



STOP SIGN



GIVE WAY



COMPULSORY CYCLE
TRACK/CYCLE ONLY



NATIONAL HIGHWAY
ROUTE MARKER SIGN

CODE OF PRACTICE FOR ROAD SIGNS

(Third Revision)



INDIAN ROADS CONGRESS
2012



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CODE OF PRACTICE FOR ROAD SIGNS

(Third Revision)

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1 INTRODUCTION

1.1 Road signs, which have the backing of law in India, are incorporated in the Motor Vehicles Act, 1988.

1.2 The Motor Vehicles Act, 1988 has covered all the signs warranted by different traffic situations. The designs of signs are fully dimensioned. Further, the signs have uniformity, and mostly symbols are used to convey the message, especially in the case of regulatory signs.

1.3 The IRC Code of Practice for Road Signs sets out the methodology to be followed in the use, placement, construction and maintenance of the road signs for all categories of roads including expressways. The road signs adopted in this code are in harmony with Protocol on Road Signs and Signals of United Nations Conference on Road and Motor Transport, 1949 and Vienna Convention on Road Signs and Signals, 1968.

1.4 The Second Revision of IRC Code of Practice for Road Signs was reviewed by the Transport Planning, Traffic Engineering and Road Safety Committee of the Indian Roads Congress in its meeting held on 13th October, 2010 based on comments received from some members and it constituted a Sub-group with Shri Nirmal Jit Singh as the Convenor and including Shri D.P. Gupta, Dr. (Mrs.) Geetam Tiwari and Shri S.B. Basu as members to review the code and suggest modifications/amendments if any required. The Sub-group after deliberations further Co-opted Prof. P. K. Sikdar, Shri Jacob George and Dr. Surinder Mohan as co-opted members of the above Sub-group considering their rich experience. The entire Sub-group reviewed the document in detail and restructured it by relating size and spacing of signs with respect to design speed of the road, including guidelines for selection of retro-reflective sheeting, incorporating some new signs and including illustrative examples of sign plans for different commonly occurring situations. The modified code was considered by the Transport Planning, Traffic Engineering and Road Safety Committee (Personnel given below) in its meeting held on 13th September, 2011 and approved for forwarding to IRC for consideration by the Highways Specifications and Standards Committee after modifications based on comments of the members.

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1.5 The Highways Specifications and Standards Committee approved the draft in its meeting held on 23rd September, 2011. Thereafter, the Council of IRC in its meeting held at Lucknow on 3rd November, 2011 considered the '*Third Revision*' of IRC-67 presented by Shri Nirmal Jit Singh, Convenor of the Sub-group and approved the document for publication suggesting minor modifications. The Council also authorized Shri Nirmal Jit Singh to oversee the incorporation of the minor comments and suggestions of the Council before it is sent for printing. Further, a small group consisting of Shri Nirmal Jit Singh (Convenor), Prof. P.K. Sikdar, Shri Jacob George and Dr.S.Velmurugan accomplished the above tasks of addressing the comments/suggestions of the Council and submitted the final version of the document to IRC for printing.

2 GENERAL

2.1 Purpose of Road Signs

The purpose of road signs is to promote road safety and efficiency by providing for the orderly movement of all road users on all roads in both urban and non-urban areas. Road signs notify road users of regulations and provide warning and guidance needed for safe, uniform and efficient operation.

2.2 Principles of Road Signs

This Code contains the basic principles that govern the design and use of road signs for all categories of roads including expressways open to public travel irrespective of road agency having jurisdiction.

It is important that these principles be given primary consideration in the selection and application of each road sign. To be effective, a road sign should meet five basic requirements:

- a) Fulfill a need;
- b) Command attention;
- c) Convey a clear and simple meaning;
- d) Command respect from road users; and
- e) Give adequate time for response.

Design, placement, operation, maintenance, and uniformity are aspects that should be carefully considered in order to maximize the ability of a road sign to meet these five basic requirements.

2.3 Placement and Operation of Road Signs

Placement of road signs should be within road user's view. To aid in conveying proper meaning, road signs should be positioned with respect to the location or situation to which it applies. The location and legibility of the road sign should be such as to provide adequate response time to road users to read and take action at the operating speed. Road signs or their supports shall not bear any advertising or other message that is not related to traffic control. However, tourist-oriented directional signs and signs relating to specific wayside services and amenities should not be considered as advertising. Road signs should be placed and operated in a uniform and consistent manner. Road signs which are not necessary or no longer required should be removed. The fact that a sign is in good physical condition should not be a basis for deferring the removal or change, if it is so warranted.

2.4 Maintenance of Road Signs

Maintenance of road signs should be ensured to retain both the legibility and the visibility of the sign. Functional evaluation of road signs should be done to determine at regular periodic intervals, whether certain signs need to be changed to meet current traffic conditions. Clean, legible, properly mounted signs in good working condition command respect from road users.

2.5 Uniformity of Road Signs

Uniformity of signs simplifies the task of the road user because it helps in recognition and understanding, thereby reducing perception/reaction time. Uniformity assists road users, traffic police and highway agencies by giving everyone the same interpretation message. Uniformity also promotes efficiency in manufacture, installation and maintenance. Uniformity means treating similar situations in a similar way. A standard sign, used where it is not appropriate, is as objectionable as a nonstandard sign.

2.6 Traffic Engineering Study

The decision to use a particular sign at a particular location should be made on the basis of traffic engineering study and after a very careful planning so that correct and uniform signs are placed at required locations.

Authorities with responsibility for traffic control that do not have in-house engineering assistance can take help from traffic engineering consultant(s) or academic and research institutions with domain expertise.

3 CLASSIFICATION OF ROAD SIGNS

Road signs are classified under the following three heads:

3.1 Mandatory/Regulatory Signs

All Mandatory or Regulatory Signs are circular in shape. Mandatory/Prohibitory Signs are to indicate the prohibition upon certain kind of vehicle maneuver and vehicle type like “overtaking prohibited” or “U-turn prohibited” or “cycles prohibited” and restriction on parking like “parking prohibited” and limit on vehicle speed and size like “speed limit” and “maximum load limit”. They are with red circular ring and diagonal bars with black symbols or arrows or letters on white background. The red ring indicates prohibitory regulation; and the diagonal red bar prohibits the action or movement indicated by the black symbol.

Mandatory signs giving positive instructions are circular with white symbol on a blue background. They indicate what driver must do compulsorily. For example, direction control signs are to compulsorily regulate certain movements wherever the restriction applies.



Fig. 3.1

The exceptions in shape are the octagonal red STOP sign and the triangular GIVEWAY or YIELD sign. These two signs provide indication about right of way to drivers.

Mandatory and regulatory signs need to be complied with and any violation of the rules and regulations conveyed by these signs is a legal offence. Examples of these signs are shown in Fig. 3.1.

3.2 Cautionary/Warning Signs

Cautionary/Warning signs are triangular in shape with red border and black symbol in white background used to caution and alert the road users to potential danger or existence of certain hazardous conditions either on or adjacent to the roadway so that they take the desired action. These signs indicate a need for special caution by road users and may require a reduction in speed or some other manoeuvre. Some examples of these signs are Hairpin Bend, Narrow Bridge, Gap in Median, School Ahead etc. An example is shown in **Fig. 3.2**.

3.3 Informatory/Guide Signs

All Informatory signs and Guiding signs for facilities are rectangular in shape.

Informatory Signs for facilities indicates location and direction to facilities like “fuel station” or “eating place” or “parking” and shall be a symbol within a rectangular board with blue background.

Information signs in rectangular shape are also used with destination names and distances with arrows indicating the direction. The colour pattern of direction information sign is presented in **Table 8.3**. These are used to give such information to road users which will help them along the route in most simple and direct manner. Examples of these are shown in **Fig. 3.3**.

3.4 Road Classifications

Generally roads are classified as under:

- Expressways
- National Highways
- State Highways
- Major District Roads
- Rural Roads (Other District Roads (ODR) and Village Roads (VR))
- Urban (City) Roads

The direction information signs for different categories of road will have different colour combinations as given in **Table 8.3**.



Cautionary/
Warning

Fig. 3.2



Facility
Information



Direction
Information

Fig. 3.3

4 SITING OF SIGNS WITH RESPECT TO THE CARRIAGEWAY

4.1 The road signs are the means of communication to the road users, especially drivers. Therefore, the signs shall be so placed that the drivers can recognize them easily and in time. Normally the signs shall be placed on the left hand side of the road. For two lane roads, normally the signs may be placed on the left side of the carriageway, repeated on the other side of the carriageway, if local conditions are such that the signs might not be seen in time by the drivers. For multilane divided roads the signs may be placed on left side of each carriageway. In case of hill roads, the signs shall generally be installed on the valley side of the road, unless traffic and road conditions warrant these to be placed on the hill side.

4.2 On all roads with or without kerb and with or without shoulder, the extreme edge of the ground mounted sign adjacent to the roadway shall be at a distance of 600 mm to 3 m from the carriageway or paved shoulder edge depending upon the local conditions. For roads with kerbs, it shall not be less than 300 mm away from kerb line, but in no case shall any part of the sign come in the way of vehicular traffic.

Gantry mounted signs should be mounted on columns preferably 7 m or more from the nearest traffic lane, unless otherwise specified. The minimum lateral offset is intended to keep it away from vehicles that may use the shoulder from striking the gantry column. If there is a situation where this lateral clearance cannot be maintained, the column of gantry sign shall be shielded with W-Beam crash barrier for required run out length depending upon the setback distance between the pavement edge line and column of gantry. Lesser clearances but not less than 1.8 m may be used on connecting roadways or ramps at interchanges.

4.3 On kerbed roads, the bottom edge of the lowest sign shall not be less than 2.1 m and not more than 2.5 m above the kerb. On roads without kerb, the bottom edge of the lowest sign shall not be less than 2 m and not more than 2.5 m above the crown of the pavement. Where signs are erected above footpaths or in areas likely or intended to be used by pedestrians, minimum headroom of 2.1 m is to be provided.

4.4 Where in the opinion of the competent authority, a sign would be ineffective if placed on the left hand side shoulder of a road with dual carriageway, it may be placed on the median instead. To improve the visibility of the signs on multi-lane roads, the minimum height of the lower edge of the sign should be kept as 2.5 m above the highest point of the carriageway.

4.5 The signs shall be so placed that these do not obstruct vehicular traffic on the carriageway, and if placed on the berm/footpath/refuge island cause least obstruction to pedestrians. The difference in level between the lower edge of the sign and the carriageway shall be as uniform as possible for signs of the same class on the same route.

4.6 On multi-lane roads, the signs may have to be mounted overhead, as this would ensure better visibility and be effective in communicating with the drivers and other road users. Overhead signs may be used in lieu of, or as an adjunct to, ground signs where the

situation so warrants for proper information and guidance of the road user. The following conditions may be considered while deciding about the provision of overhead signs:

- Traffic volume at or near capacity
- Complex interchange design
- Three or more lanes in each direction
- Restricted visibility
- High speed traffic
- Insufficient space for ground mounted signs
- Large percentage of commercial vehicles
- Closely spaced interchanges

4.7 From safety and aesthetic standpoints, overhead signs shall be mounted on overhead bridge structures wherever possible. Overhead signs shall provide a vertical clearance of not less than 5.5 m over the entire width of the pavement and shoulders. Where overhead sign supports cannot be placed at a safe distance away from the line of traffic or in an otherwise protected site, they should either be so designed as to minimize the impact forces or protect motorists adequately by a physical barrier or guard rail of suitable design. Encompassing all above requirements, the placement of signs with respect to carriageway with required height and clearance is given in **Table 4.1** and **Fig. 4.1**.

4.8 Mandatory signs (e.g. Keep Left) on traffic islands are normally mounted so that the bottom edge is about 1000 mm above the paved surface. When several signs have to be placed along the same section of road, take care that they do not obscure each other. And then locate the signs at a minimum of $0.6*V$ meters apart (where V is the 85th percentile speed in km/h). Signs are normally erected on the left side of the road, but for extra emphasis a second sign may be placed on the right side of the road as well. This is especially useful on left-hand curves. Wherever minimum lateral clearance cannot be maintained for gantry columns from shoulder edge line, such exposed column shall be protected with crash barrier.

Table 4.1 Height and Clearance Required for Sign Placement

| | Minimum (mm) | Desirable (mm) | Maximum (mm) |
|---|---------------------|-----------------------|---------------------|
| A | 600 | 1000 | 2500 |
| B | 1000 | 2000 | 3000 |
| C | 300 | 600 | 1000 |
| D | 2000 | 2000 | 2500 |
| E | 2100 | 2100 | 2500 |
| F | 5500 | 6000 | 6500 |
| G | 750 | | |
| H | | | 5000 |
| I | 5000 | 7000 | 9000 |
| J | 1800 | 2000 | 2500 |

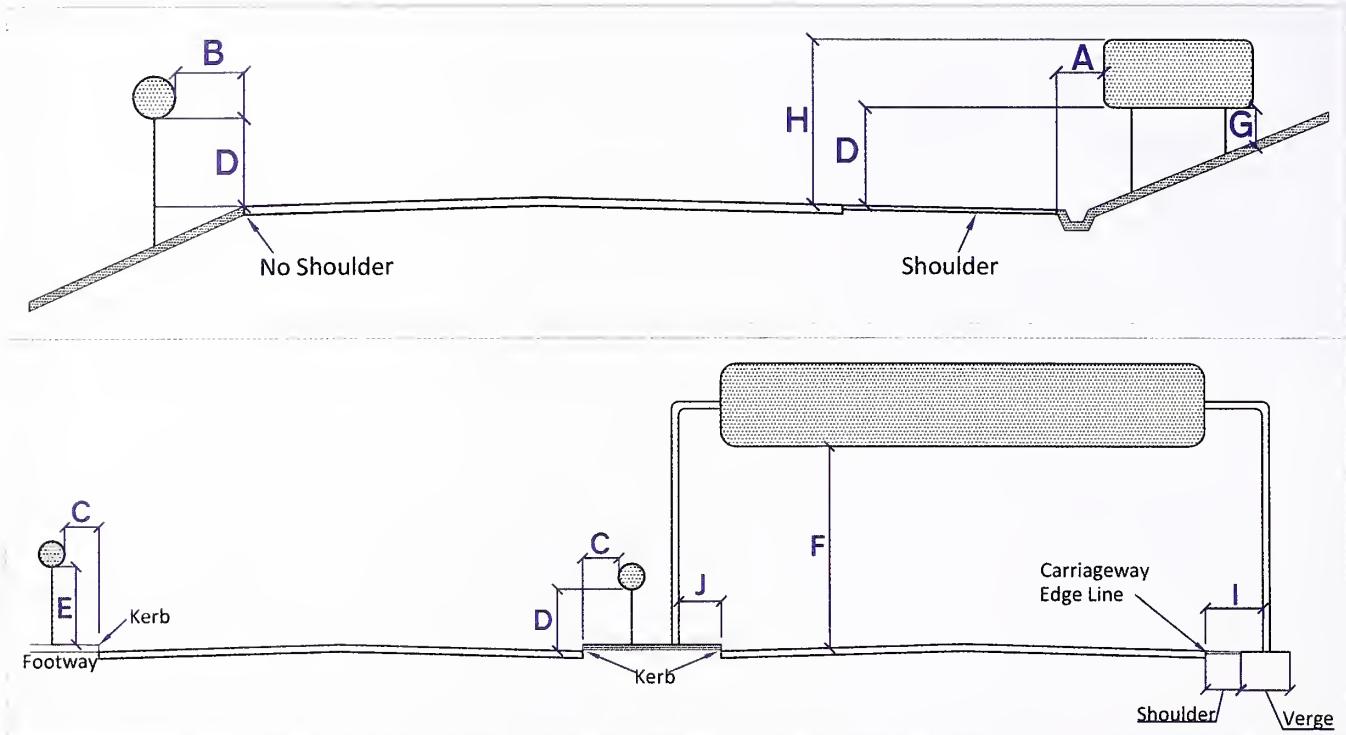


Fig. 4.1 Siting of Signs with respect to Carriageway
(Height and Clearance)

5 ORIENTATION OF SIGNS

5.1 The signs unless otherwise stated shall normally be placed at right angles to the line of travel of the approaching traffic. Signs relating to parking, however, should be fixed at an angle (approximately) 15° to the carriageway so as to give better visibility.

5.2 Where light reflection from the sign face is encountered to such an extent as to reduce legibility, the sign should be turned slightly away from the road as shown in Fig. 5.1. On horizontal curves, the sign should not be fixed normal to the carriageway but the angle of placement should be determined with regard to the course of the approaching traffic.

5.3 Sign faces are normally vertical, but on gradients it may be desirable to tilt a sign forward or backward from the vertical to make it normal to the line of sight and improve the viewing angle.

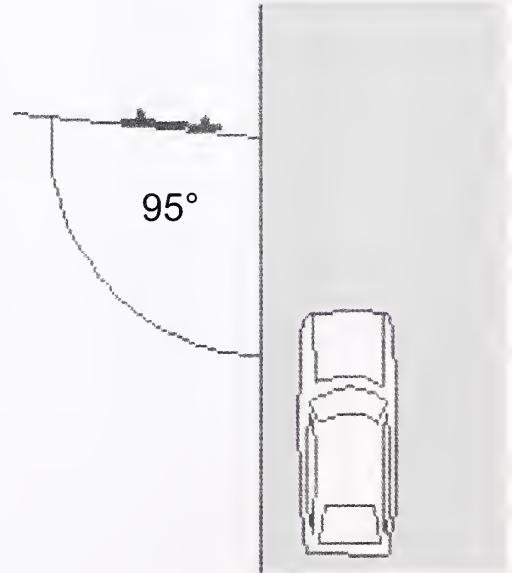


Fig. 5.1

6 MATERIAL FOR SIGNS

The various materials and fabrication of road signs shall conform to the following requirements:

6.1 Concrete: Concrete shall be of M25 grade.

6.2 Reinforcing Steel: Reinforcing steel shall conform to the requirements of IS 1786 unless otherwise specified.

6.3 Bolts, Nuts and Washers: High strength bolts shall conform to IS 1367 whereas precision bolts, nuts, etc. shall conform to IS 1364.

6.4 Plates and Supports: Plates and support sections for the signposts shall conform to IS 226 and IS 2062 or any other stated IS specification.

6.5 Substrate: The substrate shall be either Aluminum sheeting or Aluminium Composite Material (ACM) conforming to following sub-sections.

6.5.1 Aluminium

Aluminium sheets used for sign boards shall be of smooth, hard and corrosion resistant aluminium alloy conforming to IS 736 - Material Designation 24345 or 1900.

6.5.2 Aluminium Composite Materials (ACM)

ACM sheets used for sign boards is a sandwiched construction with a thermoplastic core of 'Low Density Polyethylene' (LDPE) between two thick skins/sheets of aluminium with overall thickness of 4 mm and 3 mm, and aluminium skin thickness of 0.4 - 0.5 mm and 0.25 - 0.3 mm respectively on both sides. The retro reflective sheeting must be applied on the top surface with aluminum surface with recommended surface preparation from sheeting manufacturer. A fluorocarbon coating may be applied over the exposed surface of aluminium to ensure corrosion resistant and weather proof and thus shall conform to relevant ASTM. The mechanical properties of 4 mm and 3 mm ACM and that of its aluminum skin shall conform to the requirement given in **Table 6.1**, when tested in accordance with the test methods mentioned against each of them.

6.6 Plate Thickness

Shoulder mounted ground signs with a maximum side dimension not exceeding 600 mm shall not be less than 1.5 mm thick with aluminium and 3 mm thick with aluminium composite material. All other signs shall be at least 2 mm thick with aluminium and 4 mm thick with aluminium composite material. The thickness of the sheet shall be related to the size of the sign and its support and shall be such that it does not bend or deform under prevailing wind and other loads. All overhead signs made with aluminium composite material shall be minimum 4 mm thick to withstand wind and other loads without deformation.

Table 6.1 Specifications for Aluminum Composite Material (ACM)

| S.No. | Description | Specification for 4 mm | | Specification for 3 mm |
|-------|--|------------------------|-------------------------------|-------------------------------|
| | | Standard Test | Acceptable Value | Acceptable Value |
| A | Mechanical Properties of ACM | | | |
| 1 | Peel off strength with retro reflective sheeting. (Drum Peel Test) | ASTM D903 | Min. 4 N/mm | Min. 4 N/mm |
| 2 | Tensile strength | ASTM E638 | Min. 40 N/mm ² | Min. 30 N/mm ² |
| 3 | 0.2% Proof Stress | ASTM E638 | Min. 34 N/mm ² | Min. 34 N/mm ² |
| 4 | Elongation | ASTM E638 | Min. 6 % | Min. 5 % |
| 5 | Flexural strength | ASTM C393 | Min. 130 N/mm ² | Min. 120 N/mm ² |
| 6 | Shear strength with punch shear test | ASTM D732 | Min. 18 N/mm ² | Min. 18 N/mm ² |
| B | Properties of Aluminium Skin | | | |
| 1 | Tensile strength (Rm) | ASTM E8 | Min. 150 N/mm ² | Min. 130 N/mm ² |
| 2 | Modulus of elasticity | ASTM E8 | Min. 70,000 N/mm ² | Min. 70,000 N/mm ² |
| 3 | Elongation | ASTM E8 | A ₅₀ Min. 2% | A ₅₀ Min. 2% |
| 4 | 0.2 % Proof Stress | ASTM E8 | Min. 110 N/mm ² | Min. 110 N/mm ² |

6.7 Retro Reflective Sheeting

The retro reflective sheeting used on the signs shall consist of white or coloured sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. It shall be new and unused and show no evidence of cracking, scaling, and pitting, blistering, edge lifting or curling and shall have negligible shrinkage or expansion. A certificate of having the sheeting tested for coefficient of retro reflection, daytime colour and luminance, shrinkage, flexibility, liner removal, adhesion, impact resistance, specular gloss and fungus resistance, 3 years outdoor weathering and its having passed these tests shall be obtained from International/Government Laboratory/ Institute by the manufacturer of the sheeting and in case the certificate is obtained from international agency, it should also be obtained from Indian agency within 3 years of launching of product by the manufacture in abroad. Alternatively, a certificate conforming to ASTM Specification (D 4956-09) on artificial accelerated weathering requirements from a reputed laboratory in India can be accepted provisionally. In such a situation, the Employer/Client, if so desires, could seek for a performance guarantee which would be released after receipt of certificate meeting the requirement of three years outdoor weathering of the sheeting. Retro reflective sheeting is divided into three classes as follows:

CLASS A SHEETING: - Engineering and Super Engineering Grade Sheeting as per ASTM D 4956-09 Type I and II.

CLASS B SHEETING: - High Intensity and High Intensity Prismatic grade sheeting as per ASTM D 4956-09 Type III and IV.

CLASS C SHEETING: - All Micro Prismatic grade sheets as per ASTM D 4956-09 Type VIII, IX and XI.

6.7.1 Selection of sheeting

Performance characteristics of sheeting Type I to Type IX used for road signs are presented respectively in **Table 6.3 to Table 6.9**. The definition of key words in understanding the performance characteristics are given below.

“Retro-reflection” means the reflection of light which is returned in directions close to the direction from which it came, and this property being maintained even over wide variations of the direction of the incident radiation.

“Observation angle (symbol α)” is the angle between the illumination axis and the observation axis as shown in **Fig. 6.1**.

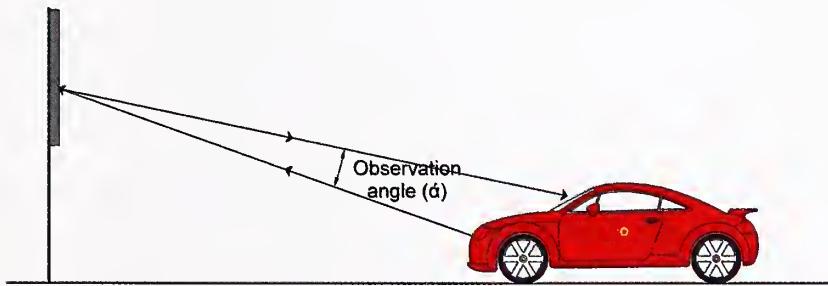


Fig. 6.1

“Entrance angle (symbol β)” means the angle from the illumination axis to the reference axis. The reference axis is an axis perpendicular to the retro reflective surface as shown in **Fig. 6.2**.

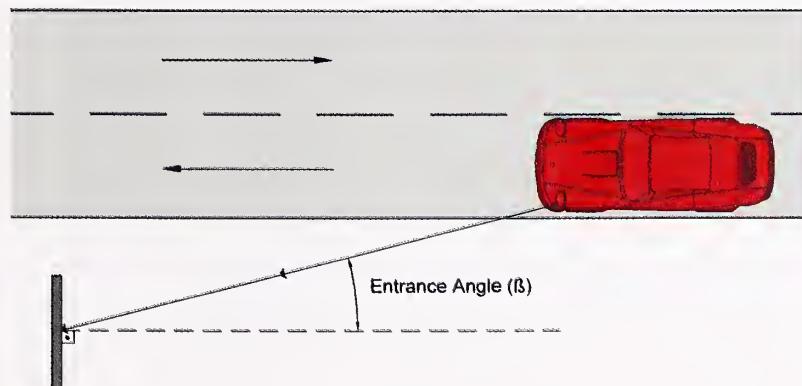


Fig. 6.2

“Coefficient of retro-reflection R’ ” can be obtained from the luminous intensity (I) of the retro-reflective area in the direction of observation and the illumination ($E \perp$) on the retro-reflective plane at right angles to the direction of the incident light and the illuminated plane sample surface A,

$$R' = I / E \perp * A$$

The coefficient of retro-reflection R' is expressed in candle per square meter per lux (cd.m^{-2} . lx^{-1}). Though the sheeting as per ASTM classification are available from Type I to Type IX, a “higher” type of sheeting used in the ASTM need not necessarily imply that it is better than a “lower”-type sheeting, rather it meets different performance characteristics. Each type of sheeting has certain performance characteristics and the type of sheeting for a road should be selected which suits the situation encountered by road users in viewing the signs on the particular road. For example, sheeting with high coefficient of retro reflection at small observation angle will give better performance for driver’s viewing the sign from long distances. Similarly, signs with wide observation angle give good performance for drivers encountering situations to observe the signs involving wide observation angle. Micro prismatic sheeting is preferred for gantry mounted overhead signs. Type IV micro prismatic sheeting may be used for delineator posts.

Table 6.2 suggests a general guideline for selection of sheeting considering the performance characteristics of each type of sheeting for different category of roads and also on economic consideration and visibility requirements in Indian context. However, the choice for selection of type of sheeting would rest with the client.

Table 6.2 Suggested Guidelines for Usage of Retro-Reflective Sheeting

| Class of Sheeting | Type of Sheeting (ASTM) | Category of Road | | | | |
|-------------------|-------------------------|-------------------------|----------------------|-------------|-------------------|------------|
| | | National/ State Highway | Major District Roads | Rural Roads | Urban/ City Roads | Expressway |
| Class A | Type I | No | Yes | Yes | No | No |
| | Type II | No | Yes | Yes | No | No |
| Class B | Type III* | Yes | Yes | Yes | Yes | No |
| | Type IV | Yes | Yes | Yes | Yes | No |
| Class C | Type VIII | Yes | No | No | Yes | Yes |
| | Type IX | Yes | No | No | Yes | Yes |
| | Type XI | Yes | No | No | Yes | Yes |

* Type III sheeting is available both as glass beaded and micro prismatic technology as per ASTM D4956-09. The light reflecting efficiency of glass beaded sheeting is lower than the micro prismatic sheeting.

6.7.2 Class A (Engineering grade sheeting)

6.7.2.1 Type I engineering grade sheeting

This sheeting shall be of enclosed lens glass bead type consisting of microscopic lens elements embedded beneath the surface of a smooth, flexible, transparent, water-proof plastic, resulting in a non-exposed lens optical reflecting system. The retro-reflective surface after cleaning with soap and water and in dry condition shall have the minimum coefficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.3**.

Table 6.3 Acceptable Minimum Co-efficient of Retro-Reflection for Type I Engineering Grade Sheeting (Candelas per Lux per Square Meter)

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Brown |
|-------------------|----------------|-------|--------|--------|-------|-----|------|-------|
| 0.2° | - 4° | 70 | 50 | 25 | 9.0 | 14 | 4.0 | 1.0 |
| 0.2° | +30° | 30 | 22 | 7.0 | 3.5 | 6.0 | 1.7 | 0.3 |
| 0.5° | - 4° | 30 | 25 | 13 | 4.5 | 7.5 | 2.0 | 0.3 |
| 0.5° | +30° | 15 | 13 | 4.0 | 2.2 | 3.0 | 0.8 | 0.2 |

When totally wet, the sheeting shall not show less than 90 per cent of the values, of retro-reflection indicated in above Table. At the end of 5 years, the sheeting shall retain at least 50 per cent of its original retro-reflectance.

6.7.2.2 Type II super engineering grade sheeting

This sheeting shall be of enclosed lens glass-bead type consisting of microscopic lens elements embedded beneath the surface of a smooth, flexible, transparent, water-proof plastic, resulting in a non-exposed lens optical reflecting system. The retro-reflective surface after cleaning with soap and water and in dry condition shall have the minimum coefficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.4**.

Table 6.4 Acceptable Minimum Coefficient of Retro-Reflection for Type II Super Engineering Grade Sheet (Candelas per Lux per Square Meter)

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Brown |
|-------------------|----------------|-------|--------|--------|-------|-----|------|-------|
| 0.2° | -4° | 140 | 100 | 60 | 30 | 30 | 10 | 5 |
| 0.2° | +30° | 60 | 36 | 22 | 10 | 12 | 4 | 2 |
| 0.5° | -4° | 50 | 33 | 20 | 9 | 10 | 3 | 2 |
| 0.5° | +30° | 28 | 20 | 12 | 6 | 6 | 2 | 1 |

When totally wet, the sheeting shall not show less than 90 per cent of the values, of retro-reflection indicated in above Table. At the end of 5 years, the sheeting shall retain at least 50 per cent of its original retro-reflectance.

6.7.3 Class B (High intensity grade sheeting)

6.7.3.1 Type III high intensity grade

This high intensity retro-reflective sheeting shall be of encapsulated lens type consisting of spherical glass lens elements adhered to a synthetic resin and encapsulated by a flexible, transparent waterproof plastic having a smooth surface or as a non-metallic micro prismatic reflective material element. The retro-reflective surface after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.5**.

**Table 6.5 Acceptable Minimum Coefficient of Retro-reflection for Type III High Intensity Grade Sheetings^A (Encapsulated Lens Type)
(Candelas per Lux per Square Meter)**

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Brown |
|-------------------|----------------|-------|--------|--------|-------|-----|------|-------|
| 0.1° ^B | -4° | 300 | 200 | 120 | 54 | 54 | 24 | 14 |
| 0.1° ^B | +30° | 180 | 120 | 72 | 32 | 32 | 14 | 10 |
| 0.2° | -4° | 250 | 170 | 100 | 45 | 45 | 20 | 12 |
| 0.2° | +30° | 150 | 100 | 60 | 25 | 25 | 11 | 8.5 |
| 0.5° | -4° | 95 | 62 | 30 | 15 | 15 | 7.5 | 5.0 |
| 0.5° | +30° | 65 | 45 | 25 | 10 | 10 | 5.0 | 3.5 |

A Minimum Coefficient of Retro reflection (R_A) (cd.lx⁻¹.m⁻²).

