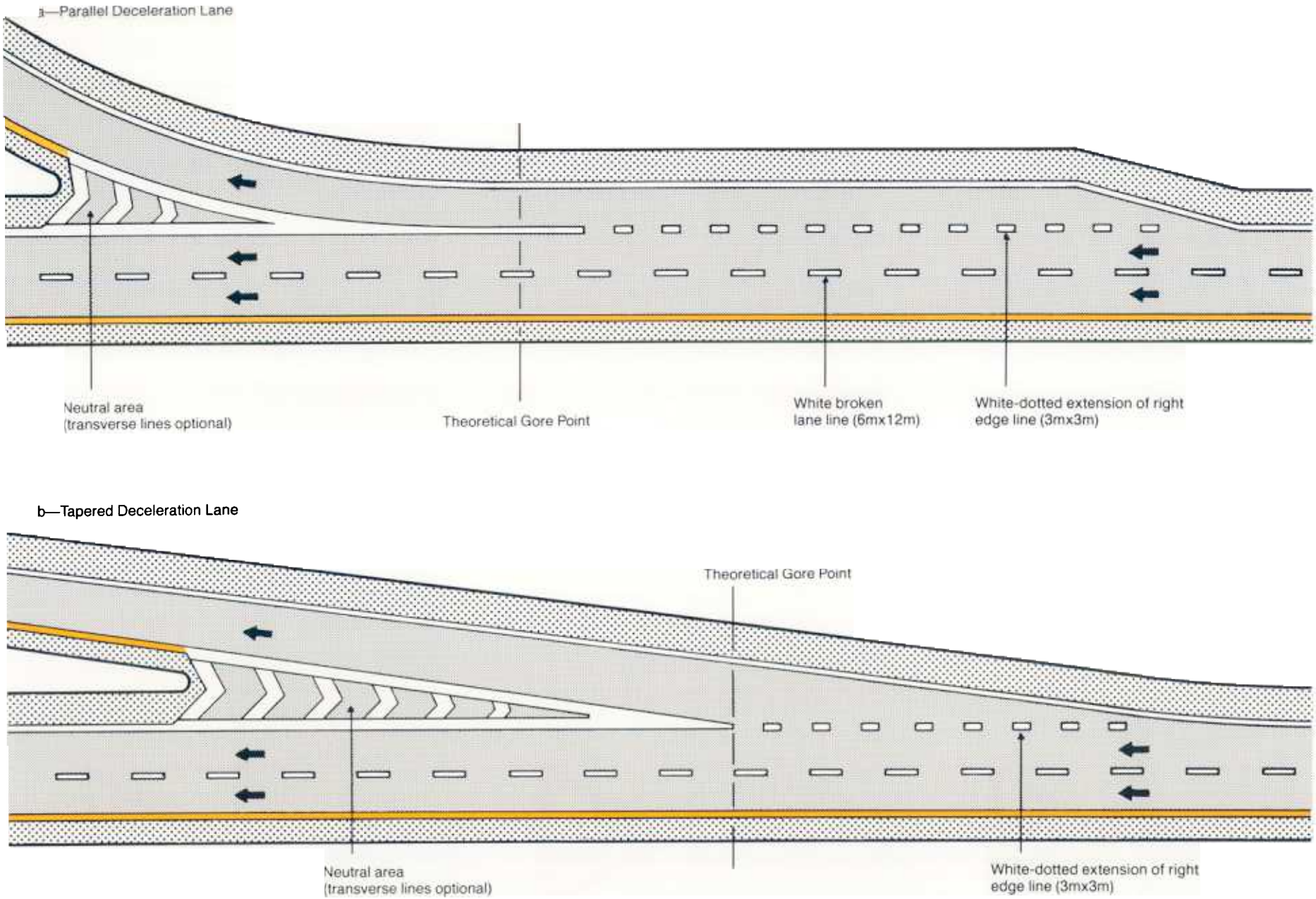



Figure 3-10
Typical exit ramp markings.

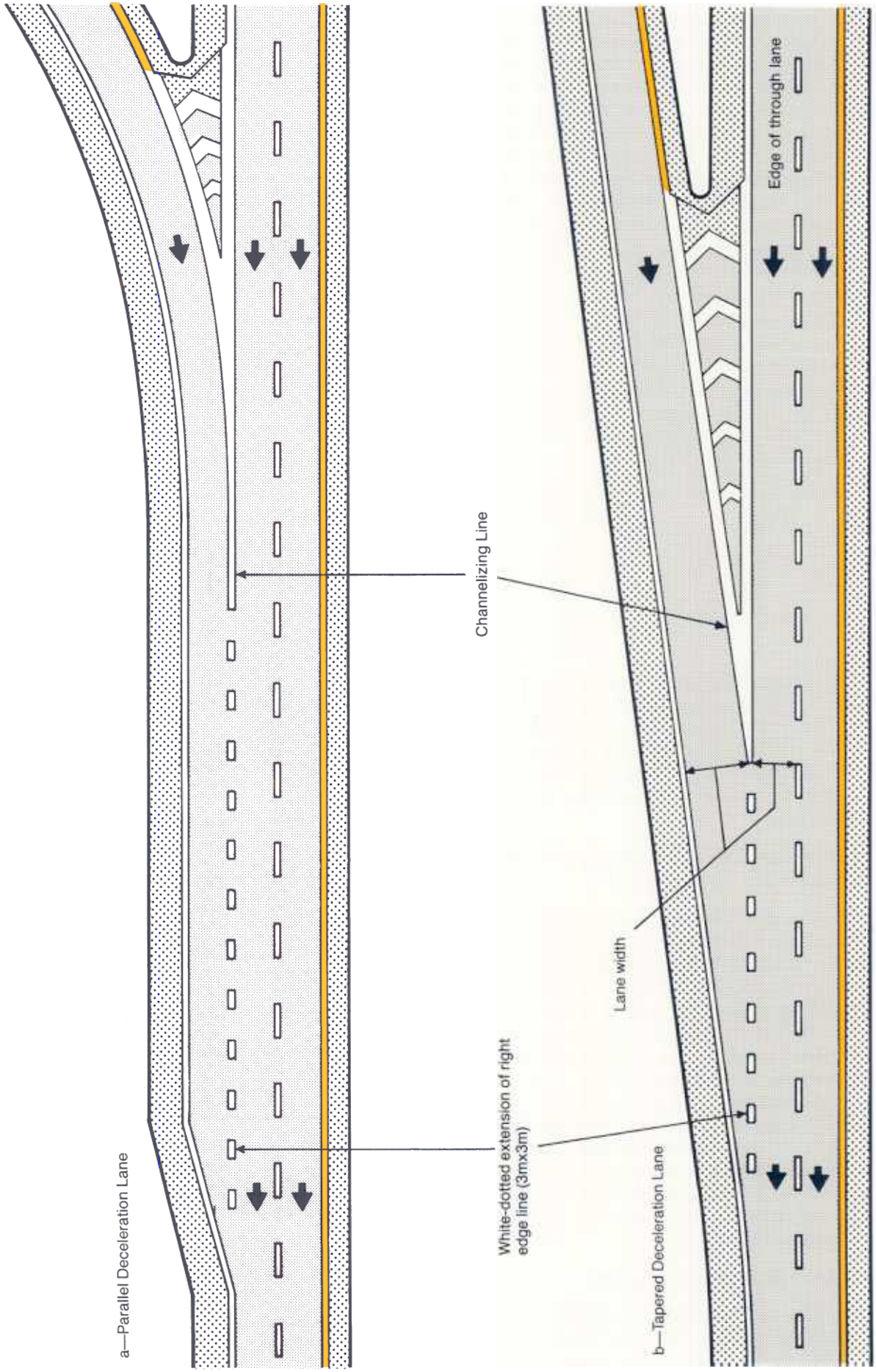



**Figure 3-11**
**Typical entrance ramp markings.**

**F. Warrants for No-Passing Zones at Bends**

1. A no-passing zone at a horizontal bend or vertical curve is warranted where the sight distance, as defined below, is less than the minimum necessary for safe passing at the prevailing speed of traffic. Passing sight distance on a vertical curve is the distance at which an object 1.10 m above the pavement surface can just be seen from a point 1.10 m above the pavement (Figure 3-7). Similarly, passing sight distance on a horizontal bend is the distance measured along the center line between two points 1.10 m above the pavement on a line tangent to the embankment or other obstruction that cuts off the view on the inside of the bend (Figure 3-7). Where center lines are installed and a bend warrants a no-passing zone, it should be so marked where the sight distance is equal to or less than that listed below for the prevailing off-peak 85 percentile speed:

| 85 Percentile Speed (km/h) | Minimum Passing Sight Distance (meters) |
|---|---|
| 50 | 150 |
| 60 | 180 |
| 70 | 210 |
| 80 | 240 |
| 90 | 270 |
| 100 | 300 |
| 110 | 360 |

2. The beginning of a no-passing zone (point "a") is that point at which the sight distance first becomes less than that specified in the above table. The end of the zone (point "b") is that point at which the sight distance again becomes greater than the minimum specified.