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

When totally wet, the sheeting shall show not less than 90 per cent, of the values of retro-reflectance indicated in above Table. At the end of 7 years, the sheeting shall retain at least 80 per cent of its original retro-reflectance.

6.7.3.2 Type IV High intensity micro-prismatic grade sheeting (HIP)

This sheeting shall be of high intensity retro-reflective sheeting made of micro-prismatic retro-reflective element material coated with pressure sensitive adhesive. The retro-reflective

surface after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.6**.

Table 6.6 Acceptable Minimum Co-efficient of Retro-Reflection for Type IV High Intensity Micro-prismatic Grade Sheeting ^A
(Candelas per Lux per Square Meter)

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

A Minimum Coefficient of Retro-reflection (R_A) ($\text{cd}.\text{lx}^{-1}.\text{m}^{-2}$).

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

When totally wet, the sheeting shall show not less than 90 per cent of the values of retro-reflection indicated in above Table. At the end of 7 years, the sheeting shall retain at least 80 per cent of its original retro-reflectance.

6.7.4 Class C (*Micro prismatic grade sheeting*)

6.7.4.1 Type VIII Micro prismatic grade sheeting

Retro-reflective sheeting is typically manufactured as a cube corner. The reflective sheeting shall be retro-reflective sheeting made of micro prismatic retro-reflective material. The retro-reflective surface, after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro-reflection (determined in accordance with ASTM D: 4956-09) as indicated in **Table 6.7**.

When totally wet, the sheeting shall show not less than 90 per cent of the values of retro-reflection indicated in above Table. At the end of 10 years, the sheeting shall retain at least 80 per cent of its original retro-reflectance.

Table 6.7 Acceptable Minimum Co-efficient of Retro-reflection for Type VIII Prismatic Grade Sheeting ^A (Candelas per Lux per Square Meter)

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Brown | Fluorescent Yellow -Green | Fluorescent Yellow | Fluorescent Orange |
|-------------------|----------------|-------|--------|--------|-------|-----|------|-------|---------------------------|--------------------|--------------------|
| 0.1° ^B | -4° | 1000 | 750 | 375 | 100 | 150 | 45 | 30 | 800 | 600 | 300 |
| 0.1° ^B | +30° | 460 | 345 | 175 | 46 | 69 | 21 | 14 | 370 | 280 | 135 |
| 0.2° | -4° | 700 | 525 | 265 | 70 | 105 | 32 | 21 | 560 | 420 | 210 |
| 0.2° | +30° | 325 | 245 | 120 | 33 | 49 | 15 | 10 | 260 | 200 | 95 |
| 0.5° | -4° | 250 | 190 | 94 | 25 | 38 | 11 | 7.5 | 200 | 150 | 75 |
| 0.5° | +30° | 115 | 86 | 43 | 12 | 17 | 5 | 3.5 | 92 | 69 | 35 |

A Minimum Co-efficient of Retro-reflection (R_A) (cd.lx⁻¹.m⁻²).

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

6.7.4.2 Type IX Micro prismatic grade sheeting

Retro-reflective sheeting is typically manufactured as a cube corner. The reflective sheeting shall be retro-reflective sheeting made of micro prismatic retro-reflective material. The retro-reflective surface, after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.8**.

When totally wet, the sheeting shall show not less than 90 per cent of the values, of retro-reflection indicated in above Table. At the end of 10 years, the sheeting shall retain at least 80 per cent of its original retro-reflectance.

6.7.4.3 Type XI Micro Prismatic Grade Sheetings

Retro-reflective sheeting is typically manufactured as a cube corner. The reflective sheeting shall be retro-reflective sheeting made of micro prismatic retro-reflective material. The retro-reflective surface, after cleaning with soap and water and in dry condition shall have the minimum co-efficient of retro-reflection (determined in accordance with ASTM D 4956-09) as indicated in **Table 6.9**.

When totally wet, the sheeting shall show not less than 90 per cent of the values, of retro-reflection indicated in above Table. At the end of 10 years, the sheeting shall retain at least 80 per cent of its original retro-reflectance.

Table 6.8 Acceptable Minimum Co-efficient of Retro-reflection for Type IX Prismatic Grade Sheeting ^A (Candelas per Lux per Square Meter)

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Fluorescent Yellow-Green | Fluorescent Yellow | Fluorescent Orange |
|-------------------|----------------|-------|--------|--------|-------|-----|------|--------------------------|--------------------|--------------------|
| 0.1° ^B | -4° | 660 | 500 | 250 | 66 | 130 | 30 | 530 | 400 | 200 |
| 0.1° ^B | +30° | 370 | 280 | 140 | 37 | 74 | 17 | 300 | 220 | 110 |
| 0.2° | -4° | 380 | 285 | 145 | 38 | 76 | 17 | 300 | 230 | 115 |
| 0.2° | +30° | 215 | 162 | 82 | 22 | 43 | 10 | 170 | 130 | 65 |
| 0.5° | -4° | 240 | 180 | 90 | 24 | 48 | 11 | 190 | 145 | 72 |
| 0.5° | +30° | 135 | 100 | 50 | 14 | 27 | 6 | 110 | 81 | 41 |
| 1.0° | -4° | 80 | 60 | 30 | 8 | 16 | 3.6 | 64 | 48 | 24 |
| 1.0° | +30° | 45 | 34 | 17 | 4.5 | 9.0 | 2 | 36 | 27 | 14 |

A Minimum Co-efficient of Retro-reflection (R_A) (cd.lx⁻¹.m⁻²).

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

Table 6.9 Acceptable Minimum Coefficient of Retro-reflection for Type XI Prismatic Grade Sheeting ^A (Candelas per Lux per Square Meter)

| Observation Angle | Entrance Angle | White | Yellow | Orange | Green | Red | Blue | Brown | Fluorescent yellow-Green | Fluorescent yellow | Fluorescent Orange |
|-------------------|----------------|-------|--------|--------|-------|-----|------|-------|--------------------------|--------------------|--------------------|
| 0.1° ^B | -4° | 830 | 620 | 290 | 83 | 125 | 37 | 25 | 660 | 500 | 250 |
| 0.1° ^B | +30° | 325 | 245 | 115 | 33 | 50 | 15 | 10 | 260 | 200 | 100 |
| 0.2° | -4° | 580 | 435 | 200 | 58 | 87 | 26 | 17 | 460 | 350 | 175 |
| 0.2° | +30° | 220 | 165 | 77 | 22 | 33 | 10 | 7 | 180 | 130 | 66 |
| 0.5° | -4° | 420 | 315 | 150 | 42 | 63 | 19 | 13 | 340 | 250 | 125 |
| 0.5° | +30° | 150 | 110 | 53 | 15 | 23 | 7 | 5 | 120 | 90 | 45 |
| 1.0° | -4° | 120 | 90 | 42 | 12 | 18 | 5 | 4 | 96 | 72 | 36 |
| 1.0° | +30° | 45 | 34 | 16 | 5 | 7 | 2 | 1 | 36 | 27 | 14 |

A Minimum Co-efficient of Retro-reflection (R_A) (cd.lx⁻¹.m⁻²).

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

6.7.5 Adhesives

The sheeting shall have a pressure-sensitive adhesive of the aggressive-tack type requiring no heat, solvent or other preparation for adhesion to a smooth clean surface, in a manner recommended by the sheeting manufacturer. The adhesive shall be protected by an easily removable liner (removable by peeling without soaking in water or other solvent) and shall be suitable for the type of material of the base plate used for the sign. The adhesive shall form a durable bond to smooth, corrosion and weather resistant surface of the base plate such that it shall not be possible to remove the sheeting from the sign base in one piece by use of sharp instrument. The sheeting shall be applied in accordance with the manufacturer's specifications.

6.7.6 Fabrication

Surface to be reflectorised shall be effectively prepared to receive the retro-reflective sheeting. The aluminium sheeting shall be de-greased either by acid or hot alkaline etching and all scale/dust removed to obtain a smooth plain surface before the application of retro-reflective sheeting. If the surface is rough, approved surface primer may be used. After cleaning, metal shall not be handled, except by suitable device or clean canvas gloves, between all cleaning and preparation operation and application of reflective sheeting/primer. There shall be no opportunity for metal to come in contact with grease, oil or other contaminants prior to the application of retro-reflective sheeting. Complete sheets of the material shall be used on the signs except where it is unavoidable. At splices, sheeting with pressure-sensitive adhesives shall be overlapped not less than 5 mm. Where screen printing with transparent colours is proposed, only butt joint shall be used. The material shall cover the sign surface evenly and shall be free from twists, cracks and folds. Cut-outs to produce legends and borders shall be bonded with the sheeting in the manner specified by the manufacturer.

6.8 Messages/Borders

The messages (legends, letters, numerals, etc.) and borders shall either be screen-printed or of cut out from durable transparent overlay or cut-out from the same type of reflective sheeting for the cautionary and mandatory sign boards. Screen printing shall be processed and finished with materials and in a manner specified by the sheeting manufacturer. For the informative and other sign boards, the messages (legends, letters, numerals etc.) and borders shall be cut-out from durable transparent overlay film or cut-out from the same reflective sheeting only. Cut-outs shall be from durable transparent overlay materials as specified by the sheeting manufacturer and shall be bonded with the sheeting in the manner specified by the manufacturer. Whenever transparent overlay film is used for making any type of sign, the coloured portion of sign shall have coefficient of reflectivity not less than the reflectivity of type and colour of sheeting normally used, as given in **Table 6.3 to Table 6.9**. Cut-out messages and borders, wherever used, shall be either made out of retro-reflective sheeting or made out of durable transparent overlay except those in black which shall be of non-reflective sheeting or opaque in case of durable transparent overlay. Creating coloured areas by means of screen-printing with ink shall not be permitted.

6.9 Warranty and Durability

The retro reflective sheeting type "A", "B" and "C" shall be covered respectively under 5, 7 and 10 year warranty respectively issued for field performance including the screen printed areas and cut-out sheeting and cut-out durable transparent overlay film. The contract shall indicate the minimum retro-reflectivity of the signs at the end of the warranty period.

7 POSTS AND MOUNTINGS FOR SIGNS

7.1 The traffic signs shall be mounted on support posts, which may be of GI pipes conforming to IS 1239, Rectangular Hollow Section conforming to IS 4923 or Square Hollow Section conforming to IS 3589. In case of signs supported on two or more posts, if necessary, bracing may also be provided. Sign posts, their foundations and sign mountings shall be so constructed as to hold these in a proper and permanent position against the normal storm wind loads or displacement by vandalism. Normally, signs with an area up to 0.9 square meter shall be mounted on a single post, and for greater area, two or more supports shall be provided. Sign supports may be of mild steel, reinforced concrete (M25) or galvanized iron (GI Post) sections. End(s) shall be firmly fixed to the ground by means of properly designed foundation. The work of foundation shall conform to relevant Specifications as specified.

7.2 All components of signs and supports, other than the reflective portion of GI posts shall be thoroughly descaled, cleaned, primed and painted with two coats of epoxy paint. Any part of Mild Steel (MS) post below ground shall be painted with three coats of red lead paint.

7.3 The signs shall be fixed to the posts by welding in the case of steel posts and by bolts and washers of suitable size in the case of reinforced concrete or GI posts. After the nuts have been tightened, the tails of the bolts shall be furred over with a hammer to prevent removal.

7.4 For overhead signs, the support system should be properly designed based on sound engineering principles, to safely sustain the dead load, live load and wind load on the completed sign system. For this purpose, the overhead signs shall be designed to withstand a wind loading of 150 kg/m² normal to the face of the sign and 30 kg/ m² transverse to the face of the sign. In addition to the dead load of the structure, walkway loading of 250 kg concentrated live load shall also be considered for the design of the overhead sign structure.

8 COLOUR FOR SIGNS

8.1 Signs shall be provided with retro-reflective sheeting and/or overlay film as shown on the detailed drawings. The reverse side of all signs shall be painted grey.

8.2 Except in the case of railway level crossing signs (for which the colour scheme is given later) the sign posts shall be painted in 250 mm wide bands, alternately black and white. The lowest band next to the ground shall be in black.

8.3 The colour of the material shall be located within the area defined by the chromaticity coordinates in **Table 8.1** and comply with the luminance factor given in **Table 8.2** when measured as per ASTM D: 4956-09. Chromaticity is the objective specification of the quality of a colour regardless of its luminance, that is, as determined by its hue and colourfulness (or saturation/chroma, or intensity)

Table 8.1 Chromaticity Coordinates (Daytime)^A

| Colour | 1 | | 2 | | 3 | | 4 | |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | x | y | x | Y | x | Y | x | Y |
| White | 0.303 | 0.300 | 0.368 | 0.366 | 0.340 | 0.393 | 0.274 | 0.329 |
| Yellow | 0.498 | 0.412 | 0.557 | 0.442 | 0.479 | 0.520 | 0.438 | 0.472 |
| Green ^B | 0.026 | 0.399 | 0.166 | 0.364 | 0.286 | 0.446 | 0.207 | 0.771 |
| Red | 0.648 | 0.351 | 0.735 | 0.265 | 0.629 | 0.281 | 0.565 | 0.346 |
| Blue ^B | 0.140 | 0.035 | 0.244 | 0.210 | 0.190 | 0.255 | 0.065 | 0.216 |
| Orange | 0.558 | 0.352 | 0.636 | 0.364 | 0.570 | 0.429 | 0.506 | 0.404 |
| Brown | 0.430 | 0.340 | 0.610 | 0.390 | 0.550 | 0.450 | 0.430 | 0.390 |
| Fluorescent Yellow-Green | 0.387 | 0.610 | 0.369 | 0.546 | 0.428 | 0.496 | 0.460 | 0.540 |
| Fluorescent Yellow | 0.479 | 0.520 | 0.446 | 0.483 | 0.512 | 0.421 | 0.557 | 0.442 |
| Fluorescent Orange | 0.583 | 0.416 | 0.535 | 0.400 | 0.595 | 0.351 | 0.645 | 0.355 |

- A** The four pairs of chromaticity coordinates determine the acceptable colour in terms of the CIE 1931 Standard Colourimetric System measured with CIE Standard Illuminant D65.
- B** The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colours.

Table 8.2 Daytime Luminance Factor (Y %)

| Colour | Non-Metallic Portion | | Metallic Portion | |
|--------------------------|----------------------|-----|------------------|-----|
| | Min | Max | Min | Max |
| White | 27 | -- | 15 | -- |
| Yellow | 15 | 45 | 12 | 30 |
| Green | 3.0 | 12 | 2.5 | 11 |
| Red | 2.5 | 15 | 2.5 | 11 |
| Blue | 1.0 | 10 | 1.0 | 10 |
| Orange | 10 | 30 | 7.0 | 25 |
| Brown | 1.0 | 9.0 | 1.0 | 9.0 |
| Fluorescent Yellow-Green | 60 | -- | -- | -- |
| Fluorescent Yellow | 40 | -- | -- | -- |
| Fluorescent Orange | 20 | -- | -- | -- |

The colours shall be durable and uniform in acceptable hue when viewed in day light or under normal headlights at night.

8.4 The mandatory and warning signs shall be provided with white background and red border. The legend/symbol for these signs shall be in black.

8.5 Colour pattern for direction information signs is given in **Table 8.3**

The colours chosen for informative or guide signs shall be distinct for different categories of roads. For various categories of road in India, following colour pattern shall be used for direction information sign as given in **Table 8.3**.

Table 8.3 Colour Pattern for Direction Information Signs

| Road Type | Background | Arrows/Border/Letters |
|---------------------------|------------|-----------------------|
| Expressway | Blue | White |
| National Highway (NH) | Green | White |
| State Highway (SH) | Green | White |
| Major District Road (MDR) | Green | White |
| Village Road (ODR & VR) | White | Black |
| Urban/City Road | Blue | White |

9 SIZE OF SIGNS

9.1 As a general rule, there shall be four sizes (small, medium, normal and large) of signs for mandatory/regulatory and cautionary/warning signs. For Expressways, refer respective chapters. For certain categories of mandatory/regulatory signs, a still smaller size may be used in conjunction with traffic light signals or on bollards on traffic islands.

9.2 General dimensions of different categories of signs are given in respective sections.

10 VISIBILITY OF SIGNS

In order to make signs more visible and legible at night, in particular cautionary/warning signs and regulatory signs other than those regulating parking and stopping in lighted streets of built-up areas shall be lighted or provided with reflective material including luminous paints or reflective devices and sheetings. Care should, however, be taken that this does not result in road users becoming dazzled.

11 SIZE OF LETTERS

11.1 Letter size should be chosen with due regard to the speed, classification and location of the road, so that the sign is of adequate size for legibility but without being too large or obtrusive. The size of the letter, in terms of x-height, to be chosen as per the design speed is given in **Table 11.1**.

Table 11.1 Letter Size and Siting of Information Signs (Shoulder & Gantry Mounted)

| 1 | Advance Direction Signs (Shoulder Mounted) | | | | | | Flag Type Direction Signs | | | Gantry Mounted Signs | | |
|---|--|----------------------------|--|--------------------------------------|--|----------------------------|----------------------------|--|----------------------------|----------------------------|--|--|
| | | | | | | | Reassurance Signs | | | | | |
| | | | | | | | Place Identification Signs | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Design Speed | "x" height (mm) lower case | "X" height (mm) upper case | Minimum clear visibility to the sign (m) | ONE sign: distance from junction (m) | TWO signs: distance between 1 st and 2 nd sign (m) | "x" height (mm) lower case | "X" height (mm) upper case | Minimum clear visibility to the sign (m) | "x" height (mm) lower case | "X" height (mm) upper case | Minimum clear visibility to the sign (m) | |
| Up to 30 km/h | 75 (60)* | 105 (84) | 50 (35) | 20 | - | 60 (50) | 84 (70) | 35 (30) | | | | |
| 31 – 50 km/h | 100 (75) | 140 (105) | 75 (45) | 45 | 45 | 75 (60) | 105 (84) | 45 (35) | 200 (175) | 280 (245) | 150 | |
| 51 - 65 km/h | 125 (100) | 175 (140) | 100 (60) | 90 | 50 | 100 (75) | 140 (105) | 60 (45) | | | | |
| 66 - 80 km/h | 150 (125) | 210 (175) | 135 | 90 - 150 | 70 | 125 (100) | 175 (140) | 75 (60) | | | | |
| 81 - 100 km/h | 200 (150) | 280 (210) | 165 | 150 – 225 | 100 | 150 (125) | 210 (175) | 105 (75) | 250 (200) | 350 (280) | 200 | |
| 101- 110 km/h | 250 (200) | 350 (280) | 225 | 225- 300, See also Note 1 | 100 | 200 (150) | 280 (210) | 135 (105) | 275 (250) | 385 (350) | 240 | |
| 111- 120 km/h | 300 (250) | 420 (350) | 260 | See Note 1 | See Note 1 | 300 (250) | 420 (350) | 180 (150) | 300 (275) | 420 (385) | 260 | |
| *Note: The values in brackets are the minimum values to be adopted when there are site/space constraints. | | | | | | | | | | | | |

Derived from the first principle as presented in **Annexure VI**

Notes:

- 1) For grade separated junction two or three advance direction signs are provided. These are located at the start of diverging lane, 250 m to 750 m from the junction and additionally 750 m to 1500 m from the junction.
- 2) The "x" height is the height of a lower case English "Transport medium" font and upper case shall be 1.4 times of lower case height.
- 3) In columns 2, 3, 7, 8, 10 and 11 of **Table 11.1** the font heights shown are normal size to be used for respective approach speeds and in brackets are the absolute minimum sizes to be used where site/space is limited. The font size can be increased by another 50 mm from the normal font size for those direction boards requiring special emphasis/attention.

- 4) In columns 4 and 9 of **Table 11.1**, the clear visibility distances indicated are minimum values. Greater distances should be provided wherever possible.
- 5) In columns 5 and 6 **Table 11.1**, the distances shown are for guidance only and are not to be taken precise.
- 6) Reassurance Signs are normally placed about 100-150 m after the junction. Place Identification Signs are normally placed about 90 m to 150 m in advance of the start of the built-up area and flag type direction signs are generally installed at the nose of diverging lanes.
- 7) Columns 10, 11 and 12 of **Table 11.1** shall be taken for design of gantry mounted signs.

11.2 Letter size on definition plates attached with normal sized signs should be 50 mm or 100 mm, and in the case of small signs, it should be 50 mm. Where the message is long, as for instance in “NO PARKING” and “NO STOPPING & NO STANDING” signs, the message may be broken with two lines and the size of letters may be varied in the lines so that the definition plate is not too large. The lettering on definition plates will be all in upper case letters. Example for Definition Plate is given in **Plate I**.

12 MAINTENANCE OF SIGNS

12.1 Prior to installing any road sign, the responsibility for the maintenance of the sign and the post is required to be decided, and the timing plan(s) should be clearly established. Over time, signs become faded and their retro-reflective properties diminish. This reduces both conspicuity and legibility, by day and by night. Excessively discoloured or faded signs (e.g. white backgrounds which have become grey or brown, or red borders faded to pink) and signs, where the legend or graphic is peeling off cannot be fully effective and need to be replaced. The signs along with the posts shall be maintained in proper position, and kept clean and legible at all times. Signs should be cleaned at intervals appropriate to the site conditions. Signs at locations where they are subject to heavy soiling from passing traffic, or algae growth (a common problem with signs beneath tree canopies) will need more frequent cleaning.

12.2 A reference number along with the month and year of installation should be placed on the back of a sign in a contrasting colour or by stamping in characters not exceeding 50 mm in height. It is distracting and unsightly to place reference numbers on the sign face or on the front of a backing board.

12.3 All signs shall be inspected at least twice a year both in day and night times and at least once a year in the rain. All signs should be replaced at the end of the warranty period provided for the retro-reflective sheeting used on the sign. Damaged signs shall be replaced immediately.

12.4 The authorities responsible for road signs should maintain a schedule of painting of the posts and signs periodically. It is recommended that painting of the signs (where applicable) may be undertaken after every two years. In case of overhead signs, adequate

provision is to be made to have access to the signs for the purpose of maintenance activities. This must be ensured at the time of installation. Special care shall be taken to see that weeds, shrubbery, mud, etc. are not allowed to obscure any sign.

13 DEFINITION PLATES/SUPPLEMENTARY PLATES

Where the competent authority considers it advisable to make the meaning of a sign or symbol more explicit, or in the case of mandatory signs to limit their application to certain categories of road users or to specific periods, an inscription shall be placed below the sign in a rectangular definition plate of suitable size. The definition plate shall be with retro-reflective white background and black letters and black border 20 mm wide. Numerals shall be inscribed in international form of Indian numerals and word messages shall be in English and/or other languages as necessary. To contain the size of the sign, the number of languages on the signs shall normally be limited to two. An example of definition plate is given in **Plate- II (Fig. 15.42 + Supplementary plate)** and its design in **Plate III (Fig. 16.17)**.

14 MANDATORY/REGULATORY SIGNS

14.1 The detailed dimensioned drawings of normal sized sign and symbols thereon are shown in **Plate-I** for ease of reproduction. For signs of other sizes, the symbols should be proportionately reduced or enlarged. The mandatory/regulatory signs are listed in **Annexure -I**. These are classified under the following sub-heads keeping in view their design and application:

- i) "Stop" and "Give Way" signs (Right of way signs)
- ii) "Prohibitory" signs
- iii) "No Parking" and "No Stopping" signs
- iv) "Speed Limit" and "Vehicle Control" signs
- v) "Restriction Ends" sign, and
- vi) "Compulsory Direction Control" and other signs

14.2 It is essential that drivers and other road users have an unobstructed view of road signs. The distance which should be kept clear of obstructions to the sight line, whether caused by vegetation (e.g. bushes, trees), other signs or street furniture (e.g. crash barriers), is known as the clear visibility distance. The higher the prevailing traffic speeds, the greater this distance needs to be.

14.3 Regulatory signs that indicate the beginning of a restriction or prohibition and to which direction it applies have to be placed in accordance with that direction. The requirement is that the signs must be placed on each side of the road or on each side of the appropriate carriageway of a dual carriageway road; except that signs need only be placed on one side if any of the following circumstances apply:

- i) Where the restriction, requirement or prohibition applies only to one side of the road.
- ii) At a junction where traffic turns from a one-way road into the relevant road. The sign should be angled to face towards the driver.
- iii) At a junction where the carriageway of the relevant road is less than 5 m wide and the centre of the sign is no more than 2 m from the edge of the carriageway.

14.4 Mandatory and regulatory signs are normally sited at or near the point where the instruction applies. **Table 11.1** (Column 4) specifies minimum clear visibility distances for regulatory and mandatory signs. These should normally be measured from the center of most disadvantaged driving lanes. The more the number of signs which drivers are presented with simultaneously, the greater the difficulty they are likely to have in assimilating the information. Generally, not more than two signs should be erected on any one post when intended to be read from an approaching vehicle and this applies when signs are mounted at the same location on separate posts. Speed limit signs should be mounted alone. When a sign needs supplementary plate, the combination of sign and plate may be regarded as one sign.

14.5 STOP Sign

14.5.1 Purpose

This is for indicating priority for the right of way. The sign is intended for use on roadways where traffic is required to stop before entering a major road, and where it is intended that the vehicle shall proceed past the stop line only after ascertaining that this will not cause danger to traffic on the main road. This is a Mandatory/Regulatory sign. (**Fig. 14.01**)

14.5.2 Combination with markings

The stop sign shall always be used in combination with certain road markings, such as stop line and the word “STOP” marked on the pavement vide IRC: 35 “Code of Practice for Road Markings”.

14.5.3 Size, shape and colour

The sign (shown in **Fig. 14.01**) shall be octagonal in shape and shall have red background and white border. The word “STOP” written in white (in English or local language) with 150 mm height letters, centrally positioned. The height of the octagon and border shall be as per **Table 14.1**.

Table 14.1 Sizes and Dimensions of ‘STOP’ signs

| Approach speed on minor road | Size | Height (mm) | Border (mm) | Font Size (mm) |
|---------------------------------|--------|----------------|----------------|----------------|
| Up to 50 kmph | Small | 750 | 25 | 125 |
| 51 – 65 kmph | Normal | 900 | 30 | 150 |
| > 65 kmph | Large | 1200 | 40 | 225 |

14.5.4 Warrants for installation

The sign should be used on a minor road at its intersection with a major road where conditions are considered to be unduly hazardous due to restricted visibility, bad alignment and high accident record. Generally, if the visibility funnel shown in Fig. 14.1 is not obstruction free, the stop sign shall be installed.

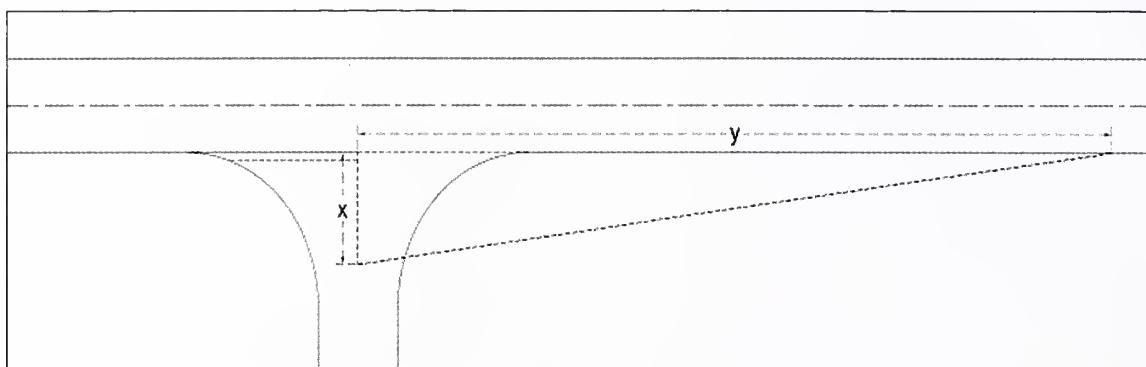


Fig. 14.1

The visibility funnel for different situation is presented in the **Table 14.2**.

Table 14.2 Visibility Funnel

| Speed on Major Road | Visibility Distances on Major Road (y) | Distance Measured along the Center Line of Minor Road from Edge Line of Major Road (x) |
|---------------------|--|--|
| Up to 15 kmph | 15 m | x = 4.5 m for medium traffic and 3.0 m for lightly trafficked side road |
| 31- 50 kmph | 30 m | |
| 51-65 kmph | 45 m | |
| 66 -80 kmph | 70 m | |
| 81- 100 kmph | 90 m | |
| > 100 kmph | 120 m | |

Note:

- a) *Visibility distance (y) is measured along the nearer edge of the major road from a point 1.05 m above the central line of the minor road (representing the driver's eye position.)*
- b) *x = 3 m for lightly trafficked side road measured from the edge of the major road carriage way along the center line of the minor road, and 4.5 m when minor road has medium traffic volume.*

14.5.5 Location

The sign shall be installed on the left side of the approach to which it applies. Stop signs should be sited as close to the stop line as possible but not in such a position as to impair visibility along the major road. Normally, these should be fixed 1.5 m in advance of the stop line. If the site conditions prevent a sign so placed from being

easily seen, it should be placed at a greater distance in advance of the STOP line, but in no case more than 6 m as shown in **Fig. 14.2**. When the STOP sign is installed at the required location and the sign visibility is restricted, a Stop Ahead sign shall be installed in advance of the STOP sign. STOP sign and YIELD sign shall not be mounted on the same post. STOP sign has to be a standalone sign when used. The sign shall not be used at intersection where traffic signals are installed.

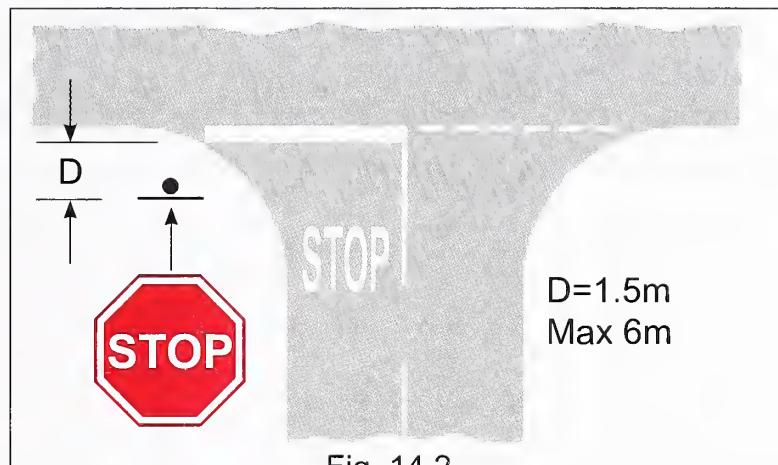


Fig. 14.2

14.6 GIVE WAY Sign

14.6.1 Purpose

The GIVE WAY sign is used to assign right-of-way to traffic on certain roadways at inter-sections, the intention being that the vehicles controlled by the sign must give way i.e. yield to other traffic having the right of way. Vehicles controlled by this sign need to slow down or stop when necessary to avoid interfering with conflicting traffic. This is a Mandatory/ Regulatory sign (**Fig. 14.3**).