**G. Pavement Marking Extensions Through Intersections or Interchanges**

Where road design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an interchange or intersection, (such as at offset, skewed, complex multi-legged intersections or where multiple turn lanes are used) a dotted line may be used to extend markings as necessary through the intersection area (Figures 3-8a, b and c) or interchange (Figures 3-10a and 3-10b). Where a greater degree of restriction is required, continuous lane lines or channelizing lines may be continued through intersections. A frequent use for the channelizing line is to separate turning movements from through movements (Figures 3-8b and 3-8c).

**H. Lane Reduction Transitions**

1. The same centerline markings should be continuous up to the point where the pavement width changes to a lesser number of through lanes. No-passing markings shall be used to prohibit passing in the direction of the convergence, throughout the transition area. The length of transition (taper length) for a lane reduction should be computed by Table 3-1. Where no 85 percentile speed is established, the design speed or posted speed limit may be used.

2. A number of situations are possible, as illustrated in Figure 3-9, depending on which lanes must be offset or terminated and the amount of offset. One or more lane lines must be discontinued, and the remaining center and lane lines must be connected in such a way as to merge traffic into the reduced number of lanes.

3. Lane lines should be discontinued one-quarter of the distance between the Road Narrows sign (Section 2.02 D3) and the point of convergence.

4. Pavement markings at lane reduction transitions supplement the standard signs.

**I. Channelizing Line**

1. The channelizing line shall be a "wide" and continuous white or yellow line.

2. The channelizing line may be used to form traffic islands where travel in the same direction is permitted on both sides. Other markings in the island area such as crosshatching shall also be white.

3. Typical examples of channelizing line applications are shown in Figures 3-8, 3-10 and 3-11.

**J. Median Islands Formed by Pavement Markings**

Two continuous double yellow lines shall be used to form narrow median islands where the islands separate travel in opposite directions. Other markings in the median island area such as crosshatching shall also be yellow.

**K. Marking of Interchange Ramps**

1. Channelizing lines at exit ramps provide a neutral area which reduces the possibility of collision with the curb nose and also directs existing traffic at the proper angle for smooth divergence into the ramp (Figure 3-10). The channelizing line promotes safe and efficient merging with the through traffic at entrance ramps (Figure 3-11).

2. For exit ramps, white channelizing lines should be placed along both sides of the neutral area between the main roadway and the exit ramp lane. With a parallel deceleration lane (Figure 10a), the white-dotted extension of the right edge line should be extended from the beginning of the channelizing line

upstream for the length of the full width deceleration lane. White diagonal markings may be placed in the neutral area for special emphasis.

3. For entrance ramps, a white channelizing line should be placed along the side of the area between the ramp lane and mainline lane. With a parallel acceleration lane (Figure 3-11a), the white-dotted extension of the right edge line should be extended from the end of the channelizing line the length of the acceleration lane. With a tapered acceleration lane (Figure 3-11b), a white-dotted extension of the right edge line may be placed to extend the channelizing line, but not beyond a point where the tapered lane meets the near side of the through traffic lane.

**L. Approach to an Obstruction**

1. Pavement markings shall be used to guide traffic on the approach to fixed obstructions within a paved roadway. An obstruction may be so located that all traffic must keep to the right of it, or it may be between two lanes of traffic moving in the same direction. The markings in either case must be designed to guide traffic away from the obstruction. The use of channelizing lines or no-passing markings is generally effective. Obstruction approach markings for bridge supports, refuge islands, median islands, and channelization islands shall consist of a diagonal line or lines, extending from the center line or the lane line to a point about 0.5 m to the right side, or to both sides, of the approach end of the obstruction (Figure 3-12).

2. The length of the diagonal markings (taper length) should be computed by Table 3-1.

3. If traffic is required to pass only to the right of the obstruction, the marking shall consist of a no-passing marking at least twice the length of the diagonal portion determined by the applicable taper formula. Diagonal yellow markings may be placed in the triangular area as shown in Figure 3-12.

4. If traffic may pass either to right or left of the obstruction, the markings shall consist of two channelizing lines diverging from the lane line, one to either side of the obstruction for a length determined by the applicable taper formula. In advance of the point of divergence, a wide, continuous single or double white line shall be extended in place of the lane line for a distance equal to the length of the diverging lines. Additional white markings may be placed in the triangular area between the channelizing lines.

**M. Stop Lines**

1. Stop lines are continuous white lines, normally 300 mm wide, extending across all approach lanes. The minimum width of the line is 200 mm and the maximum is 600 mm.

2. Stop lines should be used in rural and urban areas where it is important to indicate the point, behind which vehicles are required to stop in compliance with a STOP sign, traffic signal, or railroad crossing signal.

3. Stop lines, where used, should ordinarily be placed 1 m in advance of and parallel to the nearest crosswalk line. In the absence of a marked crosswalk, the Stop line should be placed at the desired stopping point, in no case more than 10 m or less than 1 m from the nearest edge of the intersecting roadway.

4. If a stop line is used in conjunction with a STOP sign, it should ordinarily be placed in line with the STOP sign. However, if the sign cannot be located exactly where vehicles are expected to stop, the stop line should be placed at the stopping point.

**N. Crosswalks and Crosswalk Lines**

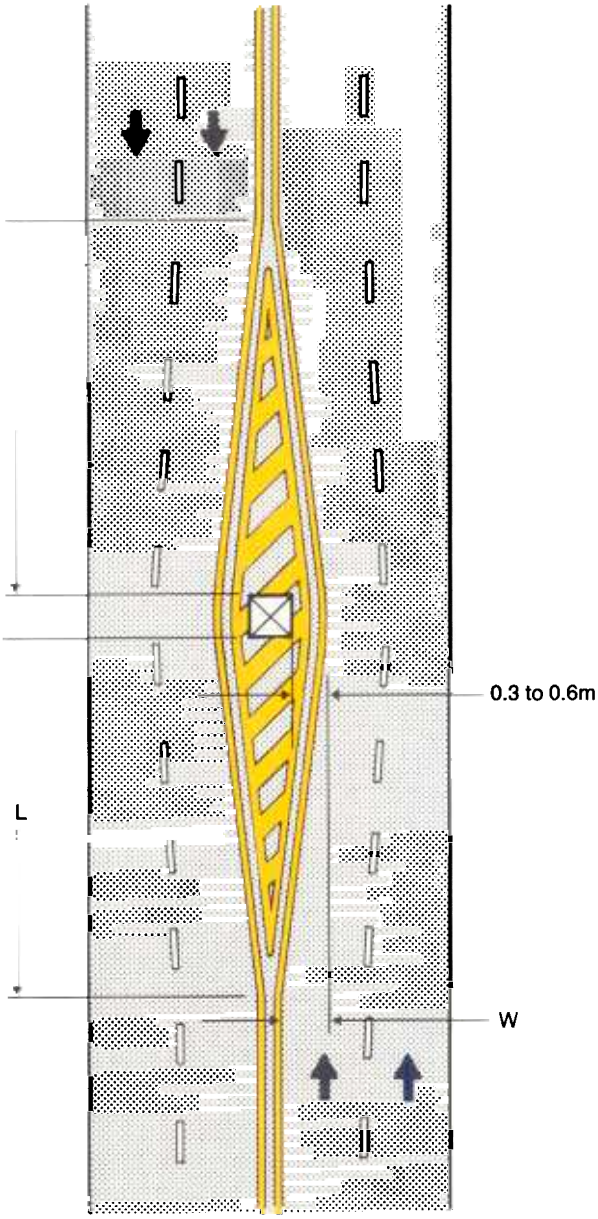
1. Crosswalk markings serve primarily to guide pedestrians in the proper paths and warn motorists of pedestrian crossing points.

2. The area of the crosswalk may be marked with white longitudinal lines at a 90° angle to the line of the crosswalk (Figure 3-13b). These lines should be approximately 500 mm wide and spaced 500 mm apart. When longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted.

3. Transverse crosswalk lines shall be continuous white lines, marking both edges of the crosswalk. These lines shall be not less than 200 mm in width and should not be spaced less than 2 m apart. Under special circumstances where a stop line is not provided, or where vehicular speeds exceed 60 km/h or where crosswalks are unexpected, it may be desirable to increase the width of the crosswalk line up to 600 mm in width.

4. Crosswalks should be marked at all intersections where there is substantial conflict between vehicle and pedestrian movements. Marked crosswalks should also be provided at other appropriate points of pedestrian concentration, such as at loading islands, midblock pedestrian crossings, or where pedestrians could not otherwise recognize the proper place to cross.

5. Crosswalk markings should not be used indiscriminately. An engineering study should be conducted before they are installed



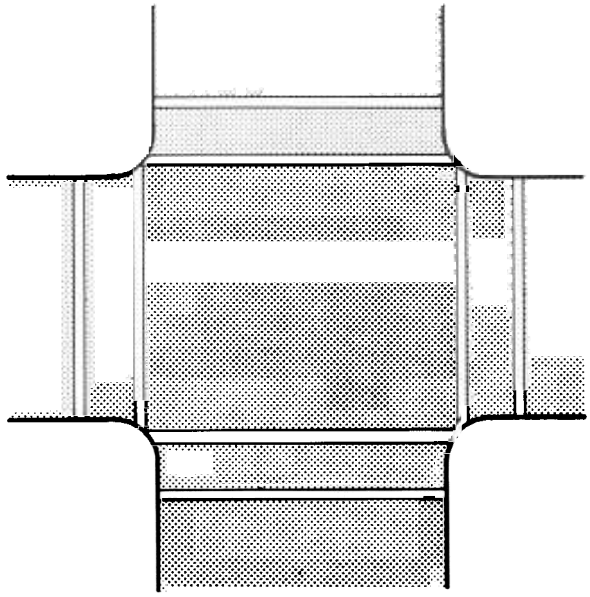

For taper length refer to Table 3-1

Minimum Length of L = 30m in urban areas
L = 60m in rural areas

Length "L" should be extended as required by sight distance conditions

**Figure 3-12**
**Typical approach markings for obstructions in the roadway.**

a—Transverse crosswalk marking.



b—Crosswalk marking with longitudinal lines

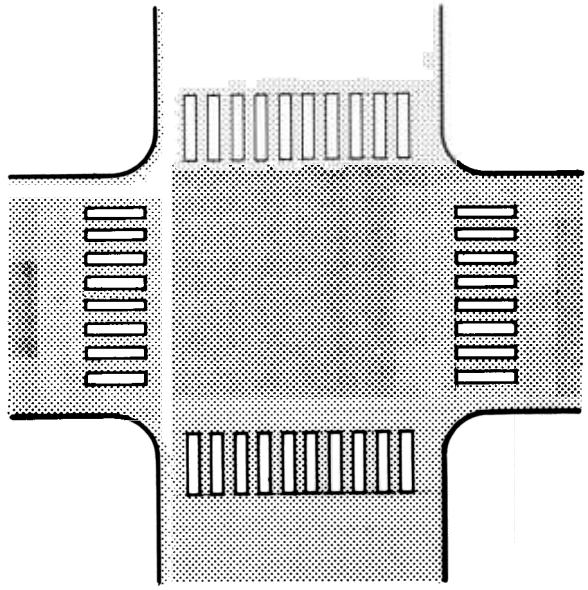


**Figure 3-13**
**Typical crosswalk markings.**

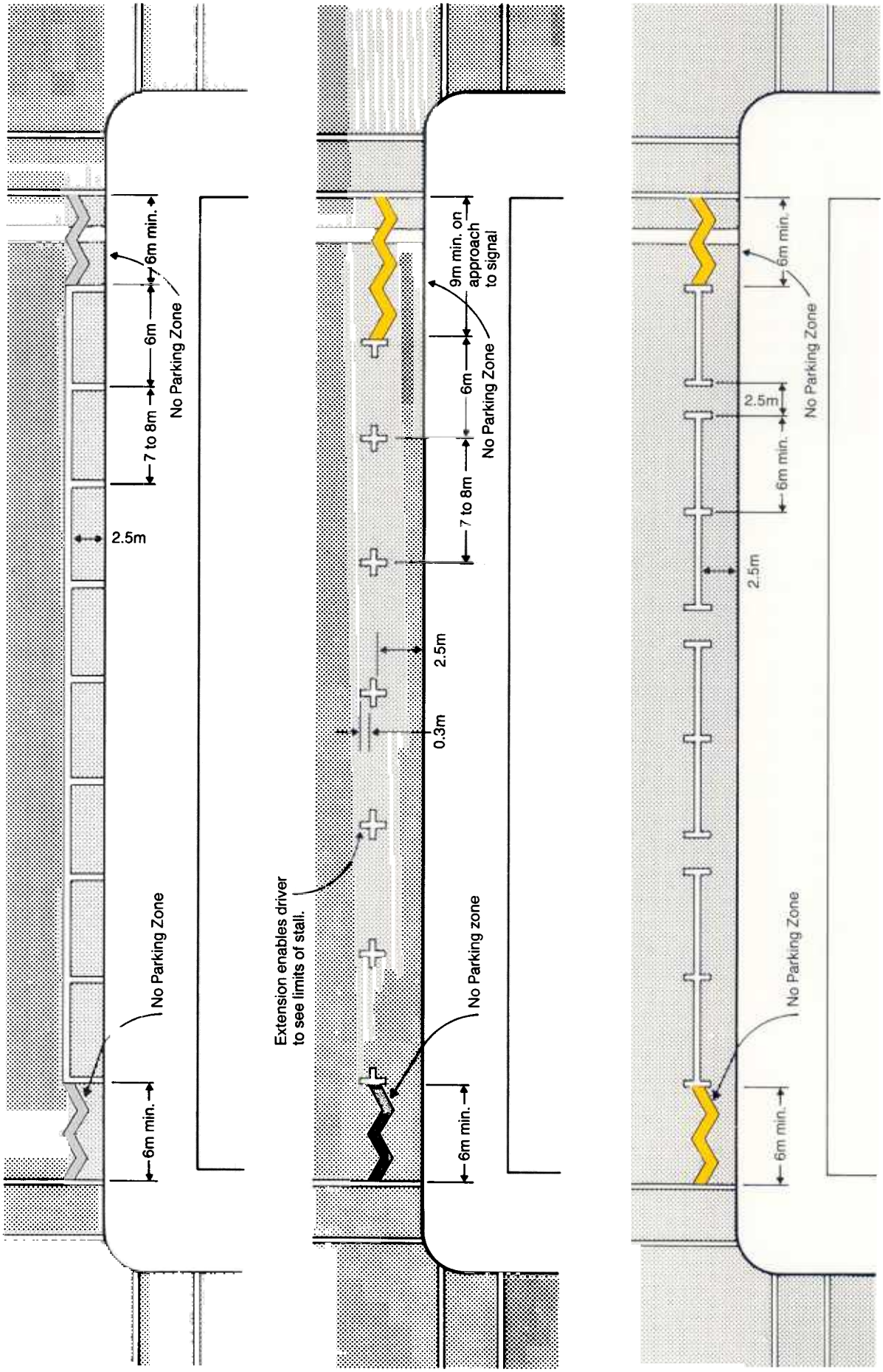



**Figure 3-14**
**Typical parking space limit markings**

at locations away from traffic signals or STOP signs.

6. Since nonintersectional pedestrian crossings are generally unexpected by the motorist, Pedestrian Warning signs (Section 2.02 D 11) shall be installed and adequate visibility provided by parking prohibitions.

**O. Parking Space Markings**

1. Parking space markings shall be white and 120 mm in width.

2. The marking of parking space limits on urban streets encourages more orderly and efficient use of parking spaces where parking turnover is substantial. It tends to prevent encroachment on fire hydrant zones, bus stops, loading zones, approaches to corners, clearance spaces for islands, and other zones where parking is prohibited. Typical parking space markings are shown in Figure 3-14.

**P. Pavement Word and Symbol Markings**

1. Word and symbol markings on the pavement may be used for the purpose of guiding, warning, or regulating traffic. The markings shall be white in color.

2. Symbol arrows may be used to convey either guidance or mandatory messages. Signs or markings should be repeated in advance of mandatory turn lanes when necessary to help motorists select the appropriate lane before reaching the end of the line of waiting vehicles. On expressways and high speed arterials, large arrows shall be used in advance of mandatory turn lanes when necessary to prevent entrapment and help drivers select the appropriate lane before reaching the end of the line of waiting vehicles. Large arrows should also be used to mark exit ramps to aid in discouraging wrong-way movement by complementing the No Entry signs.

3. Large letters, symbols, and numerals should be used and should be 2.5 m or more in height. Symbol messages are generally preferable to word messages. Where speeds are low, somewhat smaller characters may be used.

4. The Stop symbol (Figure 3-15), shall not be used on the pavement unless accompanied by a stop line (Section 3.02 M) and STOP sign (Section 2.03 D1) and unless every vehicle is required to stop at all times.

5. Pavement messages should generally be no more than one lane in width.

**Q. Curb Markings for Parking Restrictions**

1. Since curb markings of yellow and white are used for delineation and visibility, it is usually advisable to establish parking regulations through the installation of standard signs (Section 2.03 D31). However, when local authorities prescribe a yellow color for curb markings to be used in lieu of or supplemental to standard signs, it shall be used.