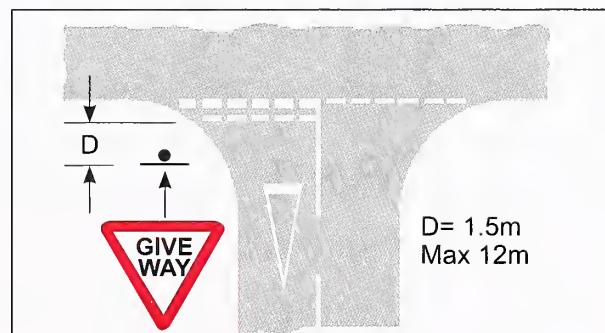


Fig. 14.3

14.6.2 Size, shape and colour

The sign shall be an equilateral triangle with the apex downwards. It shall have red border and white background. The sizes and dimensions of these signs shall be as prescribed in (**Table 14.3**).

Table 14.3 Size and Dimension of Give Way Sign

| Approach speed on minor road | Size | Side (mm) | Border (mm) |
|------------------------------|--------|-----------|-------------|
| Up to 50 kmph | Small | 600 | 45 |
| 51 - 80 kmph | Normal | 900 | 70 |
| > 80 kmph | Large | 1200 | 90 |

14.6.3 Warrants for installation

The sign shall be used on a minor road at the entrance to an inter-section where it is necessary

to assign right-of-way to the major road but where a stop is not necessary at all times. The sign shall also be used on hill roads with single or intermediate lane carriageway on long gradients facing the downhill traffic to assign right-of-way to vehicles climbing uphill. The GIVE WAY sign, together with its associated road markings, may also be used as follows:

- i) In non-urban areas at all junctions of minor roads with main highway (National Highway or a State Highway)
- ii) In urban areas generally at junctions of minor road with trunk and principal road. If the minor road is a residential or local street, it is advisable to provide a STOP sign.
- iii) At other junctions and roundabouts where the traffic regulatory authority considers it desirable on account of traffic speeds or volumes

The visibility funnel already depicted in Fig. 14.1 shall be obstruction free while installing a give way sign.

14.6.4 *Location*

The sign shall be located in advance to the point where vehicles are required to stop or to slow down to yield the right-of-way, say at a distance of 1.5 m to 12 m. It is also recommended that Give Way line (Ref. IRC: 35) should be marked at the entry to the junction. Give Way line may be preceded by GIVE WAY marking on the road as shown in **Fig. 14.3**. On gradients, the sign should be placed at the start of the down gradient and repeated as necessary.

14.6.5 *Give way to buses exiting bus lay-by ahead*

The sign shall be used to inform the vehicles about Give Way to Buses exiting from a bus lay-by ahead. The sign shall be placed at the beginning of such area (**Fig. 14.03**).

14.7 Prohibitory Signs

These signs generally give instructions regarding maneuver that must not be made. Prohibitory signs indicate a forbidden maneuver. They cover both junctions and the sections of road between junctions.

14.7.1 *Size, shape and colour*

The signs shall be of circular shape with a red border, white background, and black symbol. The sizes and dimensions of mandatory signs are given at **Table 14.4** and also of regulatory signs.

14.7.2 *Bullock Carts Prohibited*

The sign shall be erected on each entry to the road where bullock carts are to be prohibited (**Fig. 14.04**).

Table 14.4 Size and Dimension of Mandatory and Regulatory Signs

| Design Speed | Size | Regulatory Signs | Mandatory Signs | | | | |
|---------------|--|------------------|-----------------|-------------|------------------|----------------|--|
| | | Diameter (mm) | Diameter (mm) | Border (mm) | Oblique Bar (mm) | Font Size (mm) | |
| Up to 65 kmph | In conjunction with traffic light signal | | 300 | 35 | 35 | 75 | |
| | Small | 600 | 600 | 50 | 50 | 100 | |
| 66 - 80 kmph | Medium | 750 | 750 | 60 | 60 | 125 | |
| 81 - 100 kmph | Normal | 900 | 900 | 75 | 75 | 150 | |
| > 100 kmph | Large | 1200 | 1200 | 100 | 100 | 225 | |

14.7.3 Bullock Carts and Hand Carts Prohibited

The sign shall be erected on each entry to the road where bullock and hand carts are to be prohibited. (**Fig. 14.05**). The sign shall be erected on each entry to the road where all types of slow moving vehicles except cycles are to be prohibited

14.7.4 Hand Carts Prohibited

The sign shall be erected on each entry to the road where hand carts are to be prohibited (**Fig. 14.06**).

14.7.5 Tongas Prohibited

The sign shall be erected on each entry to the road where Tongas are to be prohibited (**Fig. 14.07**).

14.7.6 Horse Riding Prohibited

The sign shall be used where Horse riding is prohibited on road. (**Fig 14.08**)

14.7.7 Caravan not Allowed

The sign shall be used at the entrance to the roads where entry to caravan is prohibited (**Fig. 14.09**).

14.7.8 Buses Prohibited

The sign shall be used where buses are prohibited and used at beginning of such areas (**Fig. 14.10**).

14.7.9 Cars Prohibited

The sign shall be used where entry of car is prohibited (**Fig. 14.11**).

14.7.10 Trucks Prohibited

The sign shall be erected on each entry to the road where movement of trucks is prohibited (**Fig. 14.12**).

14.7.11 Tractor Prohibited

The sign shall be used where entry of tractor is prohibited (**Fig 14.13**).

14.7.12 Construction Vehicles Prohibited

The sign shall be used where entry of construction vehicles is prohibited (**Fig 14.14**).

14.7.13 Articulated Vehicles Movement Prohibited

The sign shall be used for prohibiting movement of Articulated Vehicles. (**Fig. 14.15**)

14.7.14 Two Wheelers Prohibited

The sign shall be erected on such highways or highway sections where the movement of two wheelers is required to be prohibited (**Fig. 14.16**).

14.7.15 Cycles Prohibited

The sign shall be erected on each entry to the road where cycles are to be prohibited (**Fig. 14.17**).

14.7.16 Blowing Horn Prohibited

The sign shall be used on stretches of the road where sounding of horn is not allowed, such as near hospitals and in silence zones (**Fig. 14.18**).

14.7.17 Straight Prohibited/No Entry

The signs shall be located at places where the vehicles are not allowed to enter. It is generally erected at the end of one-way road to prohibit traffic entering the roadway in the wrong direction and also at each intersection along the one-way road. The No Entry sign, if used, should be placed directly in view of a road user at the point where a road user could wrongly enter. The sign should be mounted on the left side of the roadway, facing traffic that might enter the roadway or ramp in the wrong direction. If the No Entry sign would be visible to traffic to which it does not apply, the sign should be turned away from, or shielded from, the view of that traffic. The sign may be repeated on long stretches if considered necessary (**Fig. 14.19**).

14.7.18 One Way

The sign shall be located at the entry to the one-way street and repeated at intermediate intersections on that street. At Unsignalized intersections, ONE WAY signs shall be placed on the near left and the far right corners of the intersection facing traffic entering or crossing the one-way street. At signalized intersections, ONE WAY signs shall be placed either near the appropriate signal faces, on the poles holding the traffic signals, on the mast arm or span wire holding the signals, or at the locations specified for Unsignalized intersections (**Fig. 14.20**).

14.7.19 Left/Right Turn Prohibited

At Unsignalized intersection where a side road forms a T-junction with a two-way road and traffic is required to turn in one direction only, **Fig. 14.21** or **Fig. 14.22** as appropriate should be used. On the other hand, if direction control sign **Fig. 14.46** or **Fig. 14.47** is used, it might be misleading by giving an impression to drivers that they are turning to a one-way road. The signs shall also be used at the intersection of one-way street to supplement the one-way signs.

14.7.20 Overtaking Prohibited

The sign (**Fig. 14.23**) shall be erected at the beginning and at intervals within, of such sections of highways where sight distance is restricted and overtaking will be hazardous. The sign may be dispensed with pavement markings as per IRC 35 provided for “No Overtaking Zones”. The “No Overtaking” sign should be erected on each side of the road at the start of the affected length and should be supplemented by repeater signs at intervals not exceeding 400 m.

14.7.21 U-turn Prohibited

The sign shall be used at the places where vehicles are forbidden to make a turn to reverse direction of travel between the sign and the next intersection beyond it. The sign shall be erected at the start and at intervals along section of a road on which the controlling authority has authorized the prohibition. The spacing between any two successive signs should not exceed 120 m on each side of the road (**Fig. 14.24**).

14.7.22 Right Turn & U-Turn Prohibited

The sign shall be used where right turn and U-turn are prohibited (**Fig. 14.25**).

14.7.23 Priority to Vehicles from Opposite Direction

The sign (**Fig. 14.26**) shall be used to indicate that drivers must give priority to vehicles from opposite direction. It should be used only when vehicles at each end of priority sections are clearly visible to each other. The sign must not be displayed to traffic approaching from opposite directions. It must not be used upside down in an attempt to imply reversed priority.

14.8 No Stopping and No Standing Signs

14.8.1 Size, Shape and Colour

The signs (**Figs. 14.27 and 14.28**) shall be of circular shape with a red border and blue background. There will be an oblique red bar at 45° for the, ‘No Standing’ sign and there will be two oblique red bars at 45° and right angles to each other for ‘No Stopping and No Standing’ sign. The sizes and dimensions shall be as per **Table 14.3** as presented earlier.

14.8.2 Combination with Definition Plate

There shall be a definition plate below the signs carrying the words “NO STANDING” or NO STOPPING & NO STANDING” as applicable in English and other language as necessary.

The scope of the prohibition may be explained by inscriptions on the definition plate specifying as the case may be

- i) The days of the week during which the prohibition applies,
- ii) The hours of the day during which standing is prohibited,
- iii) The distance up to which the prohibition is applicable, and
- iv) Exceptions granted for certain classes of road users.

In addition, the definition plate may exhibit a single-headed arrow pointing the direction in which the restriction is applicable if the sign is at the end of a zone, or a double-headed arrow pointing both ways if the sign is at an intermediate point in the zone.

14.8.3 Location of ‘NO STANDING’ Sign

This sign (**Fig. 14.27**) shall be erected where the controlling authority has decided to prohibit standing of vehicle even for a very short duration. The sign should be accompanied by suitable kerb or carriageway markings as indicated in IRC: 35. A definition plate can be attached to sign post to convey the message more precisely.

14.8.4 Location of “NO STOPPING” and ‘NO STANDING’ Sign

The sign (**Fig. 14.28**) shall be erected on sections of a road or street where the controlling authority has decided to prohibit stopping of vehicles and standing and even momentary stopping. A definition plate can be attached to sign post to convey the message more precisely.

14.8.5 No Parking Signs in Urban Area

In urban areas, the “No Parking” sign is used on the roads to prevent any parking of vehicles on the main carriageway which will lead to congestion. This sign may be used along with time restriction, indicating morning and evening peak periods. The sign shall be placed at the start of the zone till the end of the prohibition zone. Signs should be erected within 25 m of the start and end of the prohibition. The “No Parking” sign is placed parallel to kerb facing the carriageway and sited approximately at 100 m intervals. Where signs are used without road markings, they should be placed strategically rather than at fixed intervals. The aim should be that wherever drivers might be tempted to stop, they should be able to see a sign. The spacing between consecutive signs, whether or not they are on the same side of the road, should be not more than 30 m. The sign can be accompanied by arrow showing the direction, timings can be changed and date can be added where required.

A “No Parking” sign should be introduced only where there are no other on-street parking controls, even if they operate at different times of day. Where other controls are required, the “No Parking” sign should be replaced by a prohibition of waiting and loading sign provided accordingly (**Fig. 14.29**).

14.8.5.1 Parking Not Allowed on Foot Path

The sign is to be erected where the Parking is not allowed on Foot Path (**Fig. 14.30**).

14.8.5.2 Parking Not Allowed on Half Of Foot Path

The sign is to be erected where the Parking is not allowed on half Foot Path (**Fig. 14.31**).

14.9 Speed Limit and Vehicle Control Signs

14.9.1 Size, Shape and Colour

The signs shall be of circular shape with a red border and with white background with black symbols and numerals. The sizes and dimensions shall be as per **Table 14.3** presented earlier.

14.9.2 Location

These signs shall be erected at the beginning of any section of a road or the side of a structure, which is subject to prohibition or restriction so as to face the entering traffic. Additional signs shall be erected within the prohibited section at each intersection made by a road which is not subject to prohibition so as to face the entering traffic and inform it of the restriction. For speed limit, additional repeater signs may also be installed at suitable intervals where necessary.

14.9.3 Axle Load Limit

The sign shall be erected where entry is prohibited for vehicles whose axle load exceeds a particular limit. To indicate the presence of any weak bridge ahead a definition plate with "Weak Bridge Ahead" may be posted (**Fig. 14.32**).

14.9.4 Height Limit

The sign shall be erected in advance of an overhead structure where entry is prohibited for vehicles whose height exceeds a certain limit (**Fig. 14.33**).

14.9.5 Length Limit

The sign shall be erected where entry of vehicles exceeding a particular length is prohibited (**Fig. 14.34**).

14.9.6 Load Limit

The sign shall be erected where entry is prohibited for vehicles whose laden weight exceeds a certain limit (**Fig. 14.35**).

14.9.7 Width Limit

The sign shall be used where entry of vehicles exceeding a particular width is prohibited (**Fig. 14.36**).

14.9.8 Maximum Speed Limit

The sign shall be located at the beginning of the section of the road or area covered by a speed restriction, with numerals indicating the speed limit in km per hour. The speed limit should be marked in multiples of 5 km per hour (**Fig. 14.37**).

Where different speed limits are to be imposed on certain classes of motor vehicles this shall be specified separately so as to ensure that the numerals indicating the speed limit are clearly visible from a distance. Symbol of class of vehicle shall accompany such speed limit indication (**Fig. 14.38**).

For sections of bad accident history or substandard curves, speed limit sign can be provided in a yellow backing plate to make it more prominent. Also, the advisory speed limit can be attached to the sign post as supplementary plate indicating the permissible speed for the particular curve.

14.9.9 Speed limit Sign in Urban Area

The speed limit sign in cities shall be placed on each of the roads where the speed changes or on the exit arms of the junctions. The vehicles travelling through a junction are reassured about the speed limit on the new road by placing a speed limit sign at 25 m from the intersection. The size of speed limit sign (the first sign indicating the changed speed on major road after crossing the junction) shall be 600 mm, except for the dual carriageway roads with speed limit of 50 kmph or more, where the sign size shall increase to 900 mm. The repeater sign shall be placed on all roads at interval given in **Table 14.4**

Table 14.4 Placement of Repeater Sign

| | | Maximum Distance (m) between | | |
|-----------------------|----------------------|---|---|--|
| Speed limit (kmph) | Size of sign (mm) | Consecutive signs on alternate sides of carriageway | Consecutive signs on the same side of carriageway | Terminal sign and first repeater |
| Below 40 | 600 | 200 | 300 | 200 |
| 50 | 600 | 250 | 400 | 200 |
| 60 | 600 | 350 | 500 | 250 |
| 80 | 900 | 450 | 700 | 350 |

14.9.10 Stop for Police Check

The sign shall be erected where the police personnel plans to conduct the checks (**Fig. 14.39**).

14.10 Restriction Ends Sign (Fig. 14.40)

14.10.1 Size, Shape and Colour

It shall be circular with white background. There shall be a diagonal band of black at an angle of 45° sloping downward from right to left. The sizes and dimensions of these signs shall be as per **Table 14.3** discussed earlier.

14.10.2 Purpose

This sign shall indicate the point at which all prohibitions notified by prohibitory signs for moving vehicles ceases to apply.

14.11 Compulsory Direction Control and Other Signs

14.11.1 Size, Shape and Colour

These signs shall be circular in shape with blue background and white border (2 mm), and having symbols in white. The size shall be as per the dimensions given in **Table 14.3**.

14.11.2 Compulsory Ahead , Compulsory Ahead or Turn Right/Left

The signs in **Figs. 14.41 to 14.43** indicate the routes that are lawfully to be taken and direction of movement with respect to the position of sign installed.

14.11.3 Compulsory Turn Right/Left

The signs in **Fig. 14.44** and **Fig. 14.45** indicate the routes that are lawfully to be taken and direction of movement with respect to the position of sign installed. **Fig. 14.47** should be used on Central Island of a roundabout to be seen by drivers' on the approach road.

Where compulsory turn left or right sign is installed in advance of junction approximately 50 m ahead, signs as **Fig. 14.47 or Fig. 14.48** as appropriate should be used.

14.11.4 Compulsory keep Left/Right

The sign at **Fig. 14.48** shows keep left sign which is used at traffic islands, refuges, and at the beginning of central median of a divided carriageway. It is used at the recommencement of central median following a gap, as traffic turns right in front of the sign without actually passing it. Keep right sign (**Fig. 14.49**) is used in traffic calming schemes and also in association with road works. The sizes of 300 mm for **Fig. 14.48** and **Fig. 14.49** can be considered when installed on bollards.

14.11.5 Pass Either Side

The "Pass either side" sign as shown in **Fig.14.50** is for use on traffic islands, usually in one-way roads, where drivers passing either side of the sign reach the same destination immediately ahead. It must not be used in situations where drivers would become committed to different destinations once they had passed the sign. In this case, a plain-faced bollard or Two way Hazard Marker (**Fig. 15.78**) should normally be provided. Where flag type direction signs have been erected on the traffic islands, it becomes clear without the compulsory direction sign.

14.11.6 Minimum Speed Limit

Where engineering judgment determines that slow speeds, especially on an expressway,

might impede the normal and reasonable movement of traffic, the Minimum Speed Limit sign may be installed to indicate the minimum legal speed (**Fig. 14.51**). This shall be used on specific sections to avoid the slow moving vehicles to improve the efficiency of the traffic movement. It is compulsory to install the “Restriction End” sign at the end of the minimum speed limit sign when restriction of minimum speed is applied for a section of the road.

13.11.7 Compulsory Cycle Track/Cycles Only

The sign shall notify cyclists that they must use the cycle track at the entrance to which it is placed, and shall notify the drivers of other vehicles that they are not entitled to use that track (**Fig. 14.52**).

14.11.8 Compulsory Cyclist and Pedestrian Route

The sign shall be used to segregate cycle and pedestrian lanes (**Fig.14.53**).

14.11.9 Pedestrians only

The sign shall mean that only pedestrians are allowed and the traffic is not allowed on this road/carriageway. The sign may be supported by supplementary plate with ‘PEDESTRIANS ONLY’ written on it (**Fig. 14.54**).

14.11.10 Compulsory Snow Chain

The sign shall be used in hilly areas for compulsory use of snow chain on all vehicles (**Fig.14.55**).

14.11.11 Bus Way/Buses only

The sign shall mean that only buses are allowed and the other traffic is not allowed on this road/carriageway. The sign may be supported by supplementary plate with ‘BUSES ONLY’ written on it (**Fig. 14.56**).

14.11.12 Compulsory Sound Horn

The sign shall mean that the motor vehicles shall compulsorily sound horn at the location at which sign is placed, for instance at sharp curves on hill roads (**Fig. 14.57**).

15 CAUTIONARY/WARNING SIGNS

15.1 The detailed dimensioned drawings of normal sized sign and symbols thereon are shown in **Plate-II** for ease of reproduction. For signs of other sizes, the symbols should be proportionately reduced or enlarged. The cautionary/warning signs are listed in **Annexure-II**.

15.2 Size, Shape and Colour

The signs shall be in the shape of an equilateral triangle, with apex pointing upwards. It shall

have red border and black symbols on white background. The size and placement details shall be as per **Table 15.1**.

Table 15.1 The Sizes and Dimensions of Cautionary and their Siting Distances

| Design speed | Size | Side (mm) | Border (mm) | Clear Visibility Distances (m) | Distance of sign from hazard (m) |
|---------------|--------|-----------|-------------|--------------------------------|----------------------------------|
| Up to 50 kmph | Small | 600 | 45 | 45 | 45 |
| 51 - 65 kmph | Medium | 750 | 60 | 60 | 45 - 110 |
| 66 - 80 kmph | Normal | 900 | 70 | 60 | 110 - 180 |
| > 80 kmph | Large | 1200 | 90 | 90 | 180 - 245 |

15.3 Location and Mounting

Warning signs should not be mounted on the same post as a STOP or GIVE WAY or speed limit sign, nor mounted on a traffic signal post. When mounted with other types of sign, the triangular warning signs should always be mounted at the top. Where two or more warning signs are erected together, the sign relating to the hazard first encountered should be placed uppermost. When a new sign is added to an existing post, it is important to ensure that the correct order is maintained, if necessary adjusting the position of the existing signs. The warning signs should normally be located depending upon 85th percentile speed of private cars (as given in **Table 15.1**) in advance of the hazard warned against. Distances may be increased on steep downhill gradients to account for higher speed. Where map type advance direction signs are posted in advance of the intersections, the warning signs relating to these junctions could be avoided to eliminate the clustering of signs.

15.4 Left/Right Curve

These signs are to be used, whenever there is a need for reduction of speed due to change of direction of alignment and radii of the curvature are below the specified limit. These signs are intended to warn the driver to reduce the speed and proceed cautiously. The warning signs are to be used sparingly. If a road has certain curves where vehicles cannot be allowed to negotiate with the absolute speed limit or the general operating speed established for the road, such curves shall be provided with curve warning signs on both approaches. Supplementary plate indicating advisory speed limit can also be provided along with cautionary sign considering the level of restriction required on the curve. Ideally if the difference between the approach speed to a curve and the safe negotiating speed derived based on geometric parameters of curve exceeds 15 kmph, the curve shall be provided with curve warning sign.

The left hand curve sign should be used to mark curves bending to the left and the right hand curve sign for curves bending to the right (**Figs. 15.01 and 15.02**).

15.5 Right/Left Hairpin Bend

The sign should be used to mark curves of small radii, where the change of direction is so

considerable as to amount to a reversal of direction. The symbol should bend to left or right according to the road alignment (**Figs. 15.03 and 15.04**).

15.6 Right/Left Reverse Bend

The sign should be erected where two curves in opposite direction are separated by a tangent less than 120 m in length in plains and 30 m in hills. The sign may also be erected where in the opinion of the controlling authority; the nature of the reverse bend is not obvious to approaching drivers and constitutes a hazard. If the first curve is to the right, a right reverse bend sign shall be used. If the first curve is to the left, a left reverse bend sign shall be used (**Figs. 15.05 and 15.06**).

15.7 Series of Bends

This sign should be used to caution the driver of the presence of zig-zag for a long distance over the section of road ahead. The sign may be posted 50-100 m ahead of the section under question. The sign may be repeated at appropriate intervals if the zig-zag road is long (**Fig. 15.07**).

15.8 270 Degree Loop

The sign shall be used to caution the vehicles about 270 degree sharp loop. The sign shall be placed at the beginning of such area (**Fig. 15.08**).

15.9 Side Road

The sign should be erected (**Figs. 15.09 and 15.10**) in advance of the main road intersections where in the opinion of the controlling authority, a sufficiently large volume of entering traffic together with restricted sight distance is likely to constitute a hazard. The sign should only be used when the drivers need to be warned of the existence of a junction and no other indication, e.g., by a map type advance direction sign or traffic signal is given.

15.10 Y-Intersection

The sign should be erected on the approach to a bifurcation of any road. This sign should only be used when the driver needs to be warned of the existence of a junction and no other indication, e. g., by a map type advance direction sign or traffic signal, is given (**Figs. 15.11 to 15.13**).

15.11 Cross Road

The sign should be erected in advance of the cross road where in the opinion of the controlling authority, a sufficiently large volume of crossing or entering traffic together with restricted sight distance is likely to constitute a hazard. This sign should only be used when the drivers need to be warned of the existence of an intersection and no other indication, e.g., by an advance direction sign or traffic signal, is given (**Fig. 15.14**).

15.12 Roundabout

The sign should be used where it is necessary to indicate the approach to a roundabout and adequate warning is not conveyed by a map type advance direction sign (**Fig. 15.15**).

15.13 Traffic Signals

This sign should be used to caution the drivers of the presence of traffic signals. This sign may be posted 50-100 m in advance of the location of traffic signals (**Fig. 15.16**).

15.14 T-Intersection

The sign should be erected in advance of T-junctions where in the opinion of the controlling authority, the nature of the intersection is not obvious to approaching drivers. The width of bands should indicate the relative importance of the roads. This sign should only be used when the driver needs to be warned of the existence of a junction and no other indication, e.g., by a map type advance direction sign or traffic signal, is given (**Fig. 15.17 and 15.18**).

15.15 Major Road Ahead

The sign should be erected in advance of crossing with a major road, where in the opinion of the controlling authority, a sufficiently large volume of traffic together with restricted sight distance is likely to constitute a hazard. The sign should not be used where the inter-section is controlled by traffic signal (**Fig. 15.19**).

15.16 Staggered Inter-section

The sign should be used to indicate junctions where the distance between two junctions does not exceed 60 m. This sign should only be used when the driver needs to be warned of the existence of a junction and no other indication, e.g., by a map type advance direction sign or traffic signal, is given (**Figs. 15.20 and 15.21**).

15.17 Merging Traffic Ahead

This sign is posted in situations where the traffic from other road is merging and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.22**). In special cases of interchanges, there can be merging from the right hand side also, for which appropriate sign shall be used as shown in **Fig. 15.22**.

15.18 Narrow Road Ahead

The sign should be erected on such sections of roads where in the opinion of the controlling authority, a sudden reduction in width of pavement causes a danger to traffic (**Fig. 15.23**).

15.19 Road Widens

The sign should be erected on such sections of roads where in the opinion of the controlling

authority, the sudden widening of a road causes a danger to traffic, such as, a two-lane road suddenly widening to a four-lane undivided carriageway (**Fig. 15.24**).

15.20 Narrow Bridge Ahead

The sign should be erected on roads in advance of bridges where the clear width between kerbs or wheel guards is less than the normal width of the carriageway (**Fig. 15.25**).

15.21 Steep Ascent

The sign should be used 30 m before a steep upgrade where the erecting authority considers that the steepness of the upgrade warrants a warning to the road users. A gradient of 10 per cent and above may be considered steep gradient for this purpose. The sign should not be used unless the gradient continues for a length of about 500 m to 1 km. It should be repeated at suitable intervals in the stretch having the steep ascent (**Fig. 15.26**).

15.22 Steep Descent

The sign should be used 30 m before a steep downgrade, where the erecting authority considers that the steepness of the grade may constitute a hazard to traffic. A gradient of 10 per cent and above may be considered as a steep gradient for this purpose. The sign should not be used unless the gradient continues for a length of about 500 m. It should be repeated at intervals in the stretch having the steep descent (**Fig. 15.27**).

15.23 Reduced Carriageway

This sign is used to caution the driver of the reduction in the width of the carriageway ahead. This is applicable to undivided carriageway when some portion of the carriageway is closed or reduced for maintenance or repairs (**Figs. 15.28 and 15.29**).

15.24 Start of Dual Carriageway

This sign is posted when a single carriageway ends up into dual carriageway. The sign may be posted at 100 m from the start of dual carriageway (**Fig. 15.30**).

15.25 End of Dual Carriageway

This sign is posted when dual carriageway is ending and single carriageway is starting. The sign may be posted at 100-150 m from the end of dual carriageway (**Fig. 15.31**).

15.26 Gap in Median

The sign should be installed ahead of a gap in the median of a divided carriageway, other than at intersection (**Fig. 15.32**).

15.27 Pedestrian Crossing

The sign should be erected in advance on both approaches to uncontrolled pedestrian

crossings. This is absolutely essential when visibility of the crossing is impaired by a bend or hump in the road (**Fig. 15.33**). If required, the sign can be repeated at a short distance ahead of the pedestrian crossing, indicating the distance to the crossing with a supplementary plate, i.e. **Fig. 15.33 + Supplementary plate indicating “10 m” or “20 m”**.

15.28 School Ahead

The sign should be erected where school buildings or grounds are adjacent to the road, and where in the opinion of the controlling authority, passing traffic can create a hazard to children (**Fig. 15.34**).

15.29 Built Up Area

The sign shall be used to caution the vehicles about Built up Area. The sign shall be placed at the beginning of such area. (**Fig 15.35**).

15.30 Two Way Operation

This sign is used to caution the driver of a changed pattern of traffic condition on a carriageway expected to carry traffic in one direction only. For example, on a dual carriageway, the entire traffic is diverted to one side because of emergency or road work. In this situation, drivers are warned by posting this sign (**Fig. 15.36**).

15.31 Two Way Traffic on Cross Road Ahead

This sign is posted in situations where the traffic on the cross road ahead is two way and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.37**).

15.32 Lane Closures

This sign is used to caution the driver of the closure of a portion of the carriageway on multi-lane highways (**Figs. 15.38 to 15.40**).

15.33 Traffic Diversion on Dual Carriageway

This sign is used to warn the driver of the diversion of traffic from one carriageway to the other. Mostly it is used on dual carriageway when one carriageway is closed for maintenance or due to an incident (**Fig. 15.41**).

15.34 Men at Work

The sign should be displayed only when men or machines are working on the road or adjacent to it or on overhead lines or poles. The sign should be removed immediately after the work is completed (**Fig. 15.42**). The sign is generally located on the approach side of the work zone or area and another sign with supplementary plate “END” shall be provided at the leaving side of the work zone where traffic revert back to normal flow of traffic.

15.35 Danger Warning Sign

This sign is posted in situations where the vehicle drivers may face any kind of danger and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.43**).

15.36 Deaf or Blind Persons Likely on Road Ahead

This sign is posted only near the schools or institutions meant for hearing impaired persons and blind persons (**Fig. 15.44 and 15.45**).

15.37 Cycle Crossing

The sign should be erected in advance of all uncontrolled cycle crossings (**Fig. 15.46**).

15.38 Cycle Route Ahead (Warning for Cycles on road ahead) (Mixed Traffic Conditions)

This sign is posted in situation where the Cycle Route is approaching, and drivers are required to slow down (**Fig. 15.47**).

15.39 Dangerous Dip

The sign should be erected where a sharp dip in the profile of the road or a causeway is likely to cause considerable discomfort to traffic (**Fig. 15.48**).

15.40 Speed Breaker

This sign should be used to warn the drivers of the presence of the speed breaker. This sign should be posted 50-60 m in advance of the speed breaker location (**Fig. 15.49**). If required, the sign can be repeated at a short distance ahead of the speed breaker, indicating the distance to the speed breaker with a supplementary plate, i.e. **Fig. 15.49 + Supplementary plate indicating “10 m” or “20 m”**.