2. When signs cannot be used, the intended meaning should be stenciled on the curb.

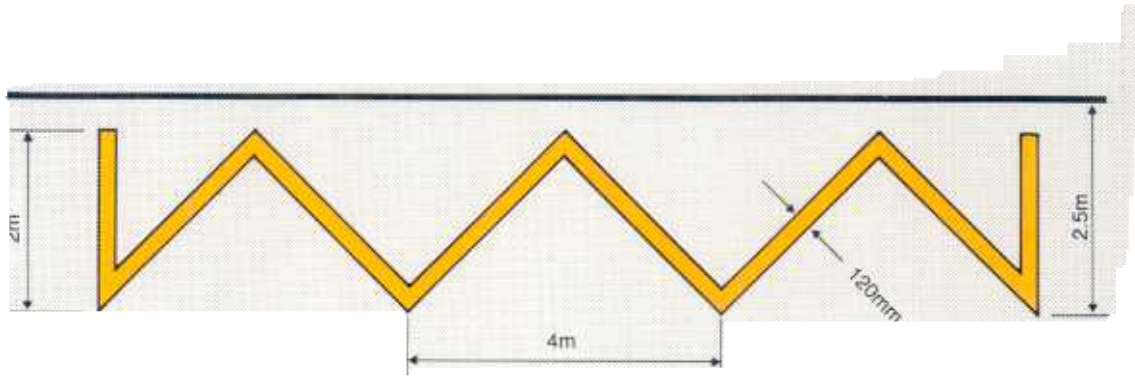
3. A zigzag marking may be used (Figures 3-14 and 3-15).

4. Signs shall always be used with curb markings in those areas where curb markings are frequently obliterated by sand and dust.

**R. Typical Applications—Pavement Markings**

Typical applications, with detailed placement information, are shown in the following illustrations.





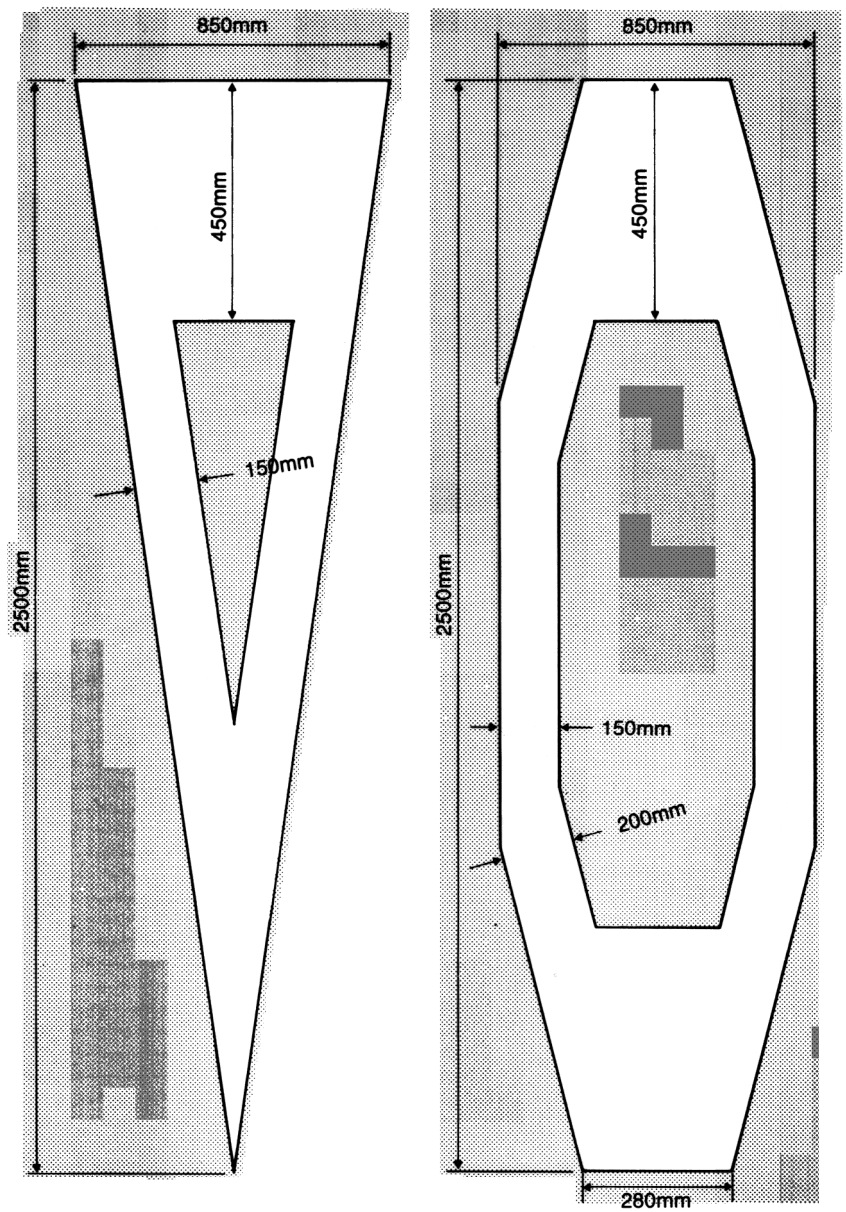




**Figure 3-**
Elongated symbols

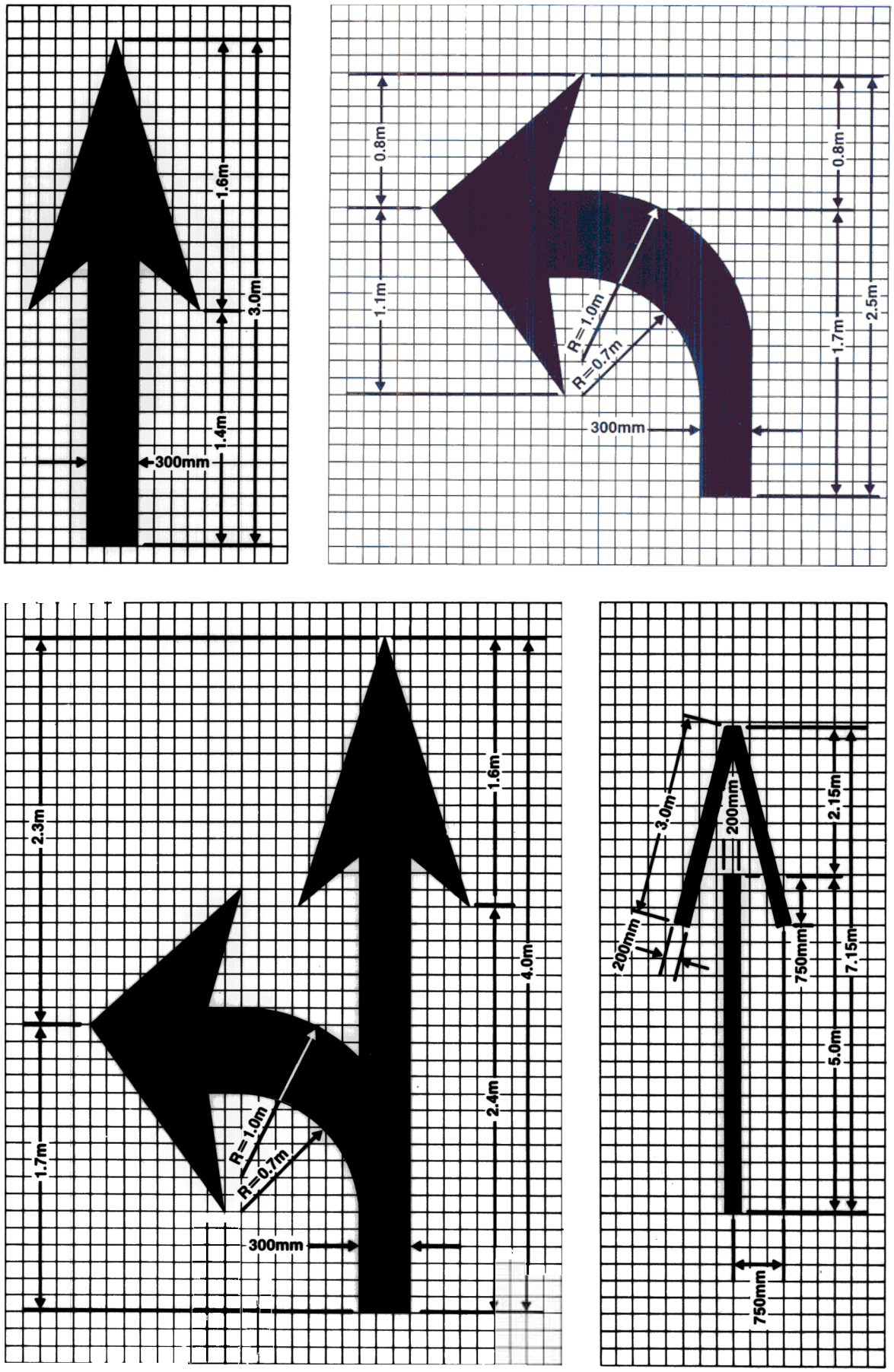
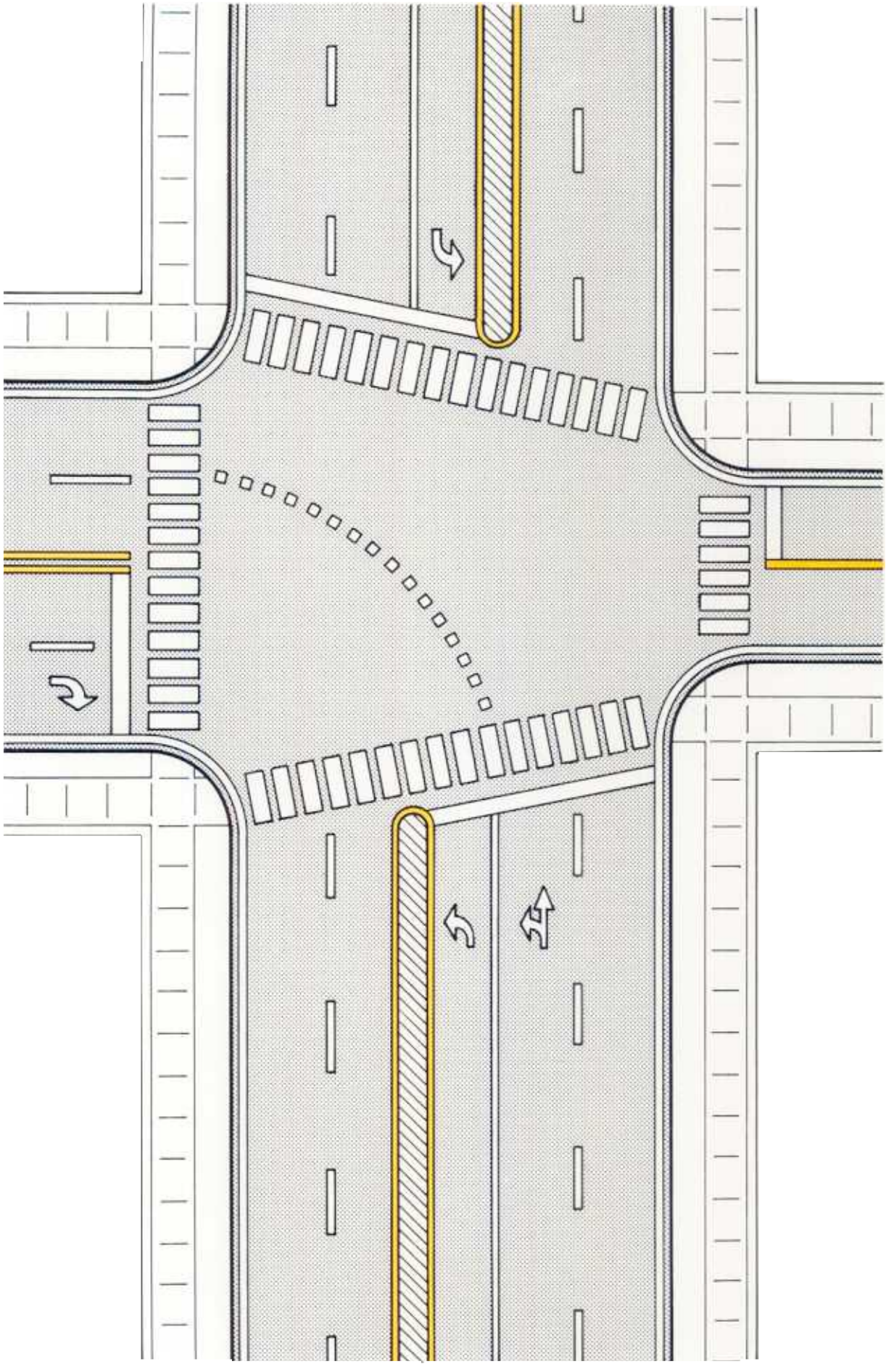