15.41 Rumble Strip

The sign should be posted 50-60 m in advance of the rumble strips provided on the road to control and reduce the speed. This is to warn the drivers of the presence of the rumble strips (**Fig. 15.50**). If required, the sign can be repeated at a short distance ahead of the rumble strips, indicating the distance to the rumble strip with a supplementary plate, i.e. **Fig. 15.50 + Supplementary plate indicating “10 m” or “20 m”**.

15.42 Rough Road

This sign is posted in situations where the road is rough and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.51**).

15.43 Dangerous Ditch

This sign is posted in situations where the road has ditch and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.52**).

15.44 Loose Gravel

The sign should be used on section of a road on which gravel may be thrown up by fast moving vehicles. The sign should be removed immediately after the hazard is remedied (**Fig. 15.53**).

15.45 Slippery Road

The sign should be erected to warn that the section of the road ahead may be particularly slippery. The sign should be removed immediately after the hazard is remedied (**Fig. 15.54**).

15.46 Slippery Road because of Ice

This sign is posted in situations where the road has ice and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.55**).

15.47 Opening or Swing Bridge

This sign is posted in situations where the swing road bridge exists, and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.56**).

15.48 Overhead Cable

This sign is used to caution the driver of the presence of overhead power transmission lines (**Fig. 15.57**).

15.49 Play Ground Ahead

The sign shall be used to caution the vehicles about play ground approaching. The sign shall be placed at the beginning of such area (**Fig 15.58**).

15.50 Quay Side or River Bank

This sign is used to caution the driver of the presence of the impending danger by the side of the road due to presence of the water body (**Fig. 15.59**).

15.51 Barrier

The sign should be erected in advance of a gate controlling entry into a road. A pair of signs should be used for the purpose: (i) a warning sign with a definition plate bearing the words "SLOW, BARRIER AHEAD" installed at a distance of 200 m from the barrier and (ii) another warning sign with a definition plate bearing the words "DEAD SLOW, BARRIER AHEAD" installed at a distance of 50-100 m in plain and rolling terrain and 30-60 m in hilly terrain. In case of toll barriers, the words "BARRIER AHEAD" may be replaced by "TOLL BARRIER AHEAD" (**Fig. 15.60**).

15.52 Sudden Side Winds

This sign is used to caution the driver of the danger of side winds, which endanger the lives of travelers. This sign is posted at places where such weather conditions exist. This will enable

the driver to proceed cautiously and act appropriately in case of emergency (**Fig. 15.61**).

15.53 Tunnel Ahead Warning

The sign is posted in situations where the traffic approaches a tunnel and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.62**).

15.54 Ferry

The sign is intended to warn the drivers about the existence of a ferry crossing across a river. It is recommended that pair of signs be used for this purpose, one for advance warning located at 200 m from the ferry, and the second erected near the ferry. The distance of the second sign from the ferry may be 50 to 100 m in plain and rolling country and 30 to 60 m in hills depending on the design speed (**Fig. 15.63**).

15.55 Tram Crossing

The sign shall be used to caution the vehicles about approaching Tram Crossing. The sign shall be placed at the beginning of such area (**Fig. 15.64**).

15.56 Falling Rocks

The sign should be erected wherever rocks are liable to fall on the road either seasonally or throughout the year. The symbol may be reversed to show the side from which rock fall is expected. The highway authorities should cover the signs during the season when this problem does not exist (**Fig. 15.65**).

15.57 Cattle Crossing

The sign should be erected where there is danger due to farm animals or cattle crossing on the road. The sign should not be used simply because animals are driven along or across the road at frequent intervals but should be used where they cross regularly (**Fig. 15.66**)

15.58 Wild Animals likely to be on Road Ahead

This sign is posted in situations where the wild animals may cross the road and the drivers are required to slow down their vehicles for safe travel (**Fig. 15.67**).

15.59 Queues Likely Ahead

This sign is posted in situations where the road is congested due to heavy vehicular movement and the drivers are required to slow down their vehicles or avoid that road for safe travel (**Fig. 15.68**).

15.60 Airport/Airfield

This sign is used to warn the drivers of the presence of Airport or Airfield and the sign may be posted at 50-100 m in advance of the airport/airfield (**Fig. 15.69**).

15.61 Unguarded Railway Crossing

The sign should be used on the approaches of railway level crossings where there are no gates or other barriers. A pair of signs shall be used for the purpose: (i) an advance warning sign located at 200 m away from the crossing and (ii) a second sign to be erected near the crossing. The distance of the second sign from the crossing may be 50-100 m in plain and rolling terrain and 30-60 m in hilly terrain (**Fig. 15.70**).

15.62 Guarded Railway Crossing

The sign should be used to warn traffic on the approaches to guarded railway crossings. A pair of signs shall be used for the purpose (i) an advance warning sign located at 200 m away from the crossing and (ii) a second sign to be erected near the crossing. The distance of the second sign from the crossing maybe 50-100 m in plain and rolling terrain and 30-60 m in hilly terrain (**Fig. 15.71**).

15.63 Chevron Signs

At the curved alignment of a roadway, the chevron signs shall be used to inform the drivers about sharpness of curve. The chevron sign shall be a vertical rectangle and shall be installed always on the outside of a turn or curve, in line with and at approximately right angle to approaching traffic. Spacing of Chevron signs should be such that the road user always has at least two signs in view, until the change in alignment eliminates the need for the sign as given in **Table 15.3**. Chevron signs should be visible for a sufficient distance to provide the road user with adequate time to react to the change in alignment.

Table 15.3 Spacing of Single Chevron Signs

| Curve Radius(m) | Distance Between Single Chevron (m) | |
|-----------------|-------------------------------------|--------------|
| | On Curve | Before Curve |
| 50 | 15 | 30 |
| 100 | 20 | 40 |
| 200 | 30 | 60 |
| 300 | 45 | 90 |
| 400 | 60 | 120 |
| 500 | 70 | 140 |
| >500 | 80 | 150 |

Depending upon the sharpness of the curve, Single Chevron (**Fig. 15.72**), Double Chevron sign (**Fig. 15.74**) and Triple Chevron Sign **Fig. 15.75**) can be installed. If the Single Chevron signs are to be used for roads operating at or more than 100kmph, relatively bigger size single chevron (**Fig. 15.73**) shall be used.

15.64 Hazard Marker

Road side hazard like bridges, trees which are coming in the roadway are to be illuminated by retro reflective Object Hazard Markers (OHM) and for a left side hazard **Fig. 15.76** shall be used and for a right hazard **Fig. 15.77** shall be used. If traffic is allowed to pass on either side the triangular island Two Hazard Marker **Fig. 15.78** shall be used.

16 INFORMATORY SIGNS

16.1 The signs illustrated in this section give information to the road user regarding their location or facilities available in the vicinity or about the destination. The detailed dimensioned drawings for direction information signs with guidance for design are shown in **Plate-III** and design principles are presented in **Annexure-III**. For facility information signs for normal sizes are shown in **Plate-IV** and signs of other sizes the symbols should be proportionately reduced or enlarged. The facility information signs are listed in **Annexure-IV**.

16.2 The signs are classified under the following sub-heads keeping in view their design and application:

- 1) Direction and Place Identification signs
- 2) Facility Information signs
- 3) Other Useful Information Signs
- 4) Parking Signs, and
- 5) Flood Gauge

16.3 Direction and Place Identification Signs

Following are the functions of the direction signs:

- It should give drivers advance information of their approach to a junction
- It should indicate the type of junction
- It should inform them of the destinations that may be reached from each exit
- It should identify the route and indicate its status within network

16.3.1 Shape, Colour and Language of Inscription

These signs shall be rectangular. However direction signs may be in the shape of an elongated rectangle with the longer side horizontal, terminating in an arrowhead. The colour pattern for direction signs are given in **Table 8.3** and size of the letters shall be as per **Table 11.1**. The English font shall be “Transport Medium” and Hindi shall be “Hindi7”. The design principles are presented pictorially in **Figs. 16.01 to 16.16**. All messages, borders, and legends shall be retro-reflective and all background shall be retro-reflective or illuminated.

16.3.2 Advance Direction Signs

The sign indicates the routes ahead by showing the names of particular places with arrow

symbols indicating directions. If desired, distance of places in km may be shown after the destination names. If more than one place is to be shown in the same direction, the names of the places may be grouped and a single arrow used for direction indication. Names/ Group of names of places shall be separated by a line as shown in **Fig. 16.01**. These are called as stack type sign. On high speed roads where the junctions are complex in layout, large size signs (map type signs) shown in **Fig. 16.02** may be employed. In situation where rotary (roundabout) inter-section exists, signs as shown in **Fig. 16.03** may be employed. The signs can be either shoulder mounted or gantry mounted. Gantry mounted signs are generally used for grade separated intersections. The sign shall normally be located at a distance from the intersection as given in **Table 11.1**.

The Advance Direction Signs shall be for showing directions and destinations with arrows, and whenever applicable can be with route numbers also.

16.3.2.1 Advance Direction Signs

- Map type of sign is designed based on the junction configuration and geometry. However it can be modified in terms of shape and composition for increasing the clarity and aesthetics.
- In a roundabout junction sign, the recommended minimum angle for cut-out is 25°. The purpose of the cut-out is to emphasize that all traffic must travel in a clockwise direction.
- Where a roundabout is offset from the main direction of travel, it may be appropriate to show a curved approach arm on the advanced direction sign.

16.3.2.2 Siting of Advance Direction Signs

Junction Reference point: The distance in advance of junction at which Advance Direction signs should be sited is measured from the junction reference point. The reference point is defined below.

In case of Interchange, the point at which carriageway widens to form the exit road and for at-grade Junctions from:

- STOP or Give Way line
- The point at which the carriageway first widens to form additional turning lanes or slip roads.

16.3.2.3 Siting of Advance Direction Signs for Interchanges

The standard distances at which Advance Direction sign would be sited are shown in **Table 11.1**. This shall be applicable for expressways or highways with major interchanges. However, if the distance between two successive junctions is less than 1 km which is a common phenomenon in most of the urban areas in the country, only Advance Direction sign shall be used.

For grade separated intersections, (i.e. where the traffic movement occurs on two or more than two levels), two advanced direction signs should be provided. The first Advance Direction sign is located 750 m to 1.5 km from the exit, which should be preferably gantry mounted sign. The second advance direction sign is located 250 m to 750 m from the exit. It should be gantry mounted; but at intersections where the number of through lanes remains constant, it may be shoulder mounted. Additionally a map type and stack type direction sign can be installed at 100m to 250m ahead of exit (**Fig. 16.14**).

16.3.2.4 Stack Type Advance Direction Sign

- Stack type signs are intended for use only at simple junctions and should not indicate more than three directions as the sign would then become difficult to read
- Both the arrow and the panel are centered vertically on the sign
- Arrows may be vertical or horizontal or at any angle (increments of 22.5°)
When more than one destination is shown, following should be considered:
- Destination ahead with vertical arrow on right hand side of destination name and both right aligned
- Destination to the left with the arrow on the left of the destination name and both left aligned
- Destination to the right with the arrow on the right of the destination name and both right aligned

16.3.2.5 Destination sign

The sign should be posted in advance at intersections of major importance or at intersections where approach speeds are high requiring advance information. The forward destination name with vertical arrow shall be the top panel, the left destination with arrow shall be the middle panel, and the right destination with arrow at the bottom of the assembly. The maximum number of destinations in a single destination sign shall not exceed three (**Fig. 16.01**).

16.3.3 Direction Sign (Flag Type)

The sign (**Fig.16.04**) shows where a road leads to and indicates the names of towns; railway stations, aerodromes, or public centers, and the distance by road to them. Direction is indicated by the arrowhead at the end of the sign board, the board being placed generally parallel to the road leading to the place named. These types of sign are called as Flag type signs. The placement of the direction sign shall be as per the provisions of **Table 11.1**. It should be visible to the drivers both during approach and while making the turn (with minimum clear visibility distance). This design principle may also be used for signs indicating street names in urban areas, which may be designed for the font height of 30 mm to 50 mm.

16.3.4 Reassurance Sign or Route Confirmatory Sign

The sign (**Fig.16.05**) should be erected on important roads beyond an intersection or

junction, to reassure a driver of a vehicle that the desired direction is being followed. A route confirmatory sign shall normally show the route number, destination ahead and distance to the destination. If two place names along with their distances have to be shown, the upper name should be of the place with larger population or maximum importance on the route and the next name being of the place next in the order of importance.

16.3.4.1 Siting of Reassurance Sign

It should be placed 60 m beyond the far shoulder or curb line of the intersected road of the junction. In urban areas, reassurance sign may be placed in between intersections so as to keep the user informed. The names of the destination places should be the same as shown on the advance direction signs placed before the intersection. For major interchanges, it should be placed within a distance of 200 m from the last point at which vehicle could join the main carriageway. It may also be used along a route at spacing not greater than 10 km on highways or expressways.

16.3.5 Place/City Identification

The sign (**Fig. 16.06**) should be used along highways to mark entrance to the place or city. It should be erected at the entrance to the area under the jurisdiction of the local authority.

16.3.6 Truck Lay by

Along the highways, the posting of Truck Lay-by is essential so that the goods vehicle drivers would be adequately informed in advance of the availability of such a facility. The sign of the type shown in **Fig. 16.07** is to be provided with the directional arrow showing the direction in which the facility is located. These signs are posted in advance of the location where truck lay-by is provided.

16.3.7 Toll Booth Ahead

The sign is used to indicate the location of toll booth where fee are levied and collected from the road users for their use of road facilities. The sign shown in **Fig. 16.08** is to be provided. The sign is posted 500 to 1000 m ahead of the toll booth.

16.3.8 Weigh bridge ahead

The sign is used to indicate the drivers of trucks or heavy goods vehicles the location of weigh bridge station. The distance or direction arrow may be included below the text. This is provided in advance of the facility so that driver can reduce the speed and leave the highway safely (**Fig. 16.09**).

16.3.9 Gantry Mounted Signs

The gantry mounted signs are made for different situations. These are made for both lane specific and non-lane specific directions, and can include more than one destination on the same line. Further, the first gantry may include junction name panel at the top of the gantry assembly.

Fig. 16.10 presents a design for gantry mounted direction boards to be placed ahead of a traffic diverging point on main highway where grade separated movement has been facilitated for main highway traffic.

Fig. 16.11 presents a design for gantry mounted direction boards to be placed ahead of a 'At-Grade intersection' where right turning movement has been facilitated by a priority or signal controlled junction. **Fig. 16.12** presents a design for gantry mounted direction boards to be placed far ahead of traffic diverging point on full access controlled and grade separated highway like expressway. **Fig. 16.13** presents a design for lane specific gantry signs where dedicated lanes have been made for destinations mentioned in the gantry boards. **Fig. 16.16** presents a design for gantry mounted signs in urban or city road ahead of a flyover where at-grade movement has been facilitated below the flyover for right turning traffic.

17 FACILITY INFORMATION SIGNS

The signs illustrated in this section give information to the road user regarding location and availability of services in the vicinity.

17.1 Size, Shape and Colour

These signs shall be rectangular and have a blue background, while black symbol shall be displayed in white square to indicate the facility. The size of the normal sign shall be 800 mm x 600 mm and of the small sized sign 600 mm x 450 mm. The distance to the facility indicated or to entry of the road leading may be inscribed in white colour on the blue band at the bottom of the sign. The signs may also be set up at the entry to the road leading to the facility and may then bear a white directional arrow on the blue part at the bottom. For Expressways, the size shall be 1200 mm x 900 mm.

17.2 Eating Place

The sign should be used to indicate where a regular eating place is located (**Fig. 17.01**).

17.3 Light Refreshments

The sign should be used to indicate a place where light refreshments would be available (**Fig. 17.02**).

17.4 Resting Place

The sign should be used to indicate place where facilities for resting and lodging would be available. It shall be combined with a separate definition plate, indicating whether the place is a Rest House, Motel, Hotel, etc. (**Fig. 17.03**).

17.5 First Aid Post

The sign should be used to notify the drivers of vehicles on long stretches of roads in rural areas of the first aid facility which may be helpful in case of emergency (**Fig. 17.04**).

17.6 Toilet

The sign shall be used to inform the vehicles about Toilet facilities. The sign shall be placed at the beginning of such facilities (**Fig. 17.05**).

17.7 Filling Station (Fuel Pump)

The sign should be erected on long stretches of roads in rural and urban areas at the entry to the road leading to the facility including CNG filling stations. It is not necessary when the facility is within sight and available at reasonably frequent intervals along the route (**Fig. 17.06**).

17.8 Hospital

The sign should be used to notify drivers of vehicles that they should take the precautions required near medical establishments and in particular that they should not make any unnecessary noise. The sign also serves to indicate the location of hospital where medical facilities will be available (**Fig. 17.07**).

17.9 Public Telephone

The sign should be erected on long stretches of roads in rural areas indicating the distance to the nearest public telephone on supplementary plate, especially where it is in inconspicuous position (**Fig. 17.08**).

17.10 U-turn Ahead

The sign is positioned on the median in advance of a U-turn (**Fig. 17.09**). The required sight distances are given in **Table 17.1**.

Table 17.1 Placement of U-turn Ahead Sign

| Design Speed (kmph) | Sight Distance (m) |
|---------------------|--------------------|
| 0-60 | 30 |
| 60-80 | 45 |
| Above 80 | 60 |

The distances should be measured from the beginning of deceleration lane. If such lane is not provided, then 100 m should be added to the above mentioned sight distances.

17.11 Pedestrian Subway

To guide the pedestrian traffic to the Subway. The plate may be extended to show the direction arrow below the text (**Fig. 17.10**).

17.12 Foot Over Bridge

It is used to inform pedestrians of the location of pedestrian foot over bridge. Signs are erected at both sides of the carriageway for traffic approaching from both directions (**Fig. 17.11**).

17.13 Chair Lift

The sign shall be used to inform the vehicles about Chair Lift facility. The sign shall be placed at the beginning of such facility (**Fig.17.12**).

17.14 Police Station

The sign should be erected at the places where the Police Station is situated nearby (**Fig. 17.13**).

17.15 Picnic Site

The sign shall be used to inform the vehicles about Picnic Site. The sign shall be placed at the beginning of such areas (**Fig. 17.14**).

17.16 Repair Facilities

The sign should be erected at the places where the repair facilities are available. (**Fig.17.15**).

17.17 Railway Station/Metro Station/Monorail Station

The sign should be erected at the places where the Railway Station/ Metro station or any other mass transit station is situated nearby (**Fig. 17.16**).

17.18 Industrial Area

The sign shall be used to inform the vehicles about industrial area. The sign shall be placed at the beginning of such areas (**Fig. 17.17**).

17.19 Cycle-rickshaw Stand

The sign is to be erected where the cycle-rickshaws are to wait (**Fig 17.18**).

17.20 Taxi Stand

The sign is to be erected where the taxis are expected to wait when not engaged/hired (**Fig. 17.19**).

17.21 Auto-rickshaw Stand

The sign is to be erected where the auto-rickshaws are to wait (**Fig. 17.20**).

17.22 Home Zone

The sign shall be used to inform the vehicles about home zone, generally useful for traffic calming measures which will entail slowing down to required speed levels as well as no honking. The sign shall be placed at the beginning of such area (This sign can be used in both rural and urban areas) (**Fig. 17.21**).

17.23 Camp Site

The sign shall be used to inform the vehicles about Camp Site. The sign shall be placed at the beginning of such areas. (**Fig. 17.22**).

17.24 Airport

The sign should be erected at the places where the Airport is situated nearby (**Fig. 17.23**).

17.25 Golf Course

The sign shall be used to inform the vehicles about Golf Course. The sign shall be placed at the beginning of such facility (**Fig. 17.24**).

17.26 National Heritage

The sign shall be used to inform the vehicles about National Heritage Area. The sign shall be placed at the beginning of such area (**Fig. 17.25**).

17.27 No Through Road

The sign should be erected at the entrance to a road from which there is no exit (**Fig. 17.26**).

17.28 No Through Side Road

The sign should be erected on the main road, with appropriate variations to the symbol so as to show the road layout, where it is considered essential to give advance indication of a 'No Through' Side Road' (**Fig. 17.27**).

17.29 Toll Road Ahead

This sign shall provide information to all vehicles about Toll roads and shall be installed at the beginning of such road (**Fig. 17.28**)

17.30 Guide Sign for ETC Lane

This sign shall be used to inform vehicle about Guide sign on Toll Lane Portal (**Fig. 17.29**)

17.31 Country Border

The sign shall be used to inform the vehicles about border of country. The sign shall be placed at the beginning of such location (**Fig. 17.30**).

17.32 Entry Ramp for Expressway

The sign is erected where there is Entry ramp to expressway (**Fig. 17.31**).

17.33 Exit Ramp for Expressway

The sign is erected where there is Exit ramp from expressway (**Fig. 17.32**).

17.34 Expressway Symbol

This sign is erected at entry of Expressways (**Fig. 17.33**).

17.35 End of Expressway

This sign is erected at the end of Expressway (Fig. 17.34).

17.36 Bus Stop

The sign should be erected at the places where the buses are designated to stop (Fig. 17.35).

17.37 Bus Lane

This sign is installed to inform the drivers of the presence of reserved bus lane in the carriageway. The operation of bus lane is supported by appropriate markings on the pavement to delineate the lane and indicate the bus only lane markings. These are generally mounted overhead with appropriate support (Fig. 17.36).

17.38 Contra Flow Bus Lane

This sign is installed to indicate the presence of bus lane to permit the operation of buses in the opposing direction of flow on one-way streets (Fig. 17.37).

17.39 Cycle lane

This sign provides information about cycle lane to road users (Fig. 17.38).

17.40 Contra flow cycle lane

This sign shall be used to inform the vehicles about Contra flow of cycles and shall be installed before beginning of such lane (Fig. 17.39).

17.41 Holiday Chalets

The sign shall be used to inform the vehicles about Holiday Chalets. The sign shall be placed at the beginning of such areas (Fig. 17.40).

17.42 Emergency Exit in Tunnel

The sign shall be used to inform people about emergency exit. The sign shall be placed at such areas as tunnel etc. (Figs. 17.41 & 17.42).

18 OTHER USEFUL INFORMATION SIGNS

The shape and colour of these signs shall be the same as those of 'Facility Information' signs. The symbols shall be according to the drawings shown in respective sign.

18.1 Parking Signs (Figs. 18.01 to 18.06)

The parking sign, which may be set up parallel to the axis of the road, should indicate the places where parking of vehicles is authorized. The sign shall be square of 600 mm x 600 mm size. It shall bear the letter 'P' in white colour. The background colour shall be blue with white

border (**Fig. 18.01**). Symbols or inscriptions on an additional plate below the sign may show the direction in which the parking places lie or the categories of vehicles for which parking is reserved.

18.2 Auto Rickshaw Parking

This sign will indicate Auto Rickshaw Parking (**Fig. 18.02**).

18.3 Cycle Parking

This sign will indicate Cycle Parking (**Fig. 18.03**).

18.4 Cycle Rickshaw Parking

This sign will indicate Cycle Rickshaw Parking (**Fig. 18.04**).

18.5 Scooter and Motorcycle Parking

This sign will indicate Scooter & Motorcycle Parking (**Fig. 18.05**)

18.6 Taxi Parking

This sign will indicate Taxi Parking (**Fig. 18.06**).

18.7 Park and Ride

The sign is to be erected where the parking is allowed only for riding the public transport vehicle (**Fig.18.07 & 18.08**).

18.8 Parking Restrictions Signs for Traffic Management

The sign is to be erected where the parking is not allowed for specified durations for traffic management (**Fig. 18.09**).

18.9 Flood Gauge Sign

The sign should be installed at causeways and submersible bridges or culverts to indicate to the road users the height of the flood above the road level (**Fig. 18.10**).

19 SIGNS FOR PERSONS WITH DISABILITIES

19.1 The International Symbol of Accessibility

The International Symbol of Accessibility (ISA) is also known as the international wheelchair symbol. It is used as informative sign with blue background and image of a person using a wheelchair overlaid in white. The wheel chair figure should always be seen facing right (**Fig. 19.01**).

19.2 Size, Shape and Colour

These signs shall be rectangular and have a blue background, while white symbol shall be displayed to indicate the facility. The size of the normal sign shall be 600 mm x 600 mm and the symbol shall be as shown in **Fig. 19.01**.

19.3 Parking Information

The parking area should be indicated using a signage to reserved vehicle parking for users with disabilities. Since the wheelchair is always to be shown facing right, the direction of the parking should be indicated using an arrow (**Fig.19.02 and Fig. 19.03**).

19.4 Ramped Entrance to Subway/Over Bridge

These signs shall inform the persons with disabilities about the ramp facility to enter pedestrian subway /foot over bridge. These signs shall be rectangular and have a blue background, while white symbol shall be displayed to indicate the facility (**Fig. 19.04**).

19.5 Telephone Facility

Telephone facility should be indicated using a signage for persons with disabilities (**Fig.19.05**).

19.6 Toilet Facility

Toilet area should be indicated using a signage for persons with disabilities (**Fig.19.06**).

19.7 Way Finding Sign for Disabled

Way finding sign should be indicated using a signage for a disable person (**Fig.19.07**).

20 ROUTE MARKER SIGNS

Route Marker signs are proposed in respect of National Highways, State Highways, Expressways and Asian Highways. The following characteristics for Route Marker Signs are recommended:

- i) Uniform shape of route markers for different types of roads.
- ii) Colour coded and simple shape with contrasting colours of letters for better recognition.
- iii) Prominence given to number of route and colour background for quick grasp by the driver.

20.1 State Highway Route Marker Sign

The State Highway Route Marker Sign shall consist of a shield with retro reflective green colour base and white symbol and border on a rectangular plate of 450 mm X 600 mm. The shape, size and spacing of letters and numerals shall conform to those given in **Fig. 20.01**.

Location: The sign shall be erected on State Highway route ahead of the intersections of other important roads, immediately after the intersections as confirmatory Route Markers, at suitable locations through built-up areas, and at such other point that may be considered necessary for guiding the through traffic. On roads without kerbs, the sign shall be erected with clear distance of two to three meters from the edge of the carriageway. On the roads with kerbs, the sign post shall not be less than 600 mm away from the edge of the kerb. The Distance (along the State Highway) of the sign from the junction, on either side of it shall be 100 to 150 m. Also, it shall be fixed on the left hand side as one approaches the junction.

20.2 National Highway Route Marker Sign

National Highway Route Marker Sign shall consist of a shield with retro reflective yellow colour base and black symbol and border on a rectangular plate of 450 mm X 600 mm. The shape, size and spacing of letters and numerals shall conform to those given in **Fig. 20.02**.

Location: The sign shall be erected on National Highway route ahead of the intersections of other important roads, immediately after the intersections as confirmatory Route Markers, at suitable locations through built-up areas, and at such other point that may be considered necessary for guiding the through traffic. On roads without kerbs, the sign shall be erected with clear distance of two to three meters from the edge of the carriageway. On the roads with kerbs, the sign post shall not be less than 600 mm away from the edge of the kerb. Distance (along the National Highway) of the sign from the junction, on either side of it, shall be 100 to 150 m. Also, it shall be fixed on the left hand side as one approaches the junction.

20.3 Asian Highway Route Marker Sign

The Asian Highway Route Marker Sign shall consist of a shield with retro-reflective green colour base and white symbol and border on a rectangular plate of 450 mm x 600 mm. The sign consists of the letters AH followed by the number in Arabic numerals assigned to the route. The shape, size and spacing of letters and numerals shall conform to those given in **Fig. 20.03**.

Location: The sign shall be erected on Asian Highway route ahead of the intersections of other important roads, or Asian Highways immediately after the intersections as confirmatory AH Route Markers, at suitable locations through built-up areas, and at such other point that may be considered necessary to advise the travelers of the presence of the Asian Highways. On roads without kerbs, the sign post shall be erected with clear distance of two or three meters from the edge of the carriageway. On roads with kerbs, the sign post shall not be less than 600 mm away from the edge of the kerb. The distance of these sign posts from the junction along the Asian Highway, on either side of it, shall be 150 to 200 m. Also, it shall be fixed on the left hand side as one approaches the junction. The sign shall be supplemented to the NH, SH or Expressway Route Marker Sign depending upon the category of the road that is classified also as part of the Asian Highway network within the country.

20.4 Expressway Route Marker Sign

The Expressway Route Marker Sign shall consist of a shield with retro-reflective blue colour

base and black symbol border on a rectangular plate of 450 mm x 600 mm. The shape, size and spacing of letters and numerals shall conform to those given in **Fig. 20.04**.

Location: The sign shall be erected on Expressway route ahead of the intersections of other important roads, immediately after the intersections as confirmatory Route Markers, at suitable locations through built-up areas, and at such other point that may be considered necessary for guiding the through traffic. On roads without kerbs, the sign post shall be erected with clear distance of two or three meters from the edge of the carriageway. On roads with kerbs, the sign post shall not be less than 600 mm away from the edge of the kerb.

Distance (along the Expressways) of the sign from the junction (interchange), on either side of it, shall be 150 to 200 m. Also, it shall be fixed on the left hand side as one approaches the junction (interchange).

21 GUIDELINES FOR SIGNS ON EXPRESSWAYS

An expressway is a divided highway for high speed traffic with full control of access.

21.1 General

The signing system for expressways should help road user to get clear and progressive direction information to avoid possible inconvenience by missing proper entry or exit. Apart from the direction information signs, alignment delineation signing and hazard adjacent to high speed traffic are important while considering signing for expressway. The Vulnerable Road Users like pedestrians and cyclist are not present and the signs catering their need are not required in the main alignment.

Signs are designed so that they are legible to road users approaching them and can be read in time to permit proper responses. Desired design characteristics include: (a) long visibility distances, (b) large lettering and symbols, and (c) short legends for quick comprehension.

21.2 Colour of Signs

The colour of all type of signs except direction informative sign shall be same as that of Plate-I, and Plate-II whereas for direction information signs, it shall be white lettering, border and arrows on blue background. In case of facility signs, black symbol is displayed within white square in blue background.

21.3 Format of Legends on Overhead and Shoulder Mounted Signs

The legend on all signboards shall be bilingual-regional/local language and english except on those signboards located at entry and/exit points of Expressways. Entry/Exit shall have inscriptions in regional/local language, Hindi and English. The font type shall be as per **Table 21.1** and a typical expressway ahead sign is given in **Fig. 16.15**.

Table 21.1 Font Type for Inscription for Expressway Signs

| S.N | Language | Font type |
|-----|-------------------|-----------------------|
| 1. | Hindi | Hindi7 |
| 2. | English | Transport Medium |
| 3. | Regional Language | As per local practice |

21.4 Warrants for Sign Installation

The Siting of regulatory and warning signs shall follow the guidelines mentioned in respective sections. Distances of installation shall be based on the speeds and clear visibility distance as mentioned in **Table 11.1**.

21.5 Sizes of the Signs

Sizes of the signs should be decided based on the prevailing speeds on the type of the roads as shown in the **Table 21.2**.