**Figure 3-16**
**Elongated arrows for pavement markings.**



**Fi 3-1**
**ypical lane-use trol markings.**

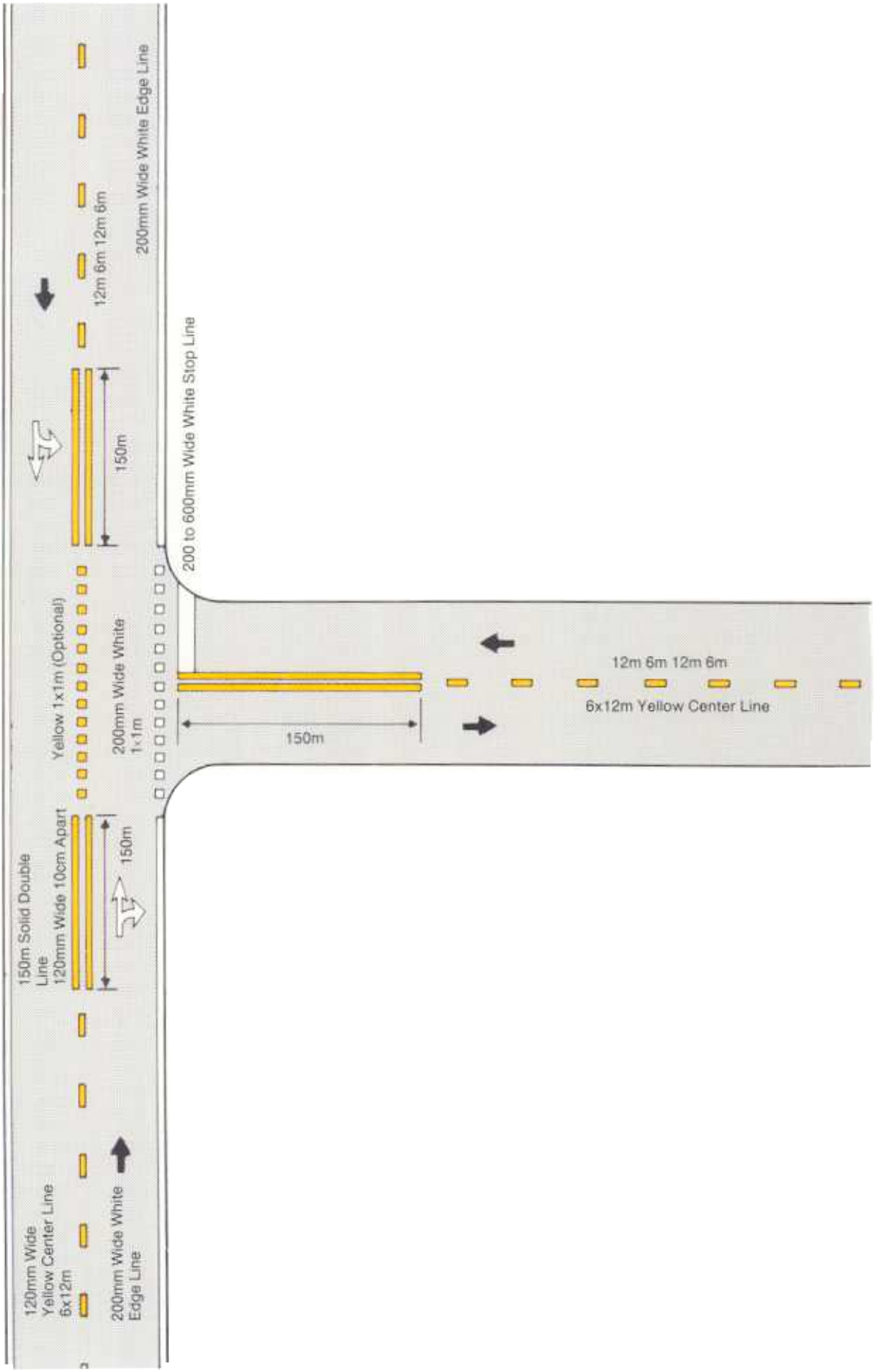



**Figure 3-18**
**Typical markings at a rural "T" junction.**

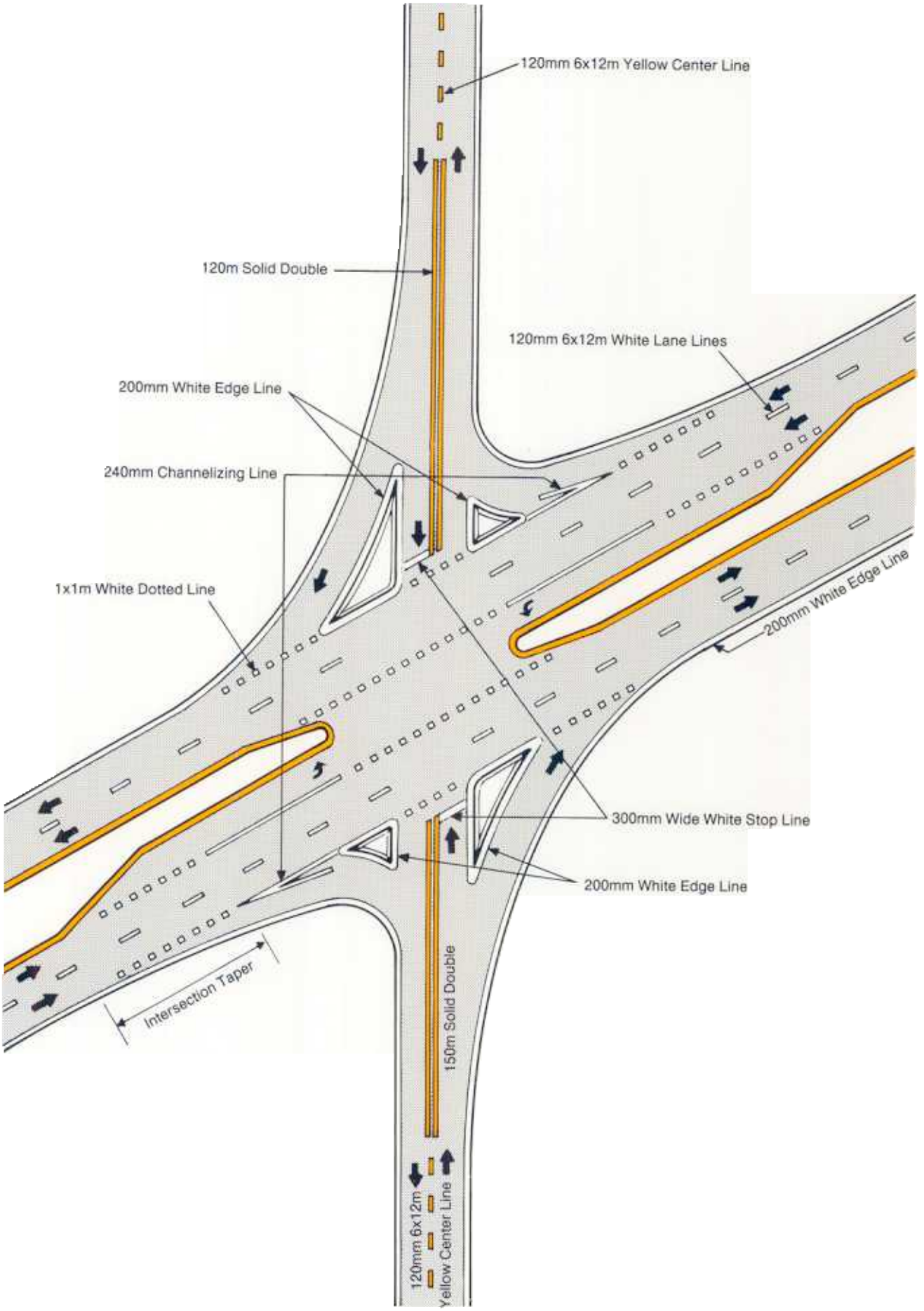



**Figure 3-19**
**Typical markings at a high speed rural intersection.**

## 3.03 Object Markers

### A. Object Marker Design

Object markers are used to mark obstructions within or adjacent to the roadway. When used, these markers shall consist of an arrangement of one or more of the following designs:

1. Type 1—A marker consisting of an all yellow reflective diamond panel 450 mm in size. Nine yellow reflector units may be used in the panel. Each reflector unit shall have a dimension of approximately 75mm mounted symmetrically on a 450 mm diamond, yellow panel. Type 1 markers may be larger if conditions warrant. (See figure 3-20a.)

2. Type 2—A striped marker consisting of a vertical rectangle approximately 300 mm by 900 mm in size with alternating black and reflectorized yellow stripes sloping downward at an angle of 45° toward the side of the obstruction on which traffic is to pass. The minimum width of the yellow stripe shall be 75 mm. A better appearance can be achieved if the black stripes are slightly wider than the yellow stripes. Type 2 object markers with stripes which begin at the upper right side and slope downward to the lower left side are to be designated as "right" object markers. (See figure 3-20b.)

3. Type 3—End of Roadway—When it is determined that markers should be placed at the end of a roadway where there is no alternate vehicular path, a marker consisting of nine red reflectors, each with a minimum dimension of approximately 75 mm, mounted symmetrically on an 450 mm red diamond panel; or an 450 mm diamond reflectorized red panel shall be used. More than one marker or a larger marker may be used at the end of the roadway where conditions warrant. The minimum mounting height of this marker shall be 1.20 m. Appropriate advance warning signs should be used. (See figure 3-20c.)

### B. Objects in the Roadway

1. Obstructions within the roadway, shall be marked with a Type 1 or Type 2 object marker.

2. For additional emphasis, a large surface such as a bridge pier may be painted with diagonal stripes, 300 mm or more in width, similar in design to the Type 2 object marker. The alternating black and reflectorized yellow stripes shall be sloped down at an angle of 45° toward the side of the obstruction which traffic is to pass. The minimum mounting height shall be 1.20 m.

3. Appropriate signs (Section 2.03 D32) directing traffic to one or both sides of the obstruction may be used in lieu of the object marker. In addition to markings on the face of an obstruction in the roadway, warning of approach to the obstruction shall be given by appropriate pavement markings (Section 3.02 L).

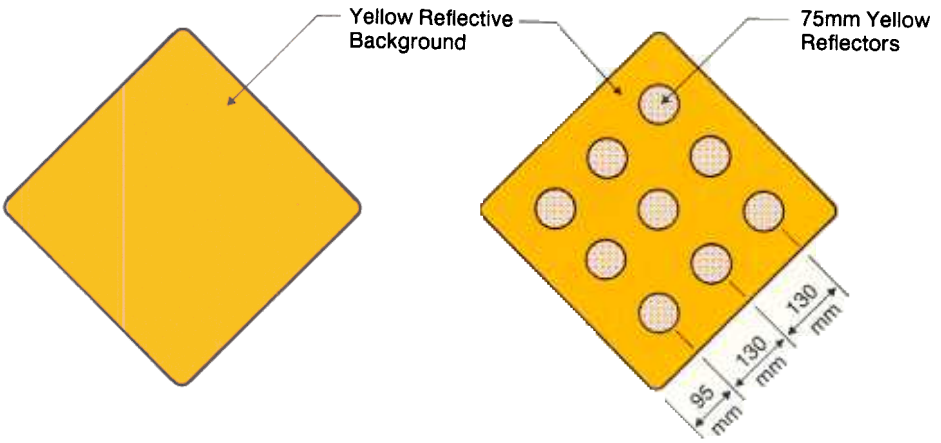
4. Where the vertical clearance of an overhead structure exceeds the maximum legal height of a vehicle by less than 0.3 m, the clearance to the nearest 0.1 m on a Regulatory sign should be clearly marked on the structure as well as on the Advance Warning sign. (See Sections 2.02 D34 and 2.03 D20).

### C. Objects Adjacent to the Roadway

1. Objects not actually in the roadway may be so close to the edge of the road that a marker is required. These include guardrail ends, underpass piers, bridge abutments, handrails, and culvert headwalls. In some cases, a physical object may not be involved, but other roadside conditions such as narrow shoulder drop-offs, gores, small islands, and abrupt changes in the roadway alignment may make it undesirable for a driver to leave the roadway. Type 2 object markers are intended for use at such locations. The inside edge of the marker shall be in line with the inner edge of the obstruction.

2. Standard Warning signs (Section 2.02) should also be used where applicable. Typical applications of markers for roadside obstructions are shown in Figure 3-21.

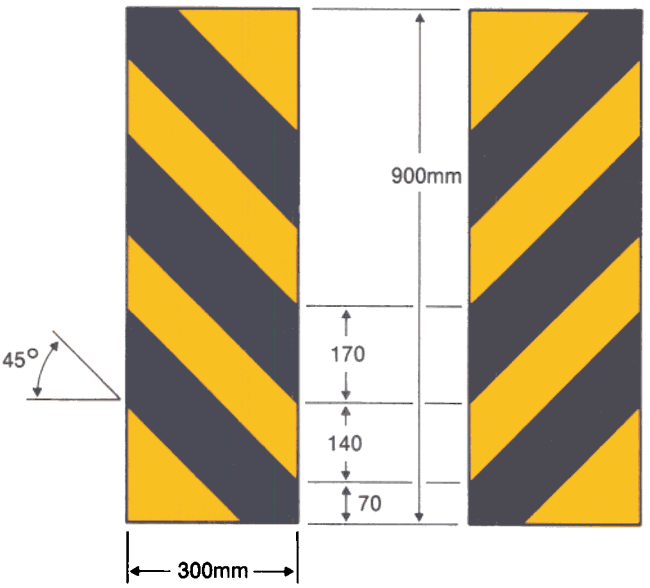
a. Type 1




450x450mm

450x450mm

b. Type 2

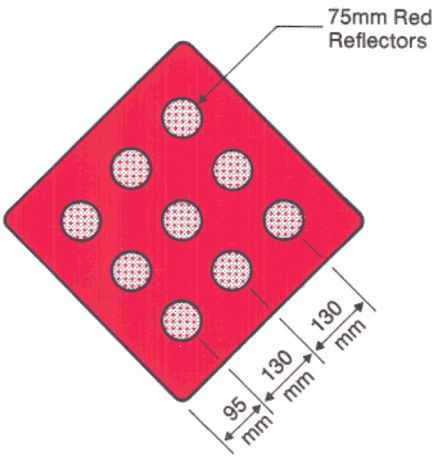



Left Object Marker

Right Object Marker

End of Roadway Marker

c. Type 3




450x450mm

**Figure 3-20**
**Object Markers.**

## 3.04 Delineation

### A. Delineators

Road delineators are light retro-reflecting devices mounted in series at the side of the roadway to indicate the roadway alignment. Delineators are effective aids for night driving and considered as guidance devices rather than warning devices. Delineators may be used on long continuous sections of highway or through short stretches where there are changes in horizontal alignment, particularly where the alignment might be confusing or at pavement width transitions. An important advantage of delineators, in certain areas, is that delineates remain visible when the roadway is wet.

### B. Design

Delineators shall consist of reflector units capable of clearly reflecting light under normal atmospheric conditions from a distance of 300 m when illuminated by the upper beam of standard automobile lights. Reflective elements for delineators shall have a minimum area of approximately 100 $cm^2$. Double delineators consist of two reflector units, one mounted above the other. Elongated reflective units of appropriate size may be used in place of the two reflectors.

### C. Curb Markings for Delineation

1. Reflectorized continuous yellow paint should be placed on the curbs of intersection islands located in the line of traffic flow where the curb serves to channel traffic to the right or to the left of the island. Reflectorized continuous white paint should be used when traffic may pass on either side of the divisional island.

2. Where the curbs of the islands become parallel to the direction of traffic flow it is not necessary to mark the curbs unless a study indicates the need for this type of delineation. Where these curbs are marked, the colors shall conform to the general principles of markings (Section 3.01 E).

3. Curbs at openings in a continuous median island need not be marked unless individual study indicates the need for this type of marking.

### D. Delineator Application

1. Delineation is intended to be a guide to the vehicle operator as to the alignment of the highway. Whatever is needed to provide that guidance in a clear and simple way should be installed.

2. The color of delineators shall, in all cases, conform to the yellow or white color of edge lines.

3. Single delineators shall be provided on the right side of expressway roadways and on at least one side of interchange ramps. These delineators may be provided on other classes of roads.

4. Single delineators may be provided on the left side of roadways and should be provided on the outside of bends on interchange ramps.

5. Where median crossovers are provided for official or emergency use on divided highways and these crossovers are to be marked, a double yellow delineator should be placed on the left side of the through roadway on the far side of the crossover for each roadway.

6. Red delineators may be used on the reverse side of any delineator whenever it would be viewed by a motorist traveling in the wrong direction on that particular ramp or roadway.

7. Delineators of the appropriate color may be used to indicate the narrowing of a pavement. The delineators should be used adjacent to the lane affected for the full length of the convergence and should be so placed and spaced to show the width reduction (Figure 3-9). Delineation is not necessary for the traffic moving in the direction of a wider pavement or on the side of the roadway where the alignment is not affected by the convergence. On a highway with continuous delineation on either or both sides, delineators should be carried through the transition and a closer spacing may be warranted.

8. Delineation is optional on sections of roadway between interchanges where fixed-source lighting is in operation.

### E. Delineator Placement and Spacing

1. Delineators, if used, shall be mounted on suitable supports so the top of the reflecting head is about 1.20 m above the near roadway edge. Delineators shall be placed not less than 1.0 m or more than 2.0 m outside the outer edge of the shoulder, or if appropriate, in the line of the guardrail. Delineators may be mounted on the guardrail at a height less than 1.2 m

2. Delineators should be placed at a constant distance from the edge of the roadway. However, where a guardrail or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with or inside the innermost edge of the obstruction. Typical delineator installations are shown in Figure 3-21.

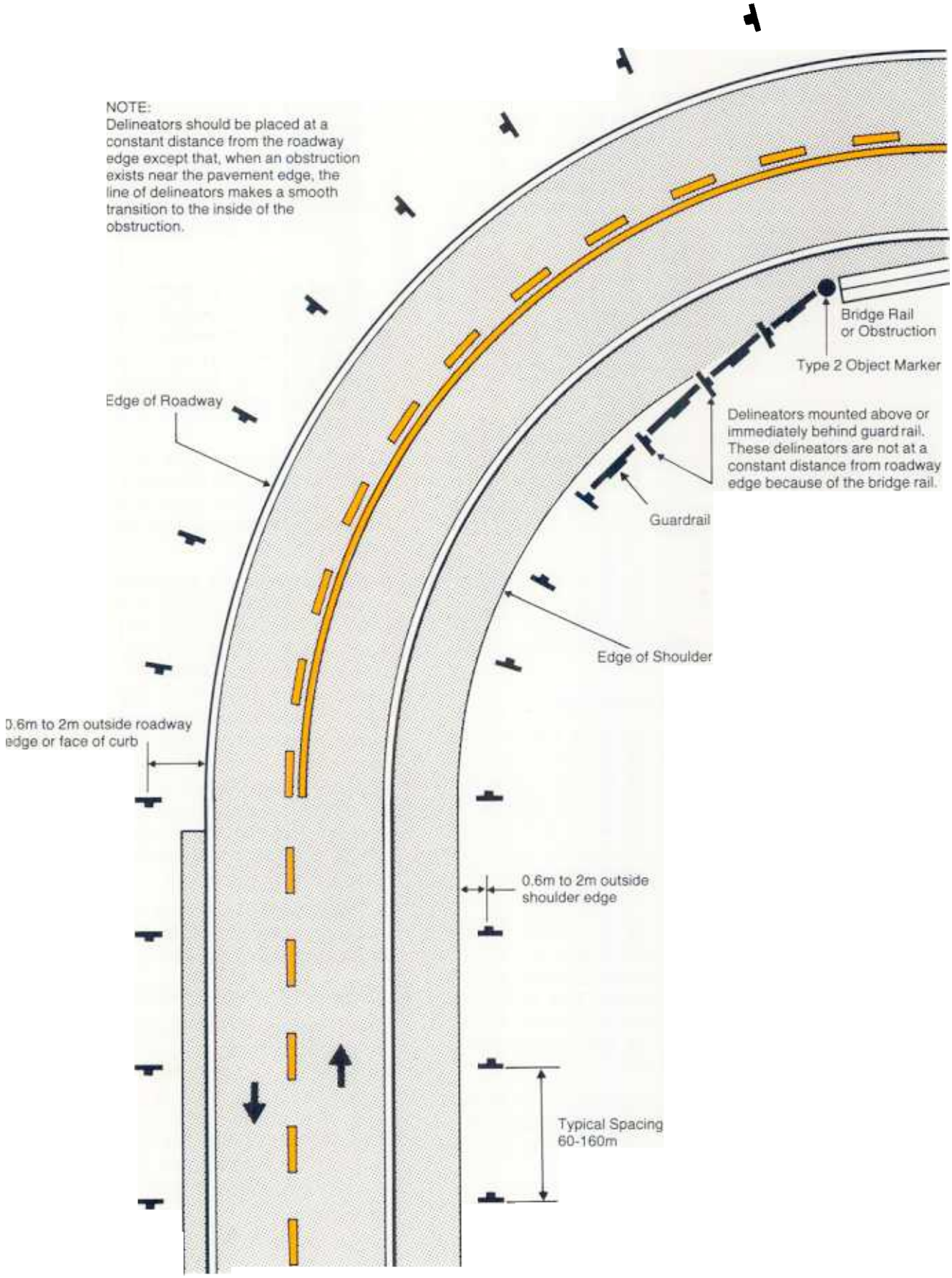



**Figure 3-21**
**Typical Delineator Installation.**

3. Normally, delineators should be spaced 60 m to 160 m. When normal uniform spacing is interrupted by driveways, crossroads, or similar interruptions delineators falling within such areas may be moved in either direction, a distance not exceeding one-quarter of the normal spacing. Delineators still falling within such areas should be eliminated. On expressways a normal delineator spacing is 100 m.

4. Double or vertically elongated delineators should be installed at 30 m intervals along acceleration and deceleration lanes.