Table 21.2 Sizes of Different Types of Signs for Expressways

| Sign | Shape | Size (mm) for Speeds between 80 -100 kmph | Size (mm) for Speeds more than 100 kmph |
|--|-----------|---|---|
| STOP Sign | Octagonal | 900 | 1200 |
| GIVE WAY Sign | Triangle | 900 | 1200 |
| Prohibitory Signs | Circle | 900 | 1200 |
| No Parking and No Stopping , No Standing Signs | Circle | 900 | 1200 |
| Speed Limit and Vehicle Control Signs | Circle | 1200 | 1200 |
| Cautionary Signs | Triangle | 1200 | 1200 |

21.6 Placement of the Signs with respect to Carriageway

Generally, placement of the signs shall be as per the details given in **Section 4**.

21.7 Size of Letters

Size of letters should be as per **Table 11.1**. Normally, sign size is determined by the length of the message and size of the letters necessary for proper legibility. For supplementary plates attached with facility signs, regulatory signs or cautionary signs the recommended letter size is 100 mm. The text size of 100-125 mm letter size shall be used in the supplementary plates with some of the regulatory signs depicting information on typical timings like "09:00 am to 08:00 pm" coupled with dates or days as applicable.

21.8 Guidelines for Informatory Signs Installation

General guidelines given in **Sections 1 to 20** as relevant for informative signs shall apply except for the following signs.

21.8.1 *Direction Signs*

The direction signs should be either gantry or shoulder mounted. These signs shall be used for grade separated Entry and Exit to the expressways. Advance direction signs should be placed normally at 1 km and at 2 km in advance of the exit.

21.8.2 *Exit Direction Signs*

The exit direction sign repeats the route and destination information that was shown on the advance information sign(s) for the next exit, and thereby assures road users of the destination served and indicates whether they exit to the left or right for that destination. Shoulder mounted Exit Direction signs should be installed at the beginning of the deceleration lane. If there is less than 90 m from the beginning of the deceleration lane, the Exit Direction sign should be installed overhead over the exiting lane.

21.8.3 *Distance Signs*

Distances to the same destinations should be shown at 5 km intervals. The distances displayed on these signs should be the actual distance to the destination points and not the distance to the exit from the expressway.

22 GUIDELINES FOR SIGNS ON URBAN AND CITY ROADS

22.1 General

The signing system for urban and city roads should help road user to get clear and unambiguous information where there could be many advertisement hoardings and road side activities. The Vulnerable Road Users like pedestrians and cyclists and signs for disabled people would play important role in urban and city road signing.

Signs are designed so that they are legible to road users approaching them and can be read in time to permit proper responses. Desired design characteristics include: (a) long visibility distances, (b) large lettering and symbols, and (c) short legends for quick comprehension.

22.2 Colour of Signs

The colour of all types of signs except direction informative sign shall be same as that of Plate-I, and Plate-II, whereas for direction information signs, it shall be white lettering, border and arrows on blue background. In case of facility signs, black symbol is displayed within white square in blue background.

22.3 Format of Legends on Overhead and Shoulder Mounted Signs

The legend on all signboards shall be bilingual-regional/local language and English except on those signboards located at entry and exit points of Expressways. Entry/Exit shall have inscriptions in regional/local language, Hindi and English. The font type shall be as per **Table 22.1**.

Table 22.1 Font Type for Inscription in Signs of city Roads

| S.No | Language | Font type |
|------|-------------------|-----------------------|
| 1. | Hindi | Hindi7 |
| 2. | English | Transport Medium |
| 3. | Regional Language | As per local practice |

22.4 Warrants for Sign Installation

The placement of regulatory and warning signs shall follow the guidelines mentioned in respective sections. Distances of installation shall be based on the speeds and clear visibility distance as mentioned in **Table 11.1**.

22.5 Sizes of the Signs

Sizes of the signs should be decided based on the prevailing speeds on the type of the roads as per **Table 14.3** and **Table 15.1** given before.

22.6 Siting of the Signs with Respect to Carriageway

Generally, placement of the signs shall be as per **Section 4**. Where, however, site condition demand any deviation, the competent authority may decide after due consultation with traffic engineering specialist.

22.7 Size of Letters

Size of letters shall be as per **Table 11.1**. For supplementary plates attached with facility signs, regulatory signs or cautionary signs, the recommended letter size is 100 mm. The text size of 100 - 125 mm letter size shall be used in the supplementary plates with some of the regulatory signs depicting information on typical timings like, "09:00 am to 08:00 pm" coupled with dates or days as applicable.

22.8 Guidelines for Informatory Signs Installation

General guidelines given in **Sections 1 to 20** as relevant for informatory signs shall be adopted for installation of signs in urban and city roads as well.

22.8.1 Gantry Mounted Signs

Gantry mounted signs given in **Figure 16.16** are appropriate for a location ahead of a flyover in an urban situation.

23 SIGN PLAN EXAMPLES FOR TYPICAL SITUATIONS

Sign plans for some typical situations are presented in **Annexure V**, **Figure V.1** to **Figure V.10**. A list of the typical conditions wherein the posting of different Sign Plans can be adopted is given below (typical figures presented in **Annexure V**). However, the sign plan shown in these figures are indicative only, and are not the only signs to be used in such road layouts. To cater to the specific road environment and road users likely to use these locations, other signs are also required to be installed. Engineer is required to prepare a full sign plan and necessary estimate for implementation. If required, advice of traffic engineering expert may be sought before placement for special conditions.

- Figure V.1** Sign plan for a 3 armed priority junction, primarily showing the direction information and junction control signs.
- Figure V.2** Sign plan for a 4 armed junction, showing the direction information and junction priority.
- Figure V.3** Sign plan for a roundabout indicating the direction information and traffic regulation signs.
- Figure V.4** Sign plan showing the essential signs to be installed when a relatively high speed highway passes through a town/village having vulnerable road users on both sides of highway.
- Figure V.5** Sign plan for a junction with low trafficked road on one side of the highway, provided with the speed breaker and signs for the side road.
- Figure V.6** Sign plan for a flyover approach in a non-urban section, mainly giving direction signs for traffic from the main highway, and the direction information for the junction below the flyover.
- Figure V.7** Sign plan for curve delineation in a divided highway, showing the positions of chevron signs on curves, and the convention to be followed while installing hazard markers.
- Figure V.8** Sign plan showing guide signs for one of the approaches of a cloverleaf interchange, primarily the direction signs, and also the gantry signs indicating lane assignment near the exit.
- Figure V.9** Sign plan for a flyover approach in an urban section, mainly direction signs for traffic from the main highway, and the direction information for the junction below the flyover.
- Figure V.10** Sign plan for information on Rest and Service Area.

Plate I to IV

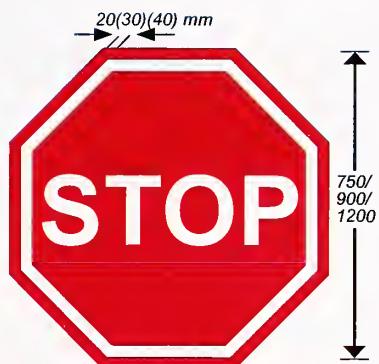
STOP and GIVE WAY SIGNS

Fig. 14.01 STOP



Fig. 14.02 GIVE WAY

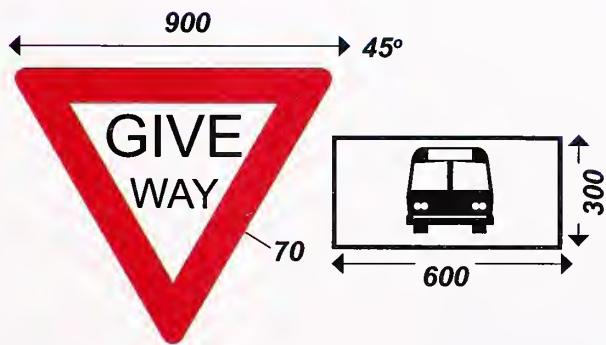
Fig. 14.03 Give Way to Buses
Exiting the Bus Bay

PLATE - I (Continued)



Fig. 14.04 Bullock carts Prohibited

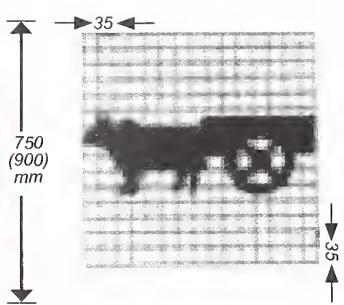


Fig. 14.05 Bullock and hand carts Prohibited

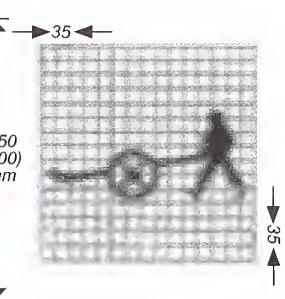


Fig. 14. 06 Hand carts Prohibited



Fig. 14.07 Tongas Prohibited

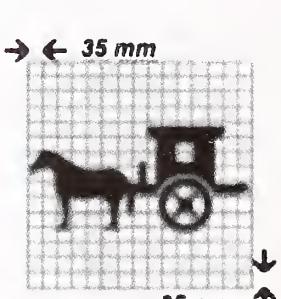


Fig. 14.08 Horse Riding Prohibited

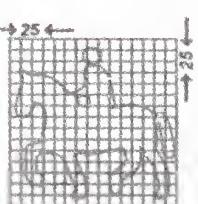


Fig. 14.09 Caravan not allowed

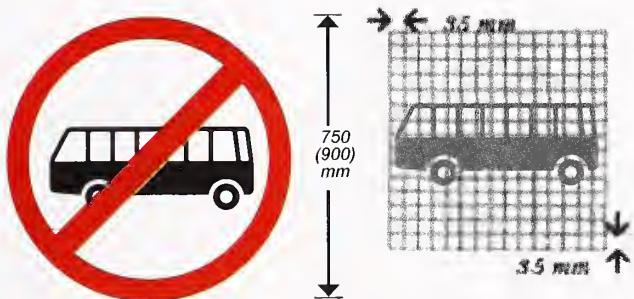


Fig. 14.10 Buses Prohibited



Fig. 14.11 Cars Prohibited

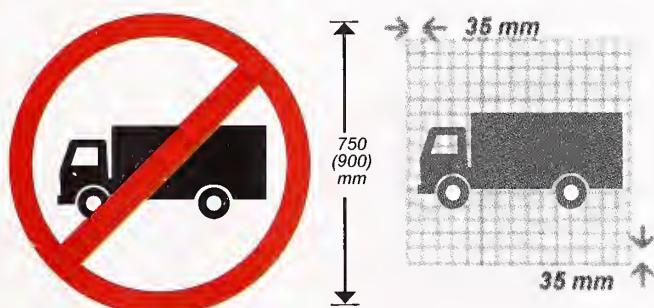


Fig. 14.12 Trucks Prohibited

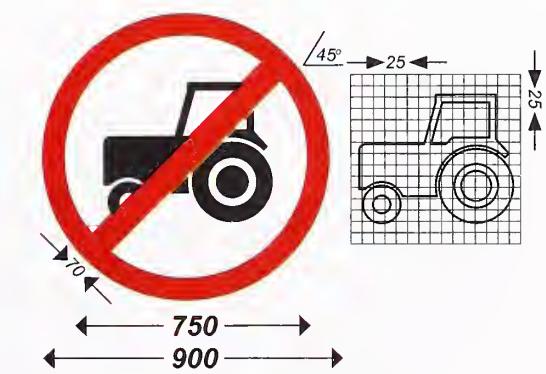


Fig. 14.13 Tractor Prohibited



Fig. 14.14 Construction Vehicle Prohibited

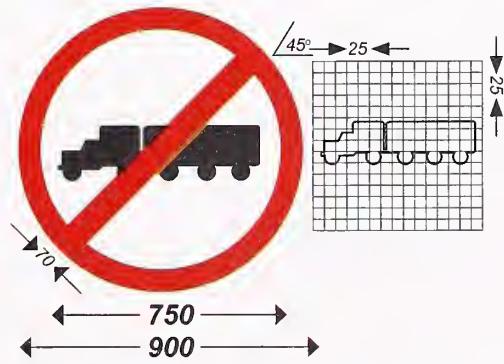


Fig. 14.15 Articulated Vehicles Movement Prohibited

PLATE - I (Continued)



Fig. 14.16 Two Wheeler Prohibited

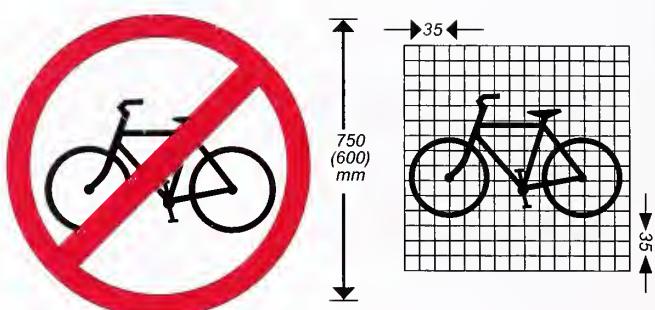


Fig. 14.17 Cycles Prohibited

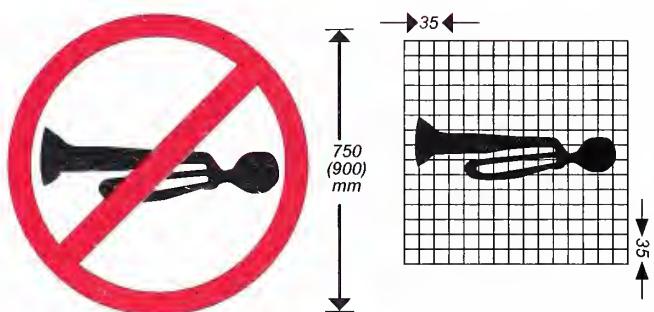


Fig. 14.18 Horn Prohibited

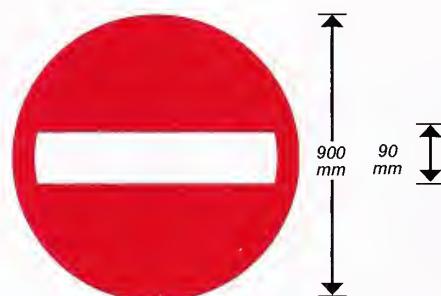


Fig. 14.19 No Entry



Fig. 14.20 One Way



Fig. 14.21 Left Turn Prohibited

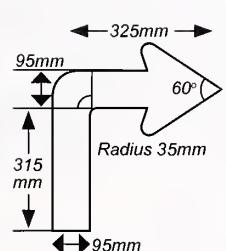


Fig. 14.22 Right Turn Prohibited

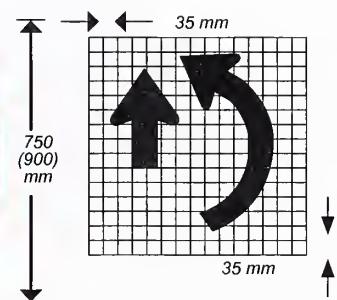


Fig. 14.23 Overtaking Prohibited

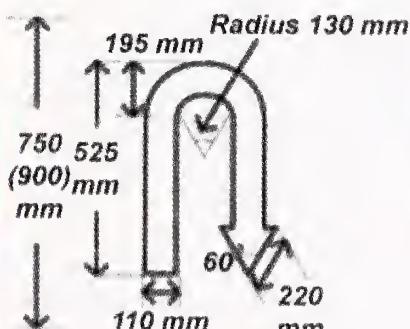


Fig. 14.24 U-Turn Prohibited

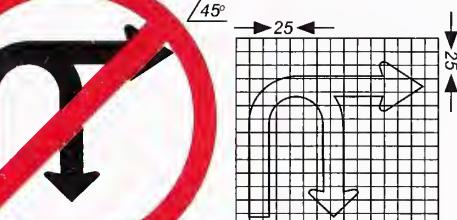
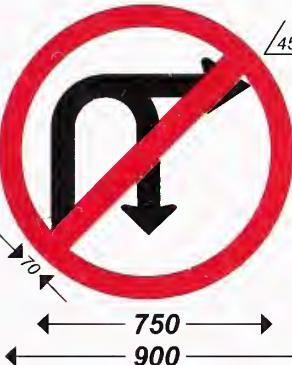


Fig. 14.25 Right turn & U-turn Prohibited



Fig. 14.26 Priority to Vehicles from the Opposite Direction

PLATE - I (Continued)

NO PARKING and NO STOPPING SIGNS

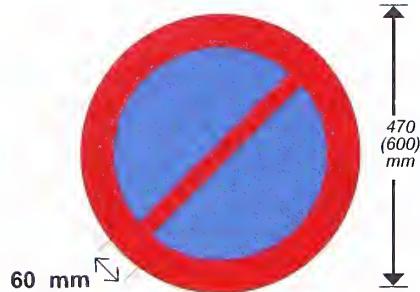


Fig. 14.27 No Standing

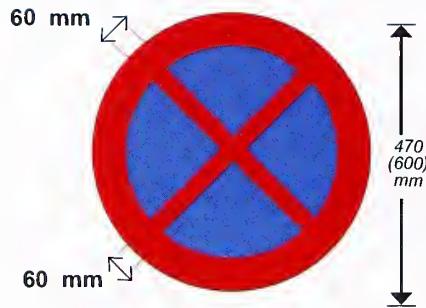


Fig. 14.28 No Stopping and No Standing



Definition Plate to Fig 14.28(Optional)



Fig. 14.29 No Parking



Definition Plate to Fig 14.29(Optional)

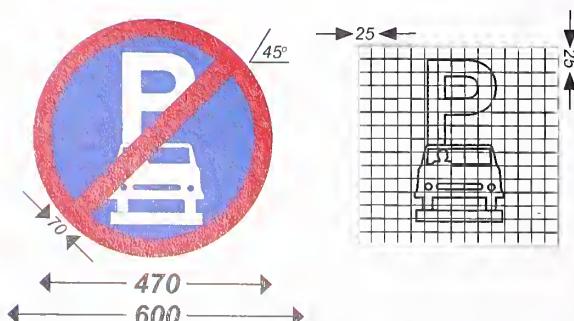


Fig. 14.30 Parking not Allowed on Footpath

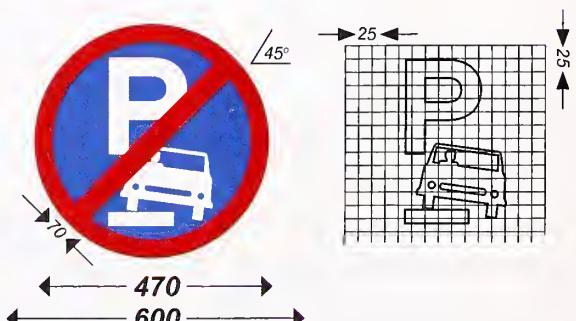


Fig. 14.31 Parking Not Allowed on Half of Foot Path

VEHICLE CONTROL SIGNS and SPEED LIMIT

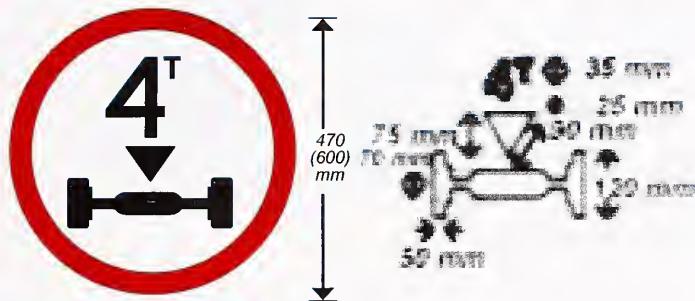


Fig. 14.32 Axle Load Limit

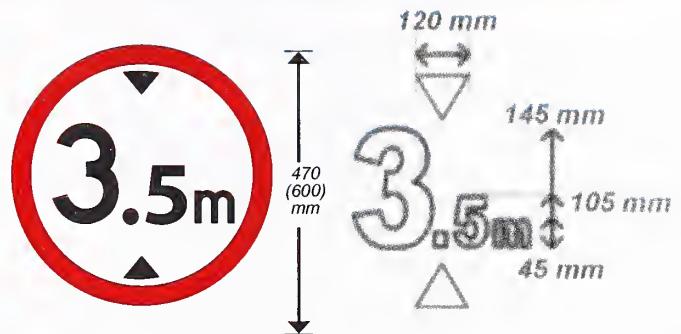


Fig. 14.33 Height Limit

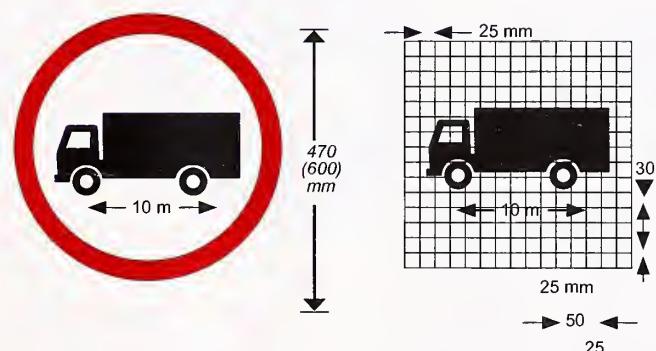


Fig. 14.34 Length Limit

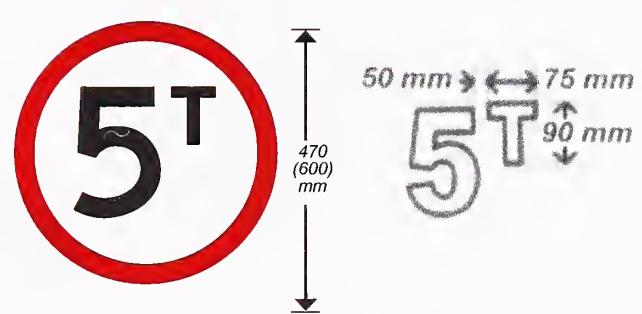


Fig. 14.35 Load Limit

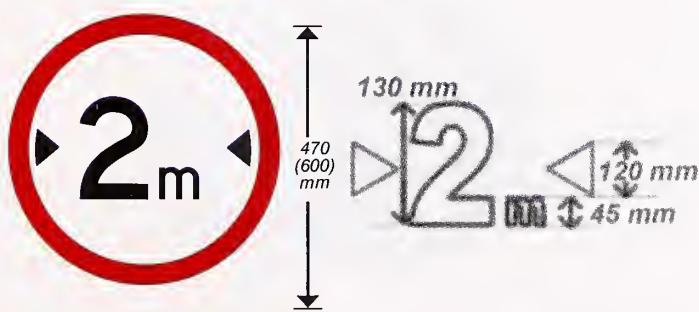


Fig. 14.36 Width Limit

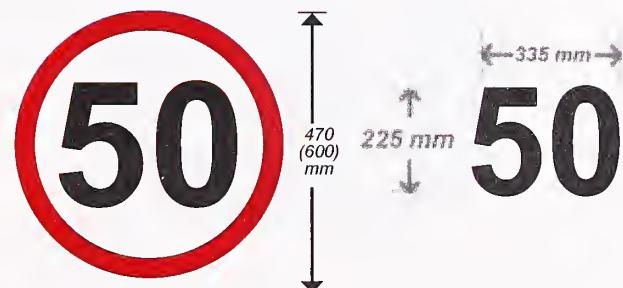


Fig. 14.37 Maximum Speed Limit

PLATE - I (Continued)

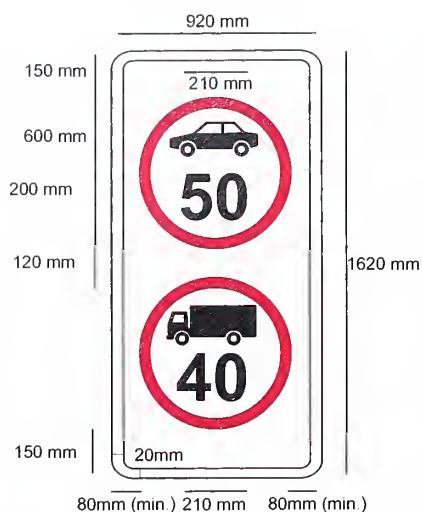


Fig. 14.38 Maximum Speed Limit (Vehicle Type)



Fig. 14.39 Stop for Police Check

RESTRICTION ENDS SIGNS



Fig. 14.40 Restriction Ends

COMPULSORY CONTROL and OTHER SIGNS

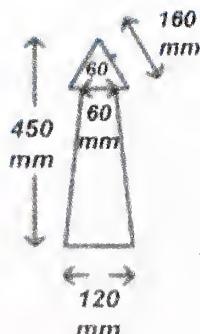


Fig. 14.41 Compulsory Ahead



Fig. 14.42 Compulsory Ahead or Right Turn

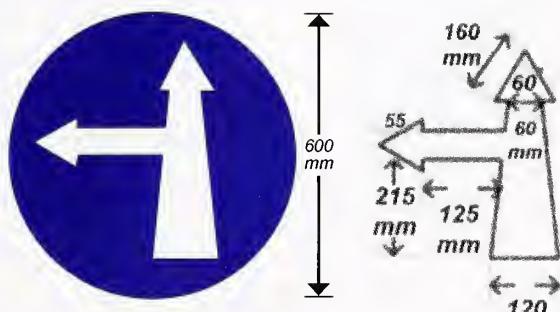


Fig. 14.43 Compulsory
Ahead or Left Turn



Fig. 14.44 Compulsory Turn Right



Fig. 14.45 Compulsory Turn Left

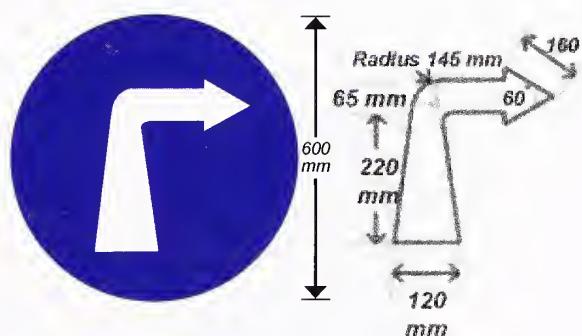


Fig. 14.46 Compulsory Turn Right
(In advance of Junction)



Fig. 14.47 Compulsory Turn Left
(In advance of Junction)



Fig. 14.48 Compulsory Keep Left

PLATE - I (Continued)

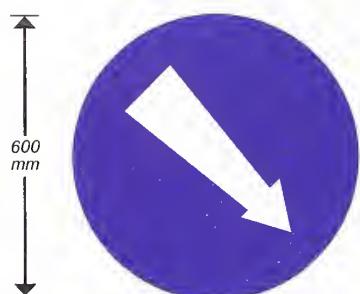


Fig. 14.49 Compulsory Keep Right



Fig. 14.50 Pass Either Side



Fig. 14.51 Minimum Speed Limit



Fig. 14.52 Compulsory Cycle Track/Cycle Only

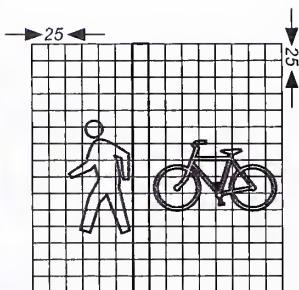


Fig. 14.53 Compulsory Cyclist and Pedestrian Route



Fig. 14.54 Pedestrian Only



← → 600

Fig. 14.55 Compulsory Snow Chain

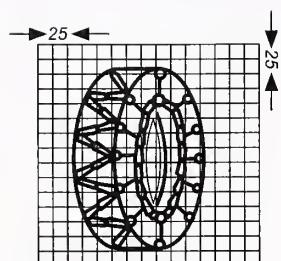


Fig. 14.56 Bus Way/Buses Only



Fig. 14.57 Compulsory Sound Horn

CAUTIONARY WARNING SIGNS

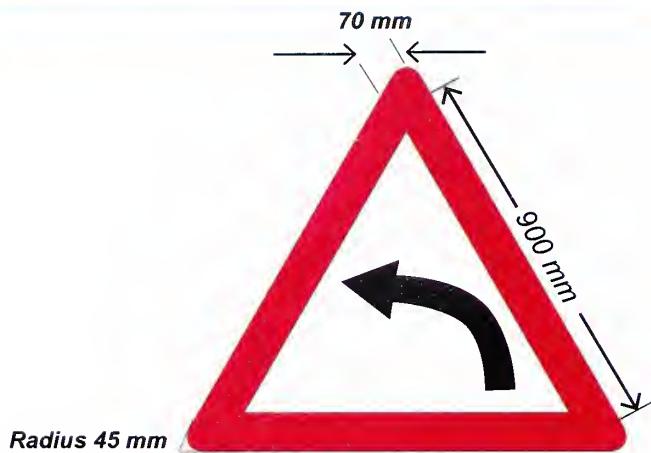


Fig. 15.01 Left Hand Curve

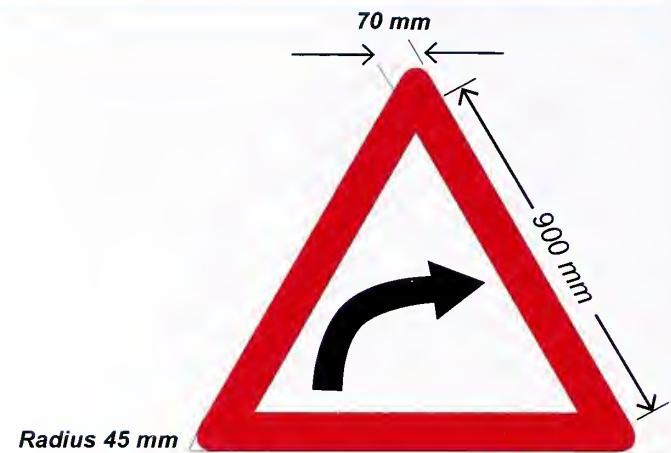


Fig. 15.02 Right Hand Curve

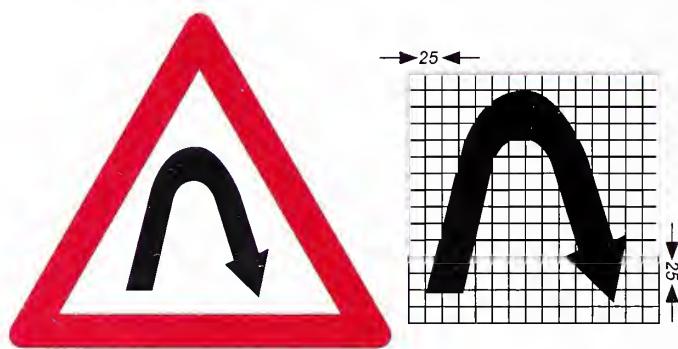


Fig. 15.03 Right Hairpin Bend



Fig. 15.04 Left Hairpin Bend



Fig. 15.05 Right Reverse Bend



Fig. 15.06 Left Reverse Bend

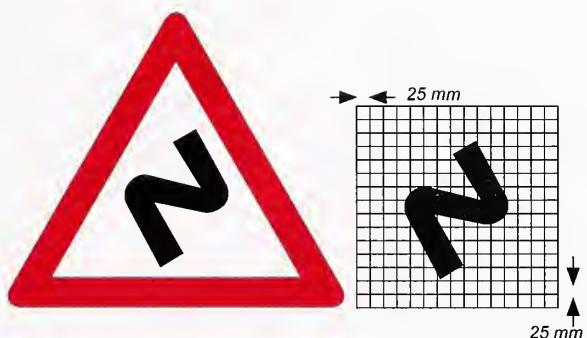


Fig. 15.07 Series of Bends



Fig. 15.08 270 Degree Loop

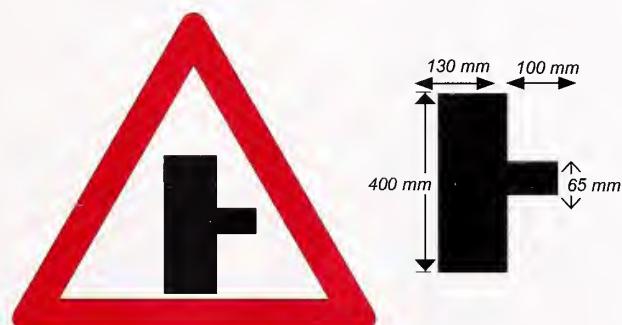


Fig. 15.09 Side Road Right



Fig. 15.10 Side Road Left



Fig. 15.11 Y- Intersection



Fig. 15.12 Y-Intersection

PLATE - II (Continued)