5. Spacing should be adjusted on approaches and throughout horizontal bends so several delineators are always visible to the driver. Table 3-2 shows suggested maximum spacing for delineators at bends.

**Table 3-2**

**Suggested Maximum Spacing for Highway Delineators on Bends.**

| Radius of Bend (R) (meters) | Spacing on Bend (S) (meters) |
|---|---|
| 15 | 6 |
| 30 | 7.5 |
| 45 | 9 |
| 60 | 10.5 |
| 75 | 12 |
| 90 | 13.5 |
| 120 | 16.5 |
| 150 | 19.5 |
| 180 | 21 |
| 210 | 22.5 |
| 240 | 24 |
| 270 | 25.5 |
| 300 | 27 |

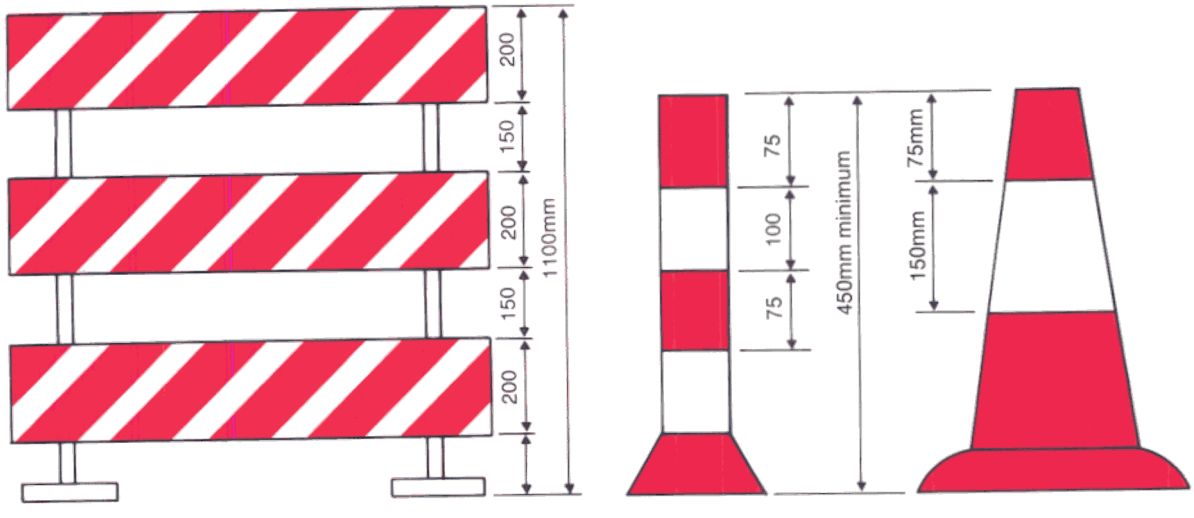
Spacing for radii not shown may be interpolated from table. The minimum spacing should be 6 m. The spacing of the first delineator on a tangent adjacent to a bend should be 2 S, the second 3 S, and the third 6 S but not to exceed 100 m.

**B. Channelizing Devices**

1. Traffic cones and tubular markers are sometimes used outside of construction and maintenance areas for general traffic control purposes. Such uses include adding emphasis to channelizing lines or islands.

2. These devices shall be a minimum of 450 mm in height and made of materials to withstand impact without damage to the devices or vehicles. Large size devices should be used wherever more conspicuous guidance is needed.

3. The color of cones and tube markers used outside construction and maintenance areas shall be the same as the pavement marking these markers are supplementing or substituting. These markers should be kept clean and bright for maximum target value. For nighttime use, the markers shall be reflectorized.




Standard Barricade—Type II

**Figure 3-22**
**Barricades and Channelizing Devices.**

## 3.06 Raised Pavement Markers

### A. General Principles

1. Raised pavement markers, generally less than 25 mm in height, may be used for pavement marking purposes. These markers may be round, square or rectangular in shape with dimensions as approved by the Ministry of Communications.

2. There are several different types of markers. The characteristics of the particular types are related to their functional applications.

3. These markers may be used as a supplement to or a substitute for other types of marking materials such as paint or plastic.

4. The color shall conform to the color of the markings these raised pavement markers supplement or the markings for which they are substituted.

5. Raised retro-reflective pavement markers may be used to supplement other types of pavement markings or in combination with nonreflectorized raised pavement markers as a substitute for other types of materials. These reflectorized markers may be used to provide improved night visibility especially during adverse weather conditions such as rain, blowing sand, or dust.

### B. Functional Applications

The determination of the normal spacing of the raised markers should be established in relation to the existing pattern of segments and gaps used with broken lines. This will avoid conflict or overlap. Figure 3-21 illustrates recommended spacings for reflectorized and nonreflectorized raised pavement markers.

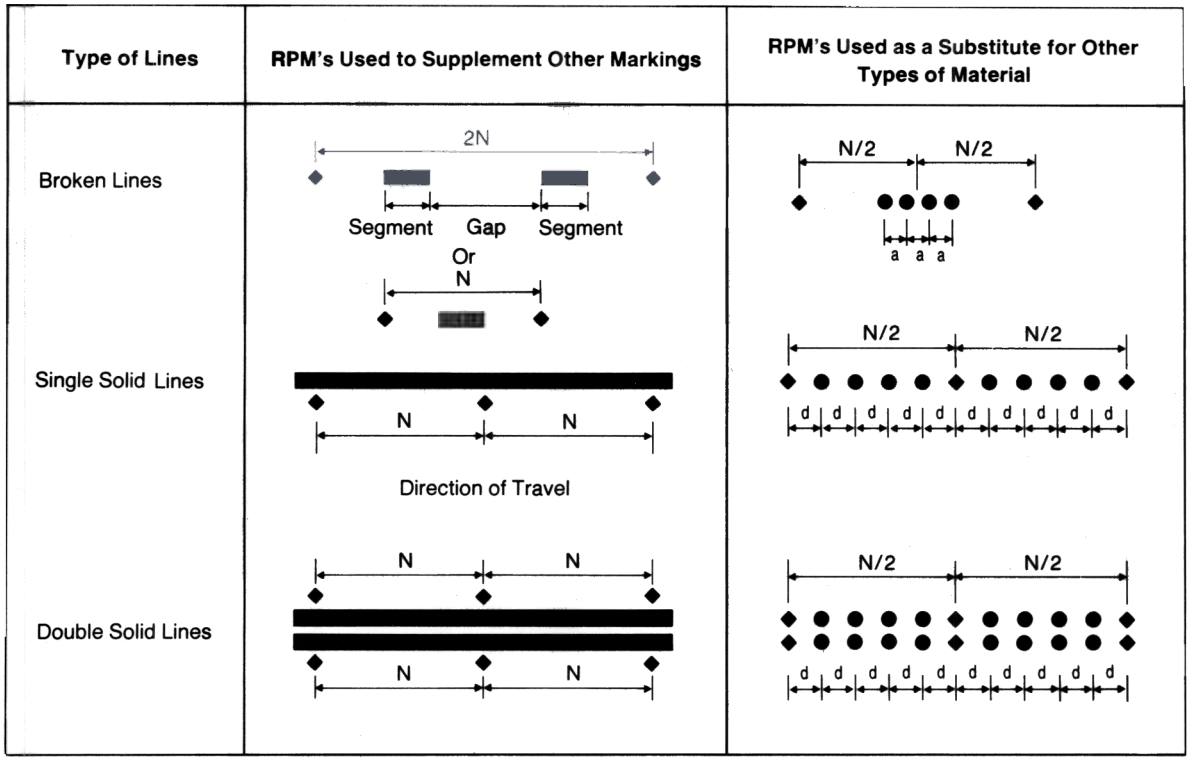
1. Generally, these markers are placed in alternate gaps to supplement a broken line and at a reduced spacing to supplement a continuous line. In some cases each stripe segment may be supplemented by a raised pavement marker and each gap may contain a raised pavement marker.

2. For special situations, closer spacing may be used. This reduced spacing may be used if there are special hazardous locations. For example, a reduced spacing may be desirable at sharp bends, approaches to problem intersections, locations where there is a predominance of bad weather (such as sand storms or blowing dust), at high traffic volume locations, or through transition areas where the number of lanes is reduced.

3. Markers placed adjacent to a painted line shall be offset by 3 cm.

4. The spacing for raised pavement markers when used as a substitute for broken or continuous lines can be determined from Figure 3-23.

5. Edge line markers are set on the roadway side of the line.




N = Generally equal to length of one gap plus one segment

$a = \frac{\text{Length of one segment}}{3}$

= Paint or plastic pavement marking

$d = \frac{N}{10}m$

◆ = Reflectorized raised pavement marker

● = Nonreflectorized raised pavement marker

RPM Spacing in gore areas = 1.0m

**Figure 3-23**
**Recommended spacing for raised pavement markers.**