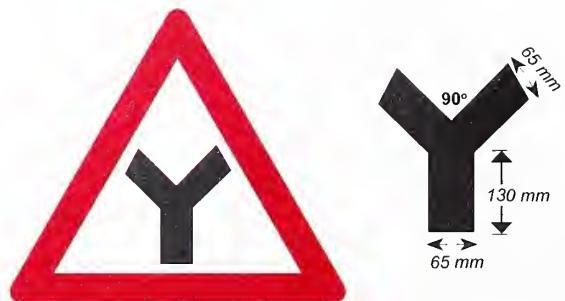


Fig. 15.13 Y-Intersection

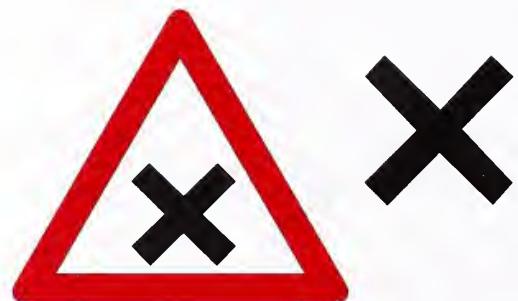


Fig. 15.14 Cross Road

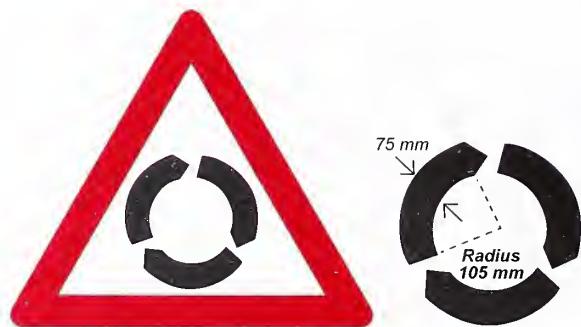


Fig. 15.15 Roundabout

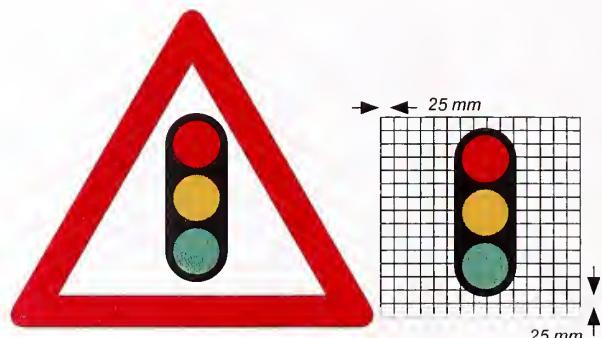


Fig. 15.16 Traffic Signals

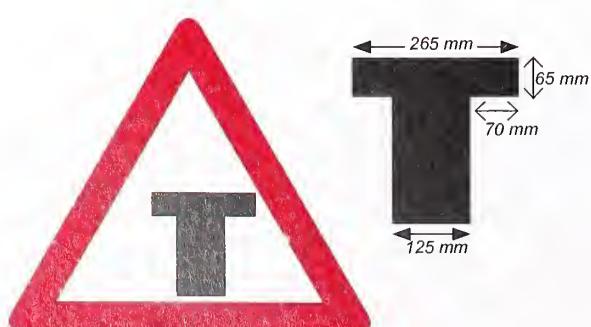


Fig. 15.17 T-Intersection

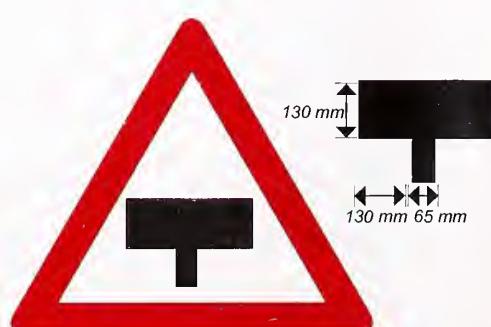


Fig. 15.18 T- Intersection Major Road Ahead

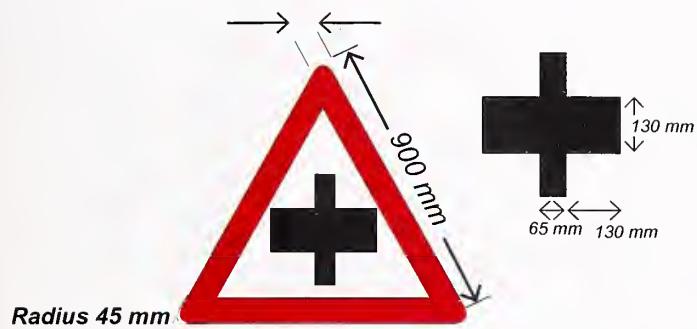


Fig. 15.19 Major Road Ahead

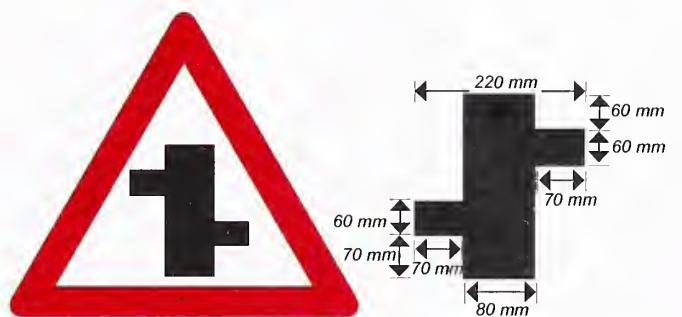


Fig. 15.20 Staggered Intersection



Fig. 15.21 Staggered Intersection



Fig. 15.22 Merging Traffic Ahead (From Left)

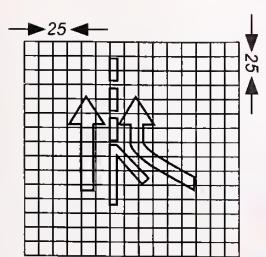
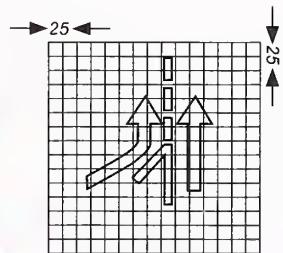


Fig. 15.22 Merging Traffic Ahead (From Right)

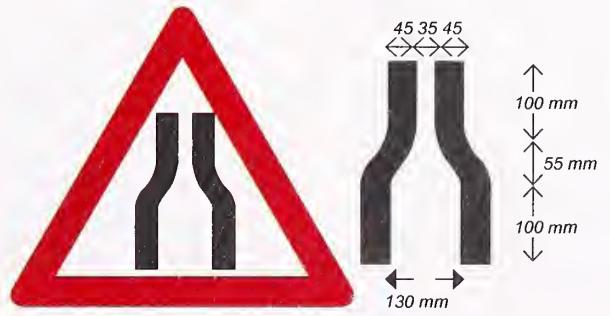


Fig. 15.23 Narrow Road Ahead

PLATE - II (Continued)



Fig. 15.24 Road Widens

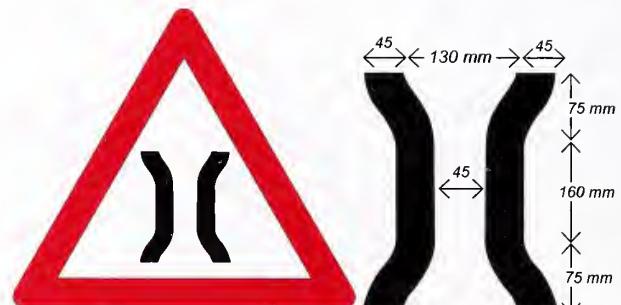
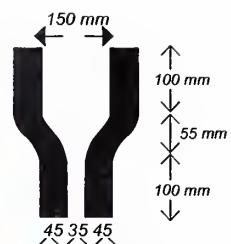


Fig. 15.25 Narrow Bridge Ahead



Fig. 15.26 Steep Ascent

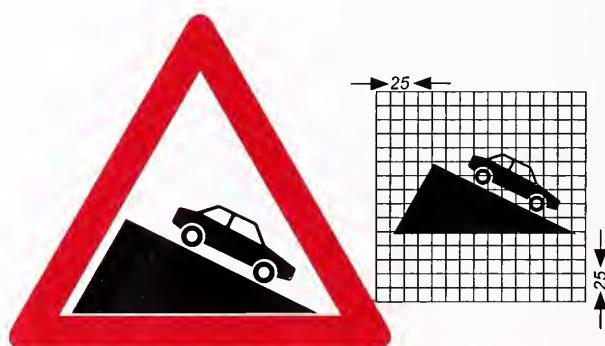
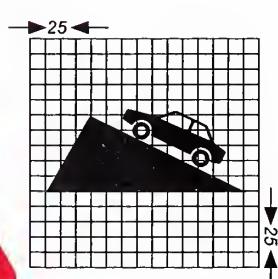


Fig. 15.27 Steep Descent

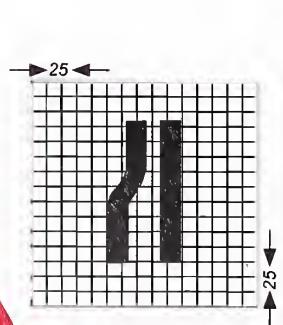


Fig. 15.28 Reduced Carriageway
Left Lane(s) Reduced

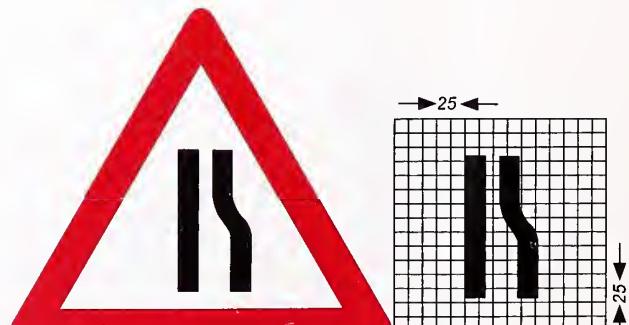


Fig. 15.29 Reduced Carriageway
Right Lane(s) Reduced



Fig. 15.30 Start of Dual Carriageway



Fig. 15.31 End of Dual Carriageway

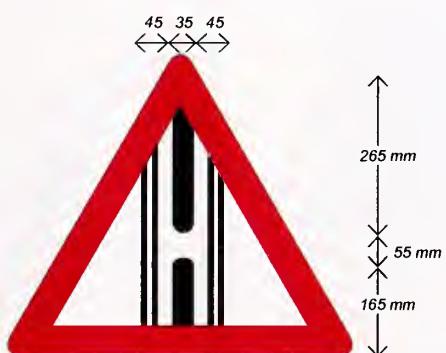


Fig. 15.32 Gap in Median

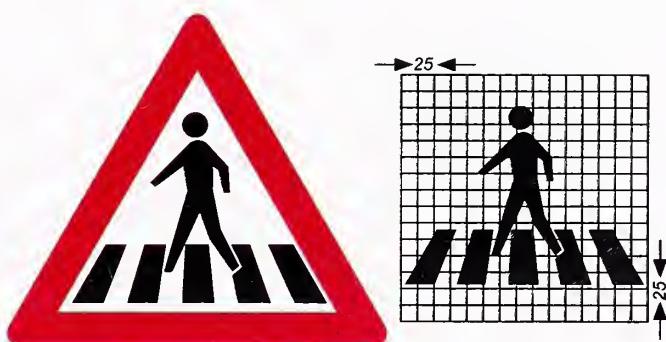


Fig. 15.33 Pedestrian Crossing

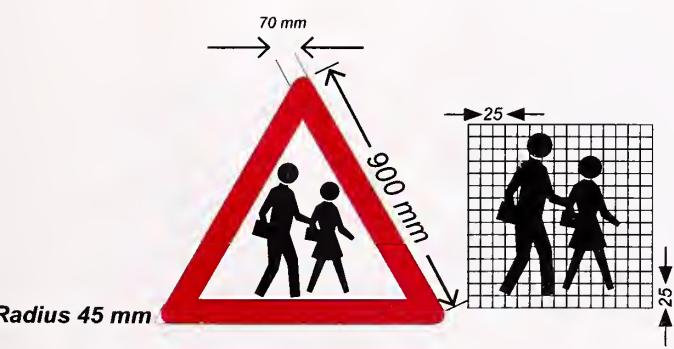


Fig. 15.34 School Ahead



Fig. 15.35 Built-up Area

PLATE - II (Continued)

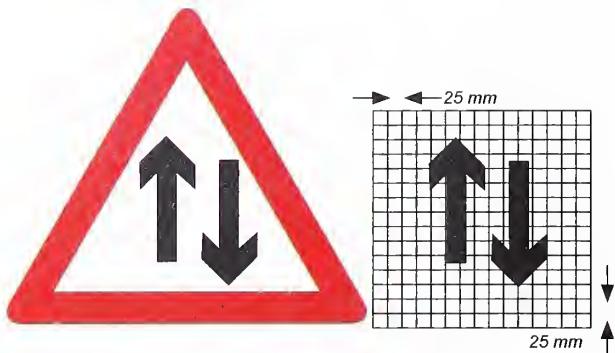


Fig. 15.36 Two Way Operation

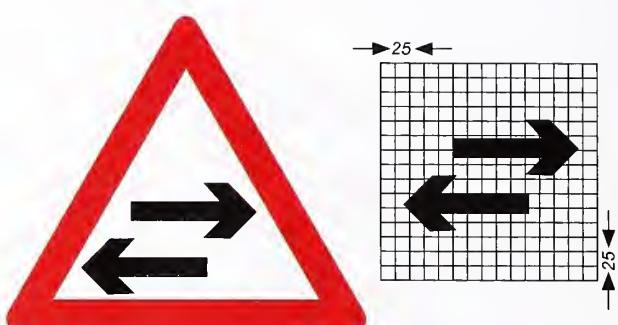


Fig. 15.37 Two way Traffic on Cross Road Ahead Warning

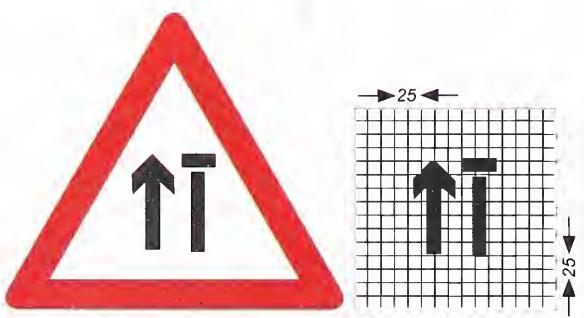


Fig. 15.38 Lane Closed
(Two Lane Carriageway)

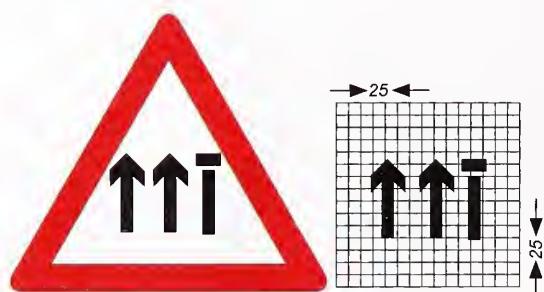


Fig. 15.39 Lane Closed
(Three Lane Carriageway)

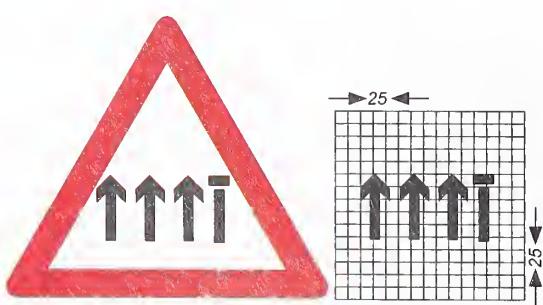


Fig. 15.40 Lane Closed
(Four Lane Carriageway)

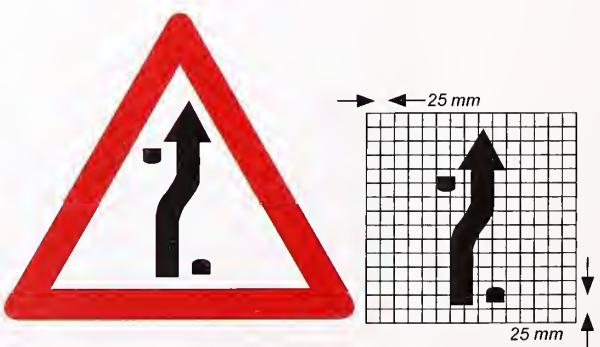


Fig. 15.41 Traffic Diversion on
Dual Carriageway

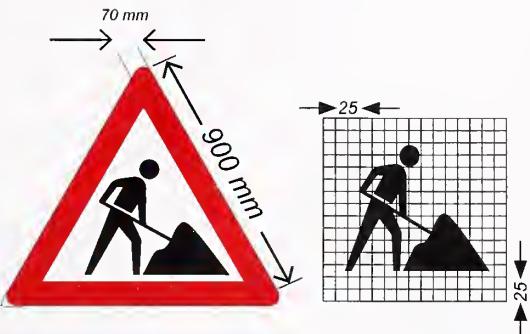


Fig. 15.42 Men at Work

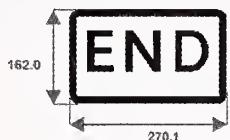
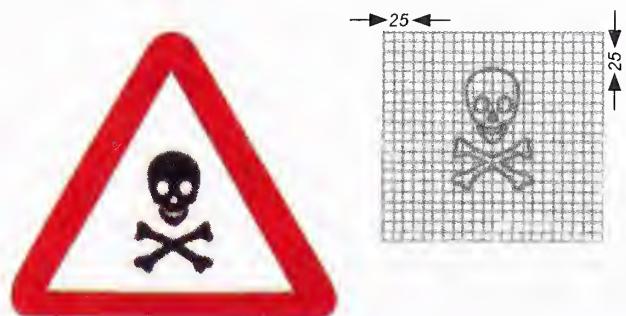
Fig. 15.42+Supplimentary Plate "END"
at the Leaving Side of Work Zone

Fig. 15.43 Danger Warning

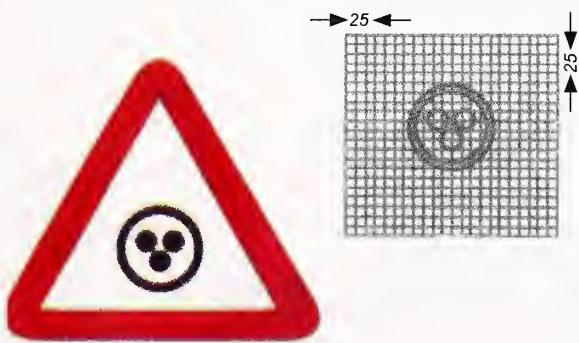
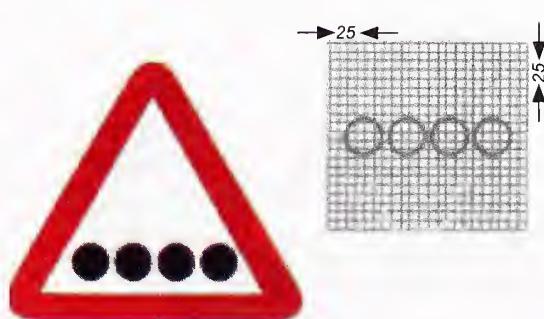
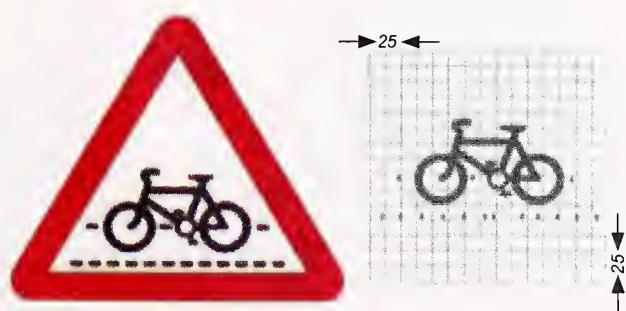
Fig. 15.44 Deaf Persons Likely on
Road AheadFig. 15.45 Blind Persons Likely on
Road Ahead

Fig. 15.46 Cycle Crossing

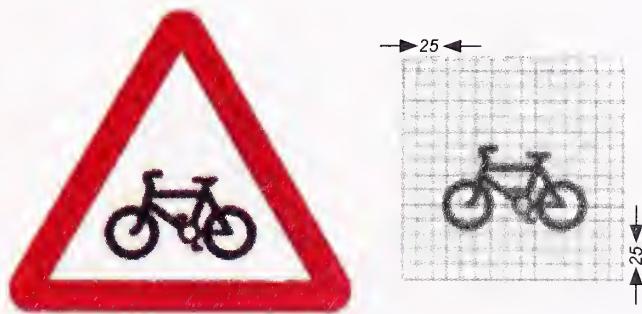


Fig. 15.47 Cycle Route Ahead

PLATE - II (Continued)



Fig. 15.48 Dangerous Dip



Fig. 15.49 Speed Breaker

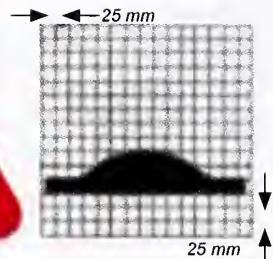


Fig. 15.50 Rumble Strip



Fig. 15.51 Rough Road

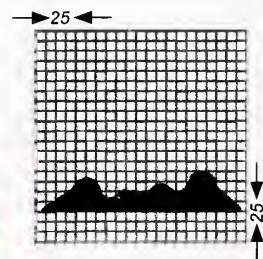


Fig. 15.52 Dangerous Ditch

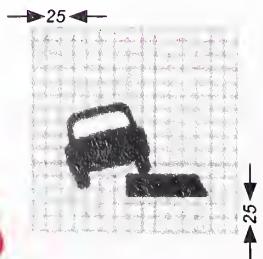


Fig. 15.53 Loose Gravel

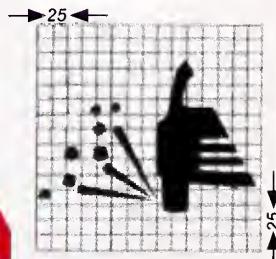




Fig. 15.54 Slippery Road

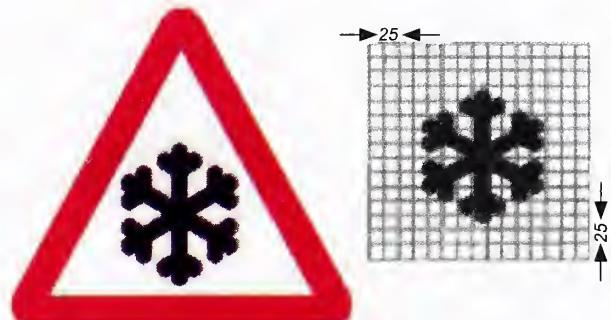


Fig. 15.55 Slippery Road Because of Ice

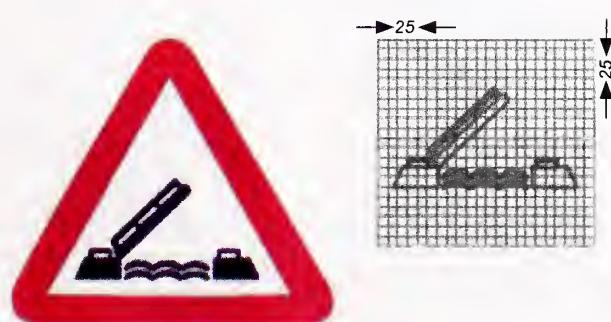


Fig. 15.56 Opening or Swing Bridge

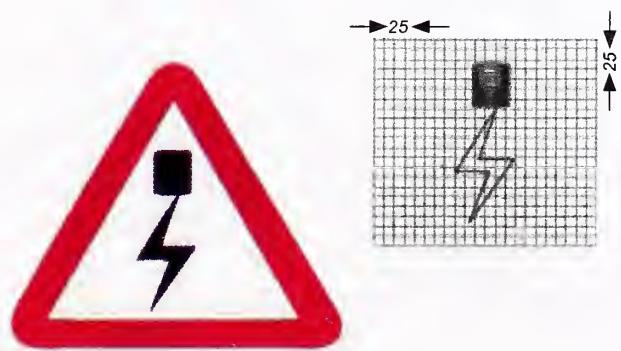


Fig. 15.57 Overhead Cables

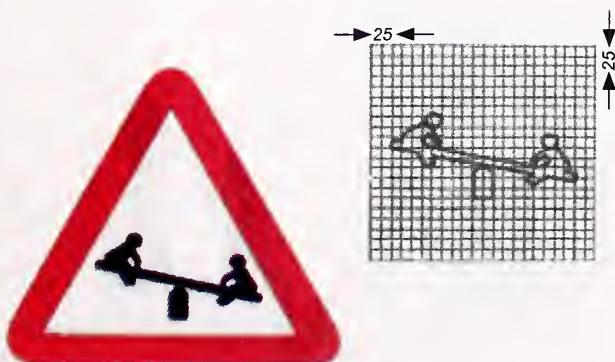


Fig. 15.58 Playground Ahead

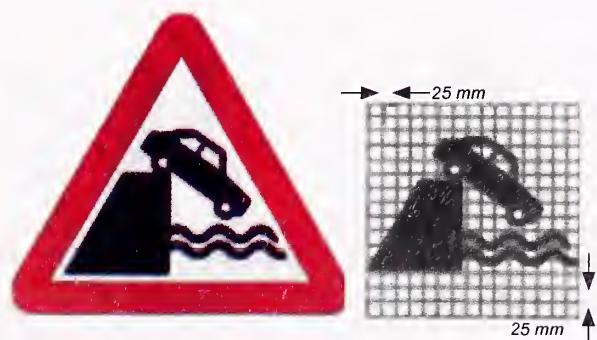


Fig. 15.59 Quay Side or River Bank

PLATE - II (Continued)



Fig. 15.60 Barrier

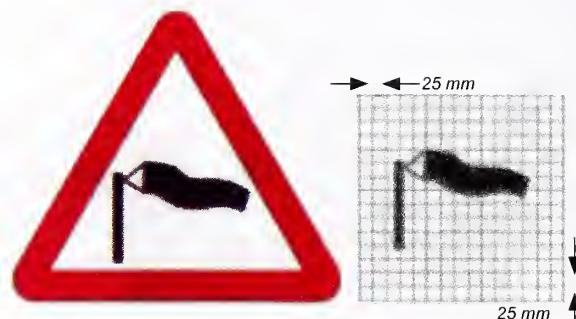


Fig. 15.61 Sudden Side Winds

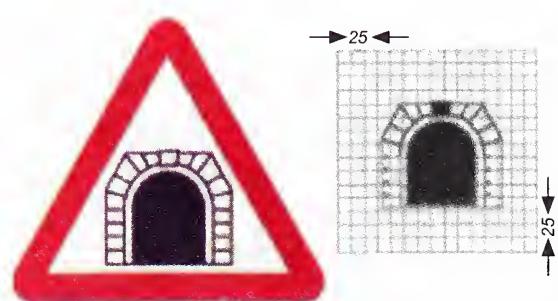


Fig. 15.62 Tunnel Ahead

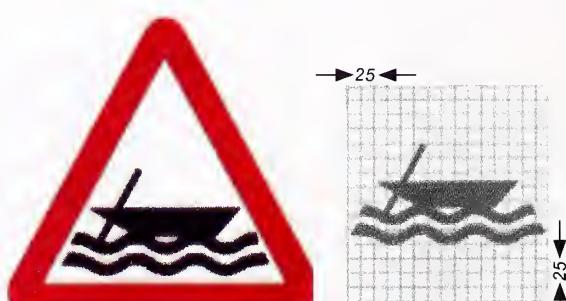


Fig. 15.63 Ferry

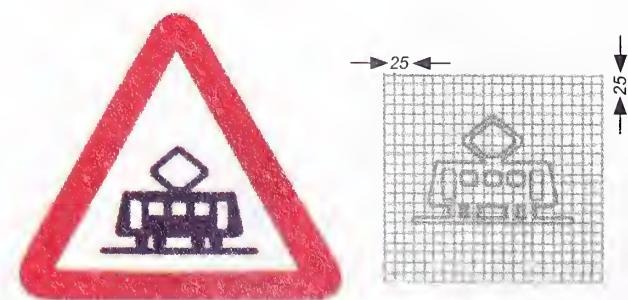


Fig. 15.64 Trams Crossing

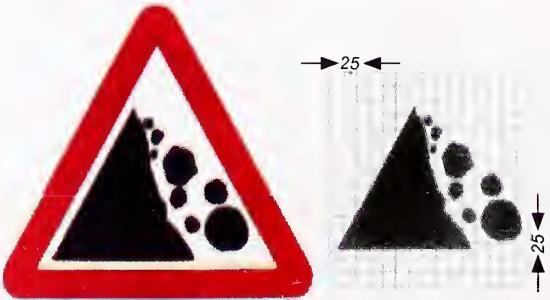


Fig. 15.65 Falling Rocks

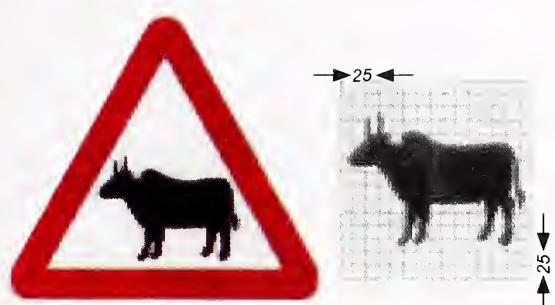
PLATE - II (Continued)

Fig. 15.66 Cattle Crossing

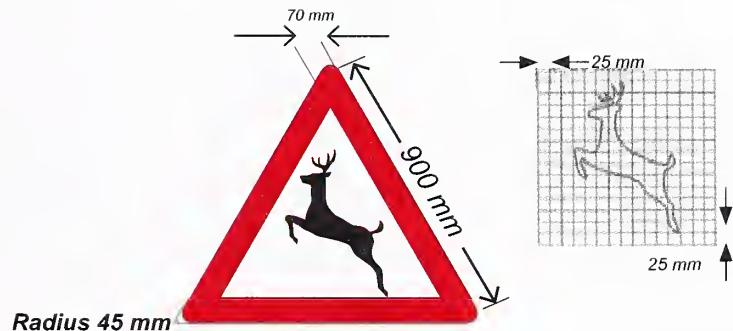


Fig. 15.67 Wild Animals

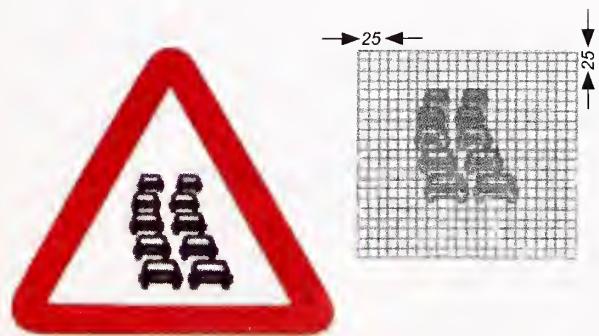


Fig. 15.68 Queues Likely Ahead

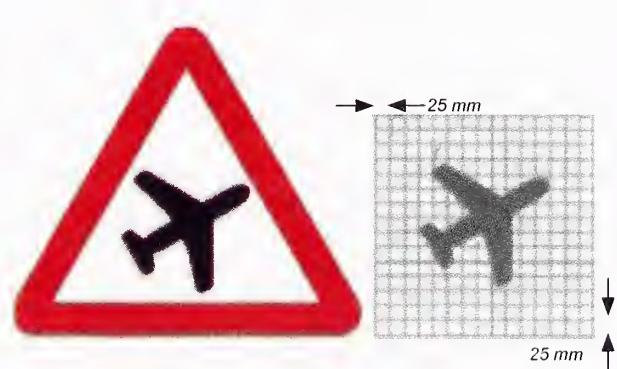


Fig. 15.69 Airport

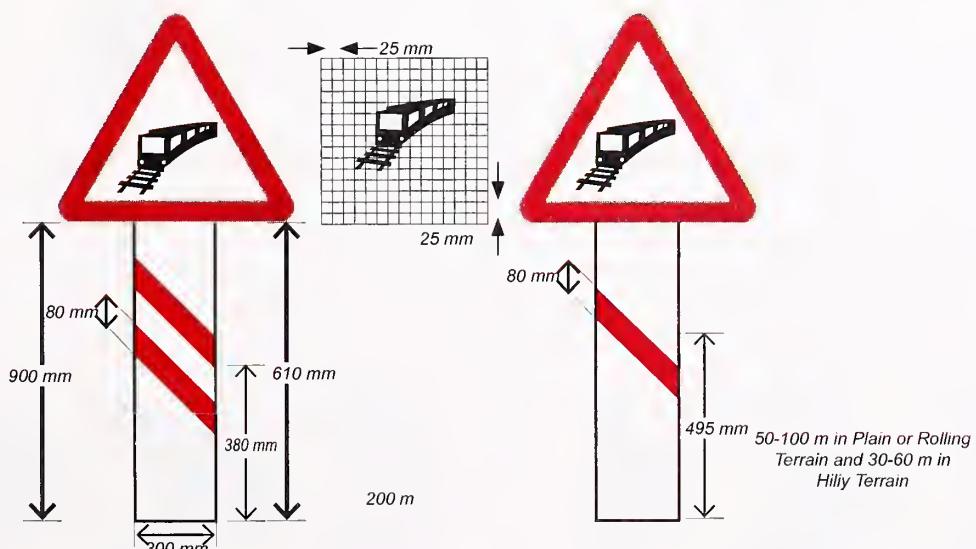


Fig. 15.70 Unguarded Railway Crossing

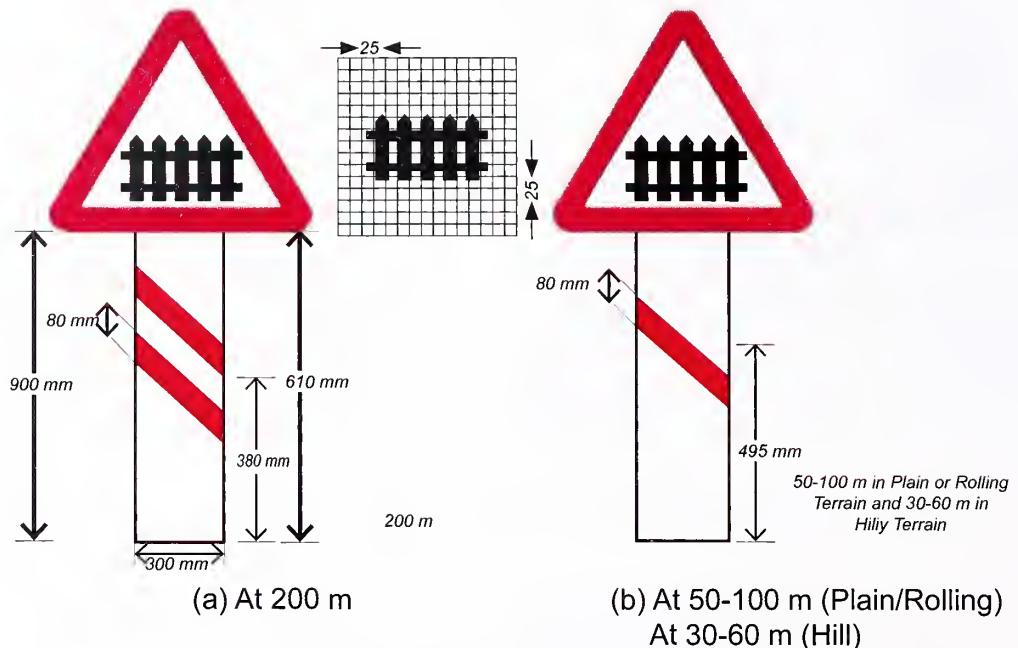
PLATE - II (Continued)

Fig. 15.71 Guarded Railway Crossing

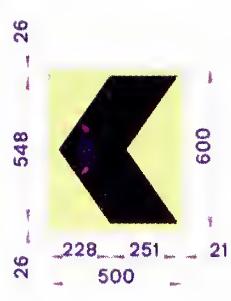


Fig. 15.72 Single Chevron (Normal)

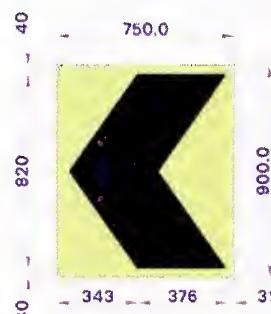


Fig. 15.73 Single Chevron(>100kmph speed)

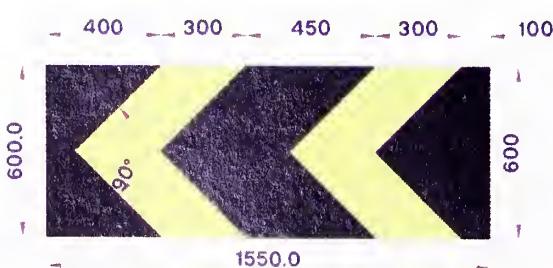


Fig. 15.74 Double Chevron

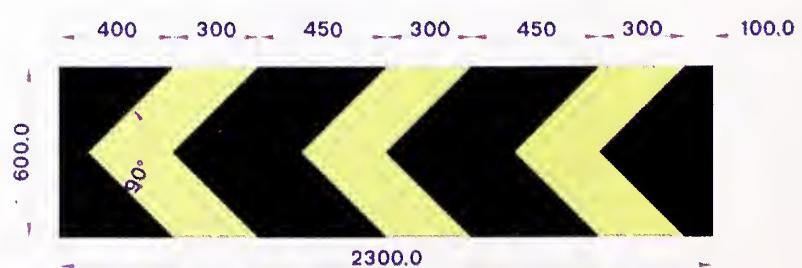


Fig. 15.75 Triple Chevron

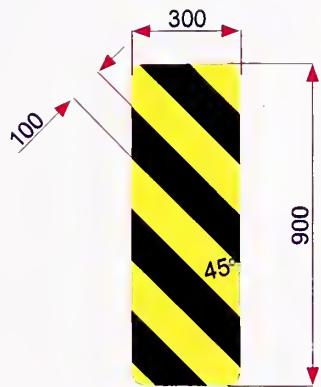


Fig. 15.76 Object Hazard (Left)

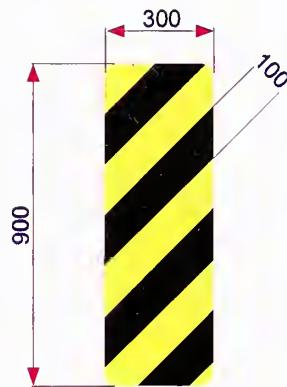


Fig. 15.77 Object Hazard (Right)

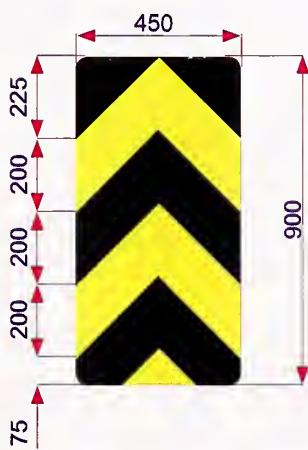


Fig. 15.78 Two Way Hazard Marker

INFORMATORY SIGNS

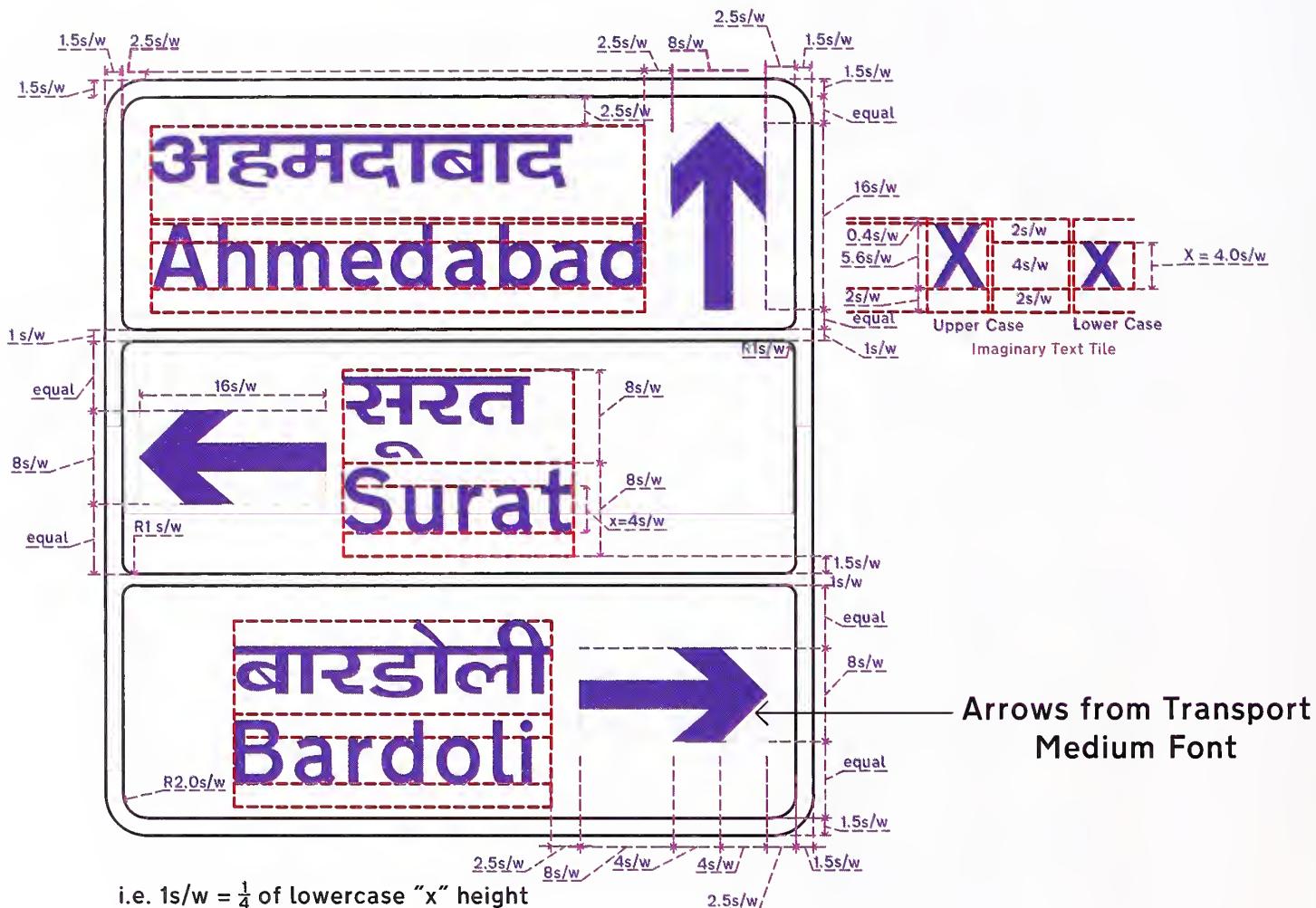


Fig. 16.01 Stack type Advance Direction Sign
(Shoulder Mounted)

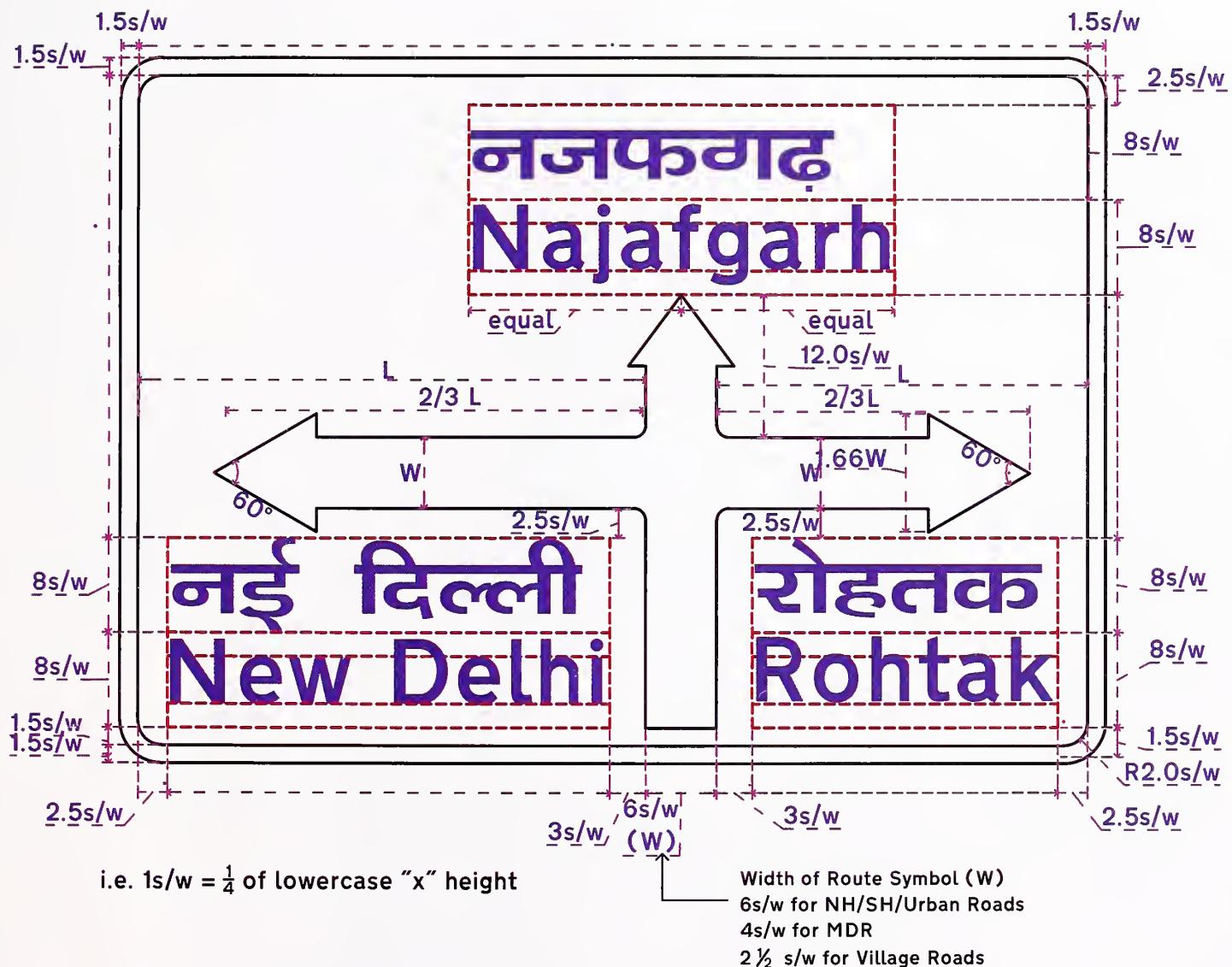


Fig. 16.02 Map type Advance Direction Sign

(Shoulder Mounted)

PLATE - III (Continued)

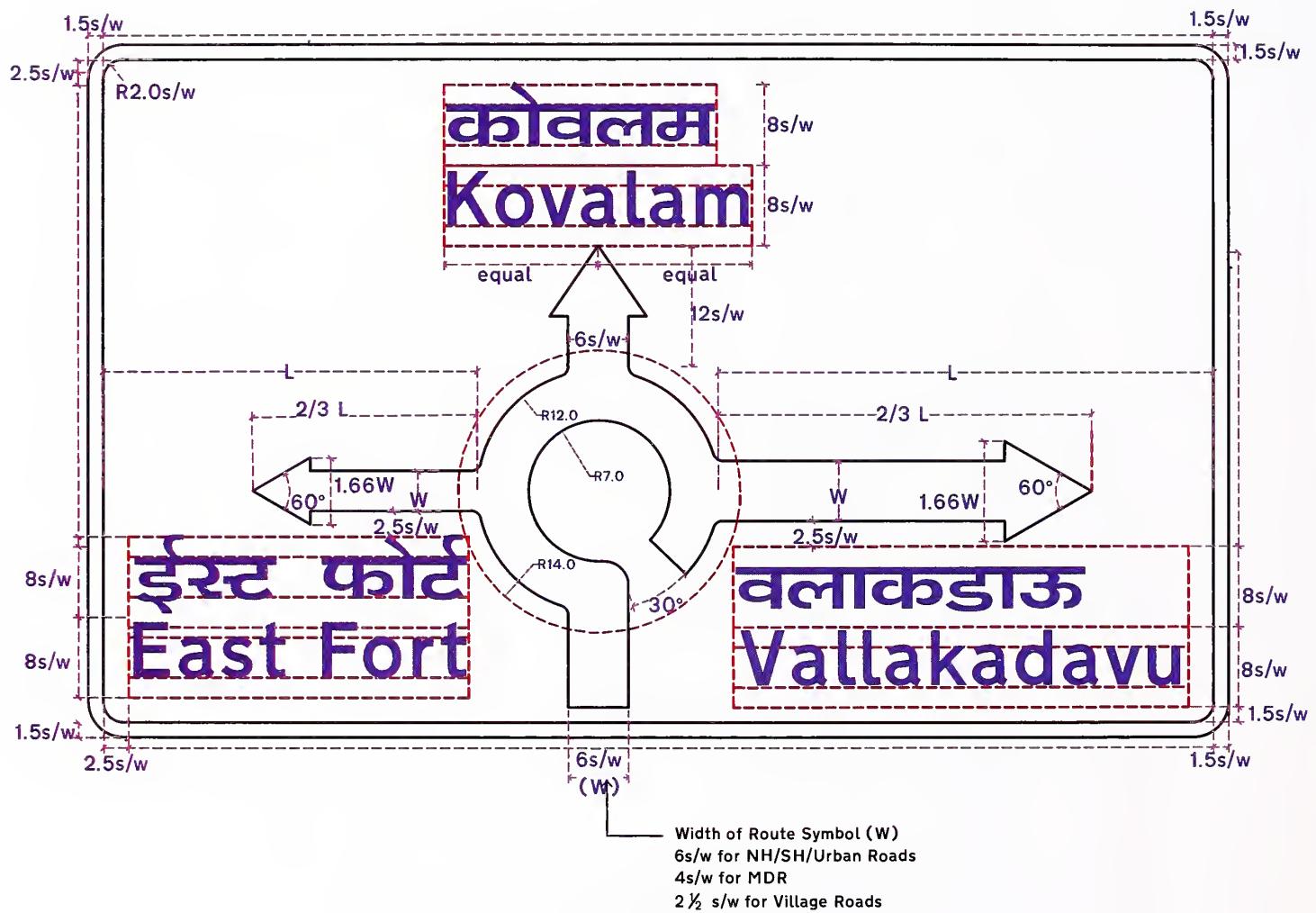


Fig. 16.03 Map type Advance Direction Sign on Roundabout
 (Shoulder Mounted)

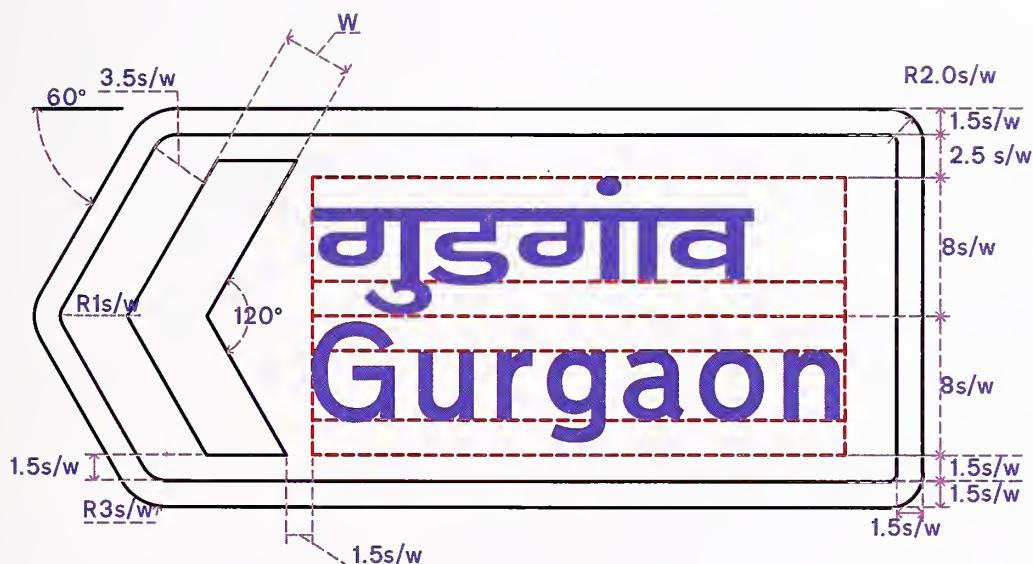


Fig. 16.04 Flag Type Direction Sign

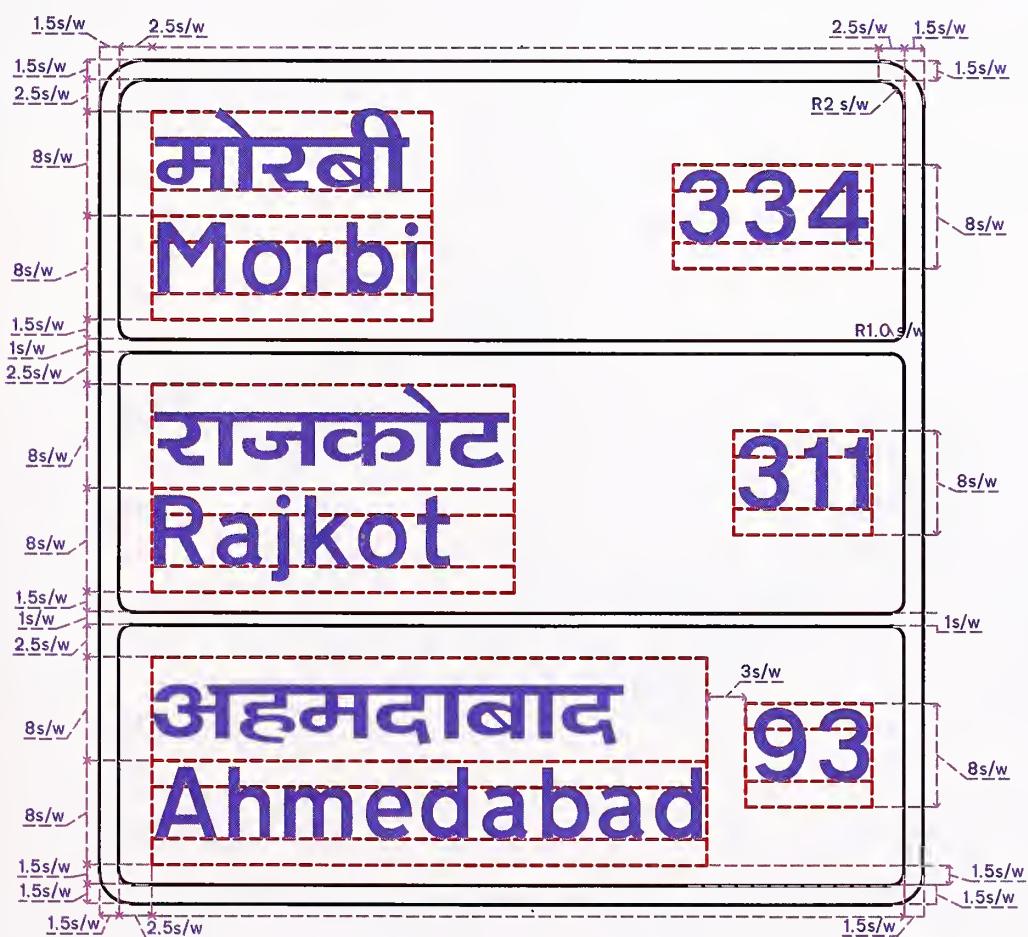


Fig. 16.05 Reassurance Sign

PLATE - III (Continued)

Fig. 16.06 Place Identification Sign

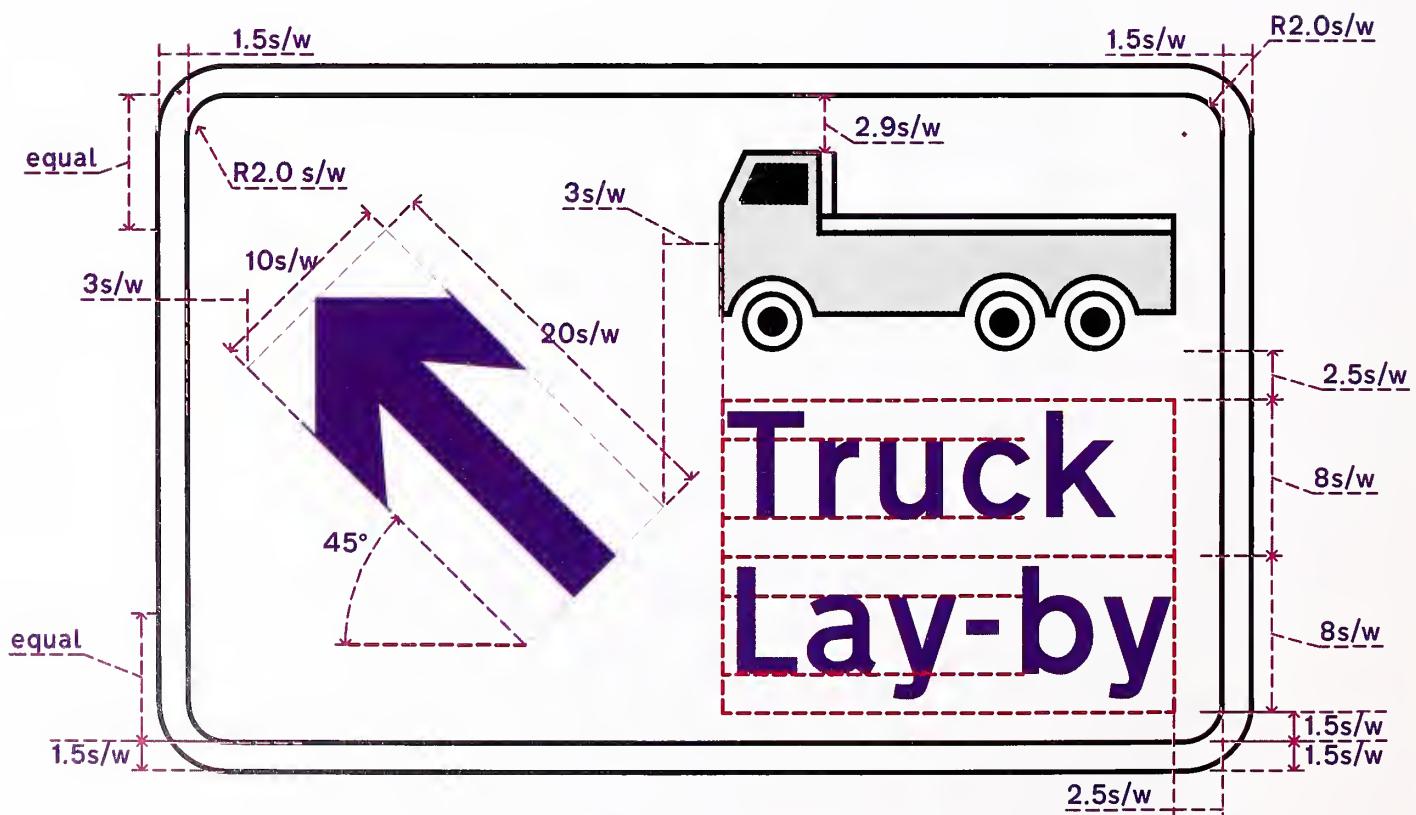


Fig. 16.07 Truck Lay- By

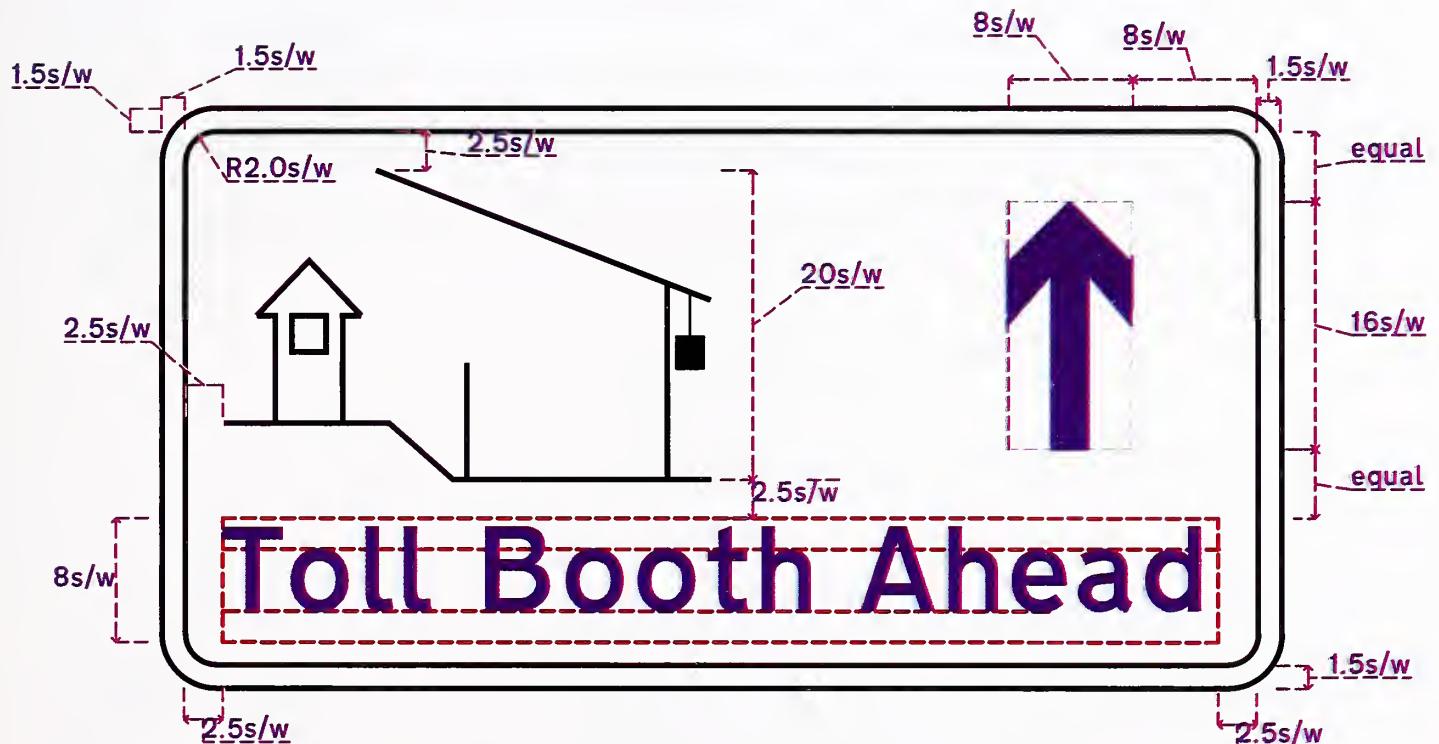


Fig. 16.08 Toll Booth Ahead

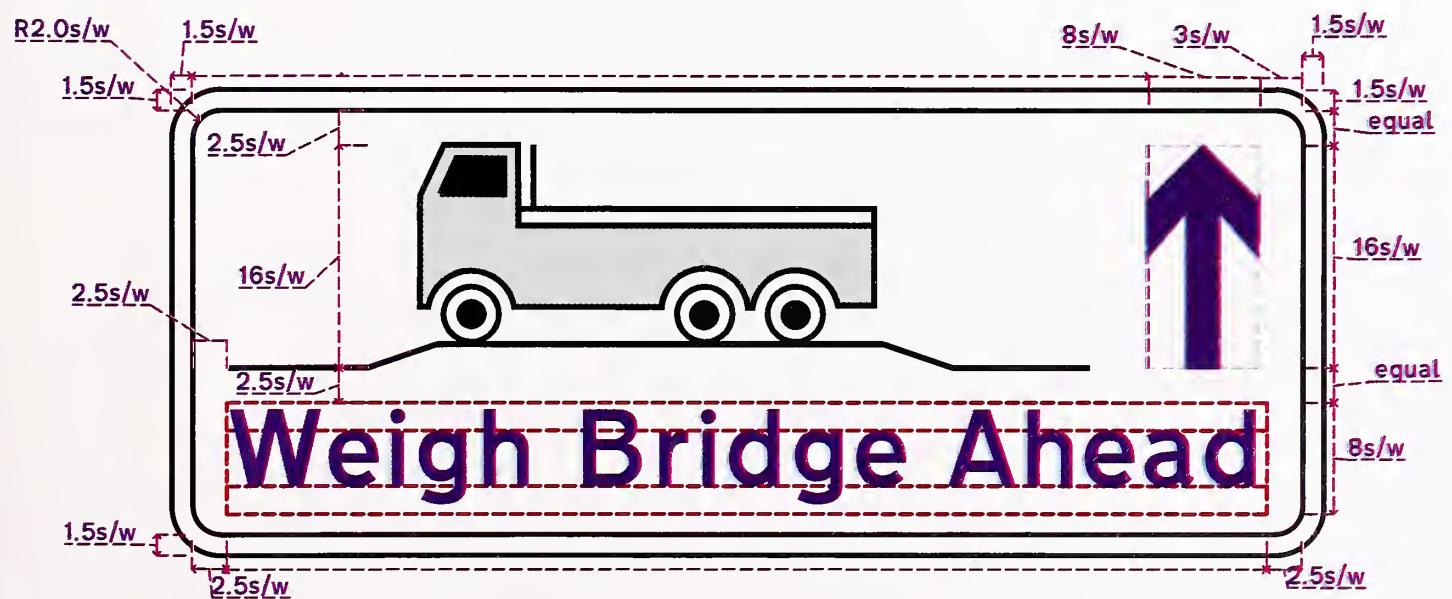


Fig. 16.09 Weigh Bridge Ahead

PLATE - III (Continued)

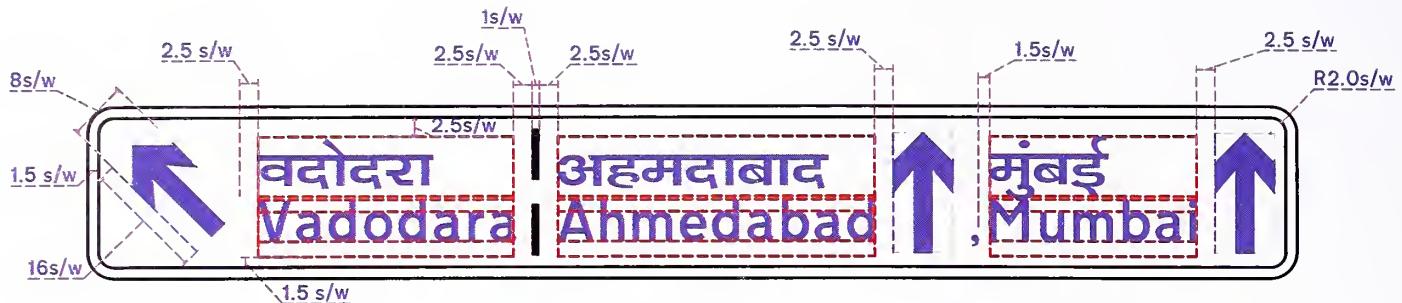


Fig. 16.10 Gantry Mounted Advance Direction Sign
Ahead of a Grade Separated Junction

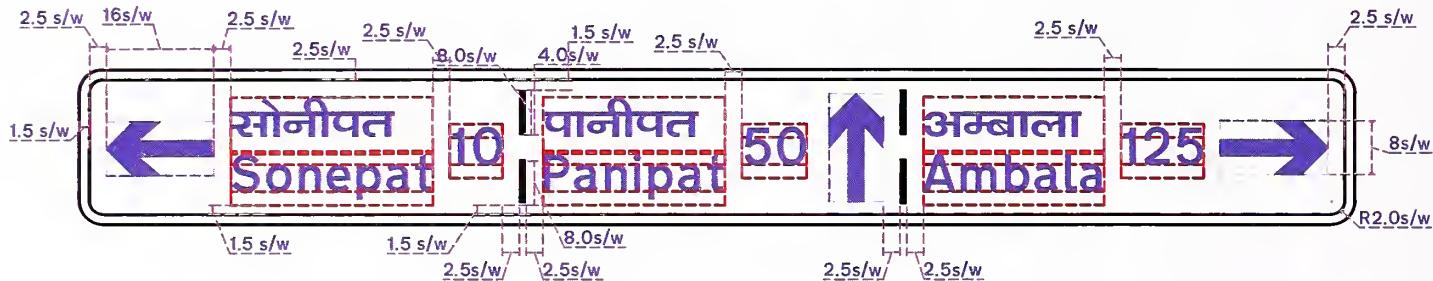


Fig. 16.11 Gantry Mounted Advance Direction Ahead
of a At-Grade Junction

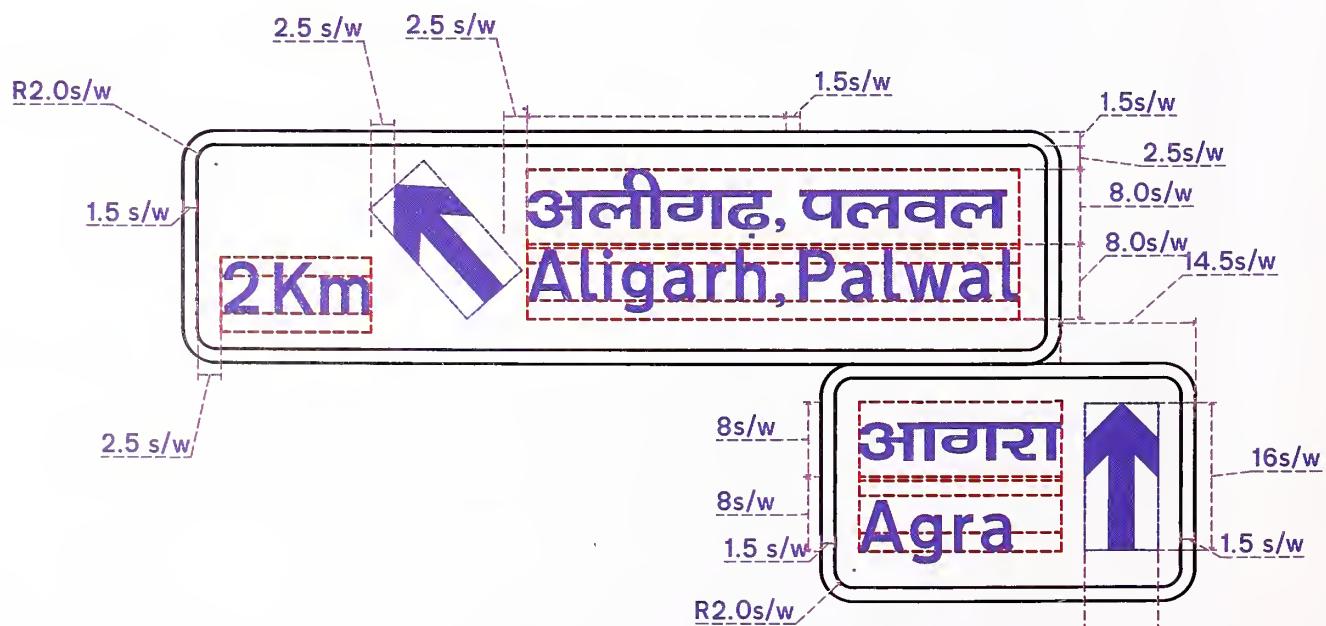


Fig. 16.12 Gantry Mounted Sign for in Advance
for an Interchange

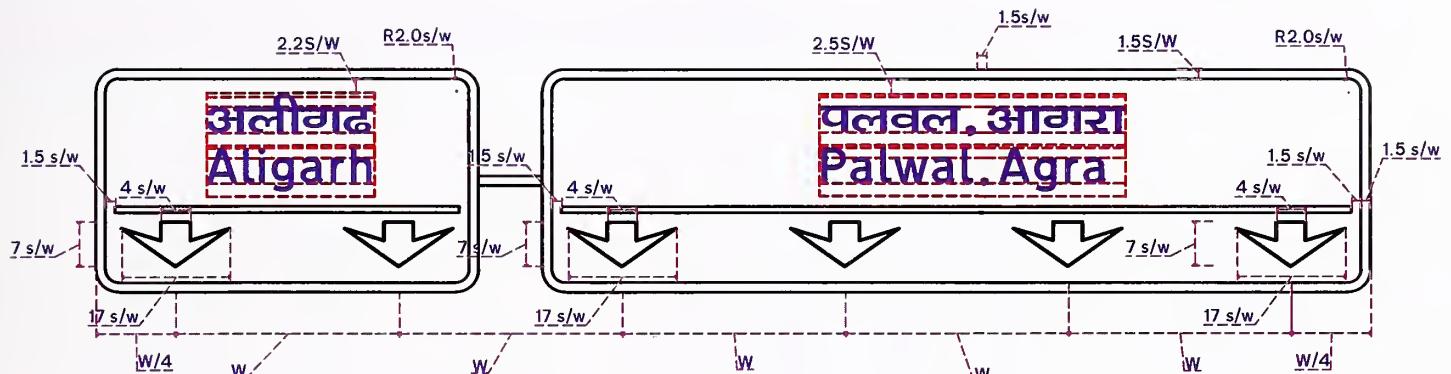


Fig. 16.13 Lane Dedicated Gantry Signs

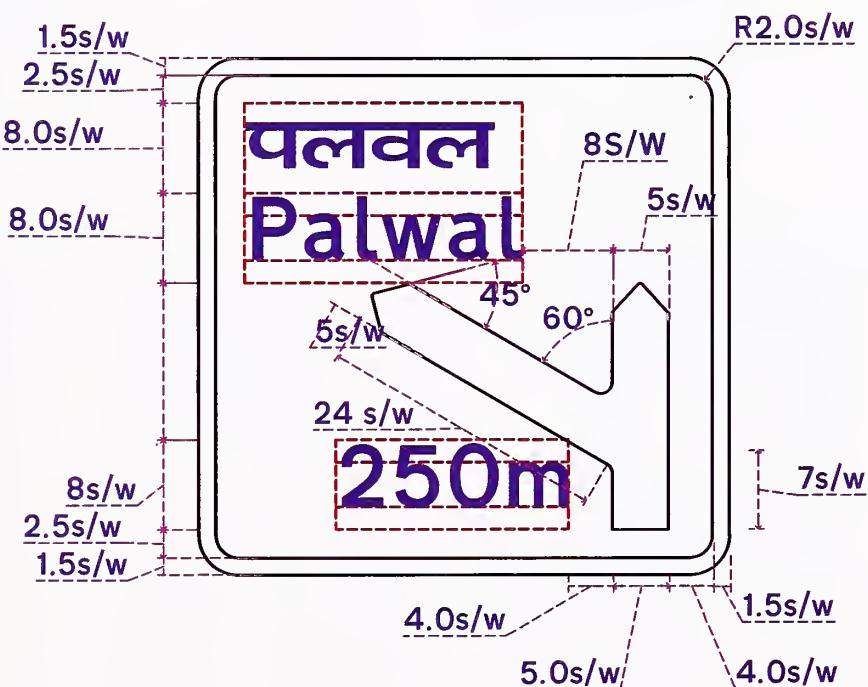
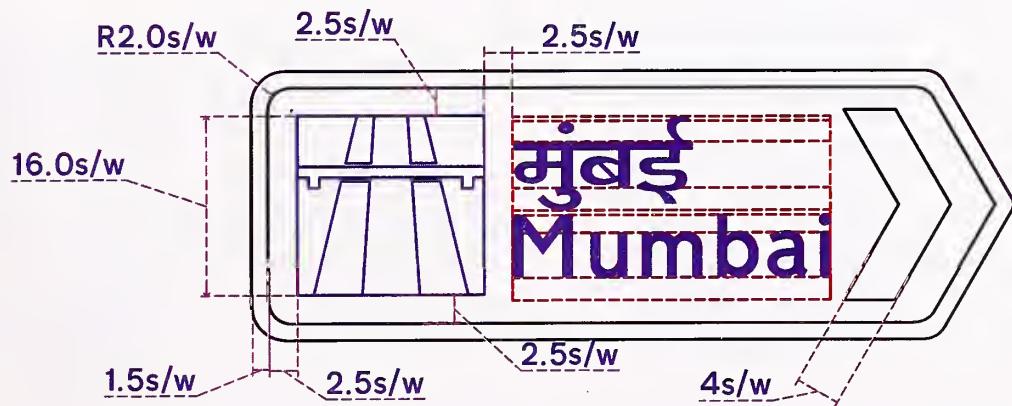
Fig. 16.14 Shoulder Mounted Sign in Advance
of Grade Separated Junction

Fig. 16.15 Expressway Sign Ahead

PLATE - III (Continued)

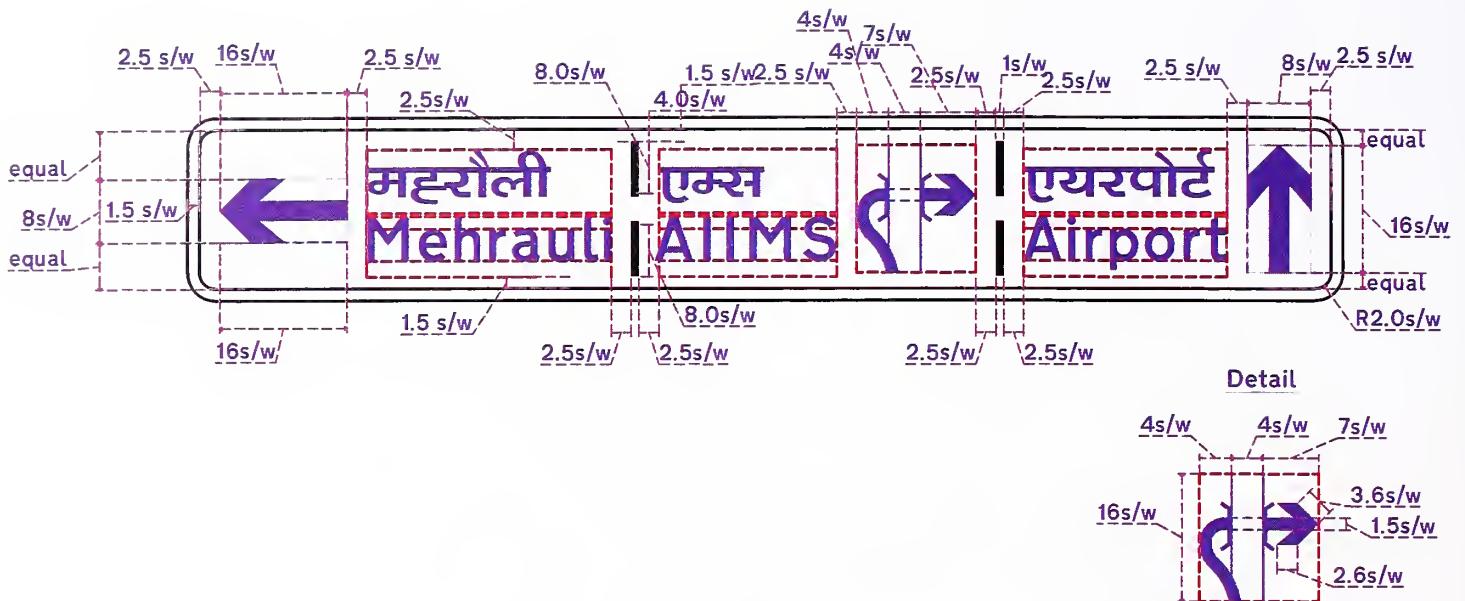


Fig. 16.16 Gantry Mounted Advance Direction Sign
Ahead of a Flyover in Urban / City Roads



Fig. 16.17 Definition / Supplementary Plate

PLATE - IV

FACILITY INFORMATION SIGNS

Fig. 17.01 Eating Place



Fig. 17.02 Light Refreshment

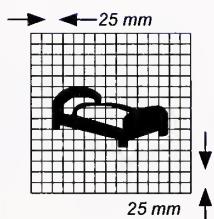
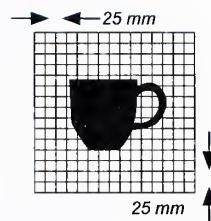


Fig. 17.03 Resting Place



Fig. 17.04 First Aid Post

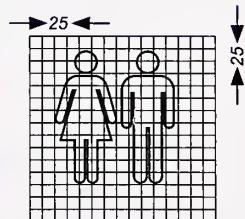


Fig. 17.05 Toilet

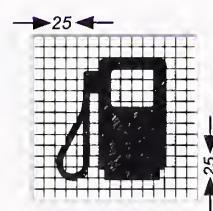


Fig. 17.06 Filling Station(Fuel Pump)

PLATE - IV (Continued)



Fig. 17.07 Hospital



Fig. 17.08 Public Telephone

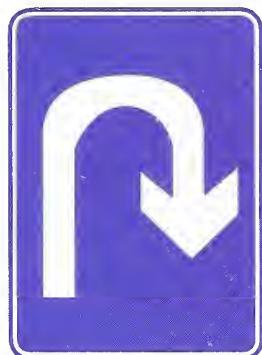


Fig. 17.09 U-Turn Ahead



Fig. 17.10 Pedestrian Subway



Fig. 17.11 Foot Over Bridge



Fig. 17.12 Chair Lift

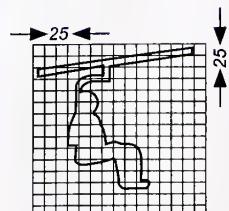


PLATE - IV (Continued)

Fig. 17.13 Police Station

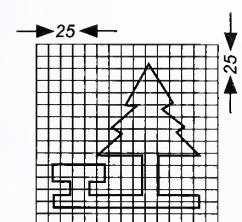


Fig. 17.14 Picnic Site

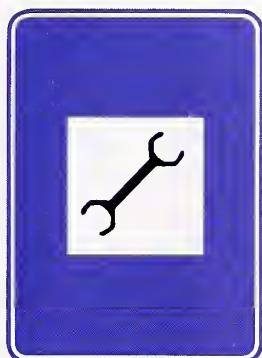


Fig. 17.15 Repair Facility



Fig. 17.16 Railway Station/Metro Station/Monorail Station

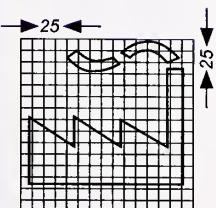


Fig. 17.17 Industrial Area



Fig. 17.18 Cycle Rickshaw Stand

PLATE - IV (Continued)

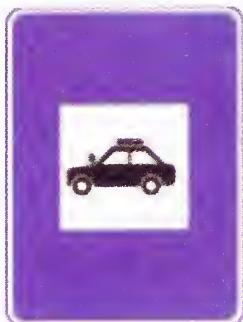


Fig. 17.19 Taxi Stand



Fig. 17.20 Autorickshaw Stand



Fig. 17.21 Home Zone

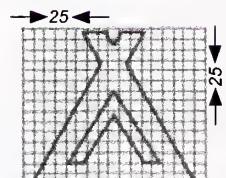


Fig. 17.22 Camp Site



Fig. 17.23 Airport

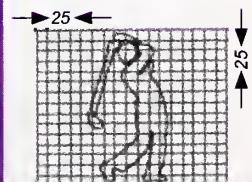


Fig. 17.24 Golf Course

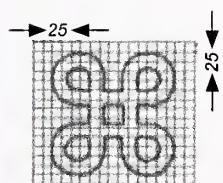


Fig. 17.25 National Heritage

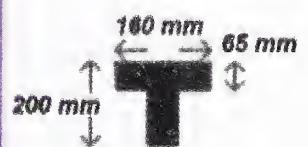


Fig. 17.26 No Through Road

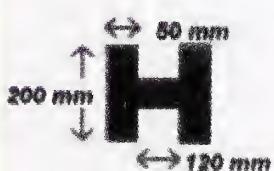


Fig. 17.27 No Through Side Road

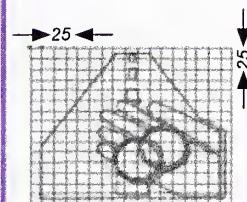


Fig. 17.28 Toll Road Ahead

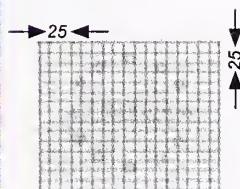
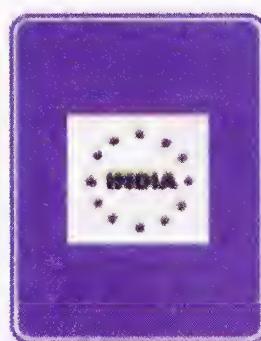
Fig. 17.29 Guide Sign
on Toll Lane Portal

Fig. 17.30 Country Border

PLATE - IV (Continued)

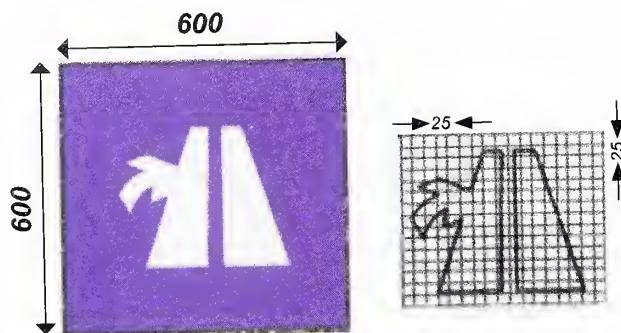


Fig. 17.31 Entry Ramp for Expressway

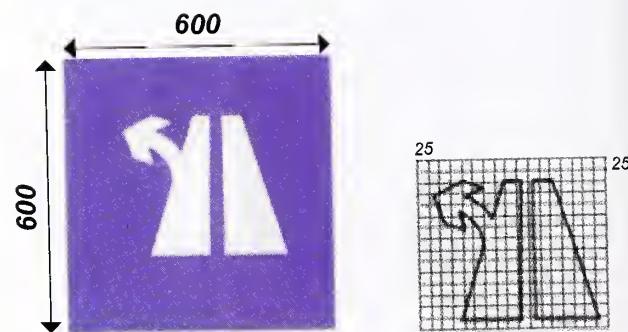


Fig. 17.32 Exit Ramp for Expressway



Fig. 17.33 Expressway Symbol



Fig. 17.34 End of Expressway



Fig. 17.35 Bus Stop



Fig. 17.36 Bus Lane

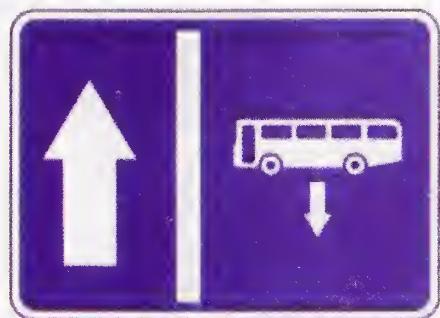


Fig. 17.37 Contra Flow Bus Lane

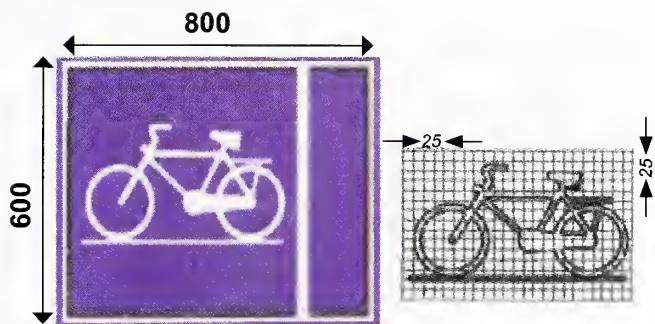


Fig. 17.38 Cycle Lane

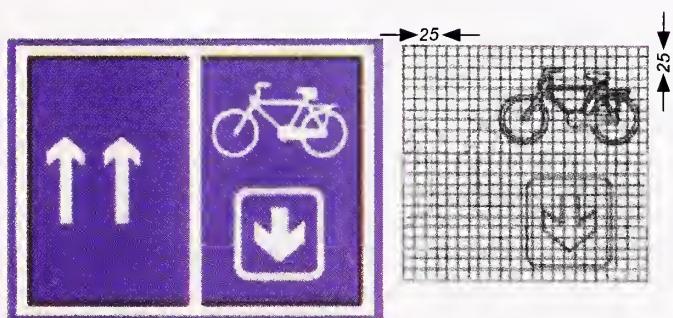


Fig. 17.39 Contra Flow Cycle Lane

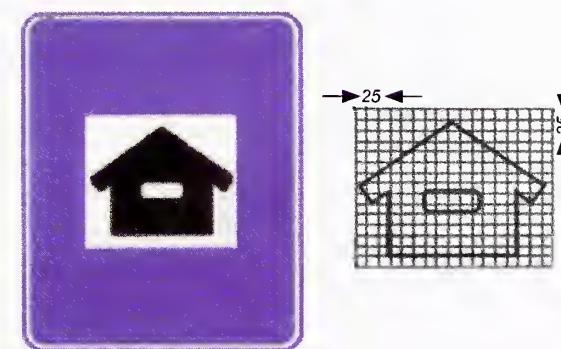


Fig. 17.40 Holiday Chalets

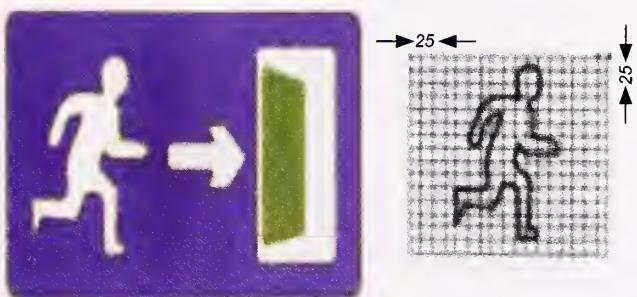


Fig. 17.41 Emergency Exit



Fig. 17.42 Emergency Exit

PLATE - IV (Continued)

PARKING SIGNS

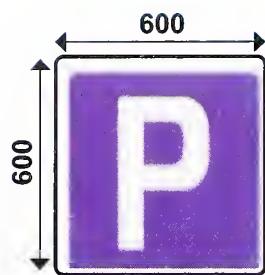


Fig. 18.01 Parking

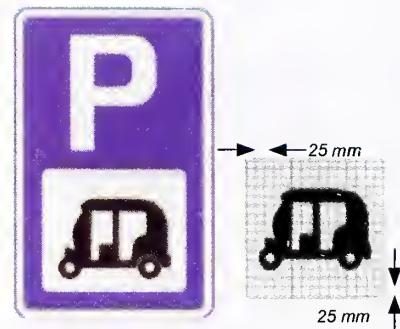


Fig. 18.02 Auto Rickshaw
Parking

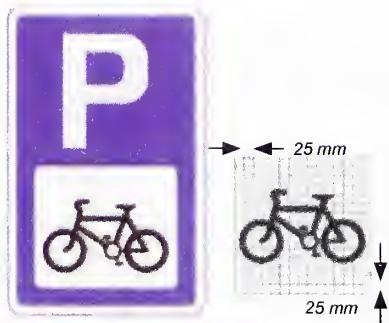


Fig. 18.03 Cycle Parking

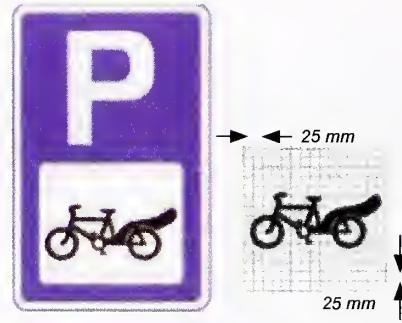


Fig. 18.04 Cycle Rickshaw
Parking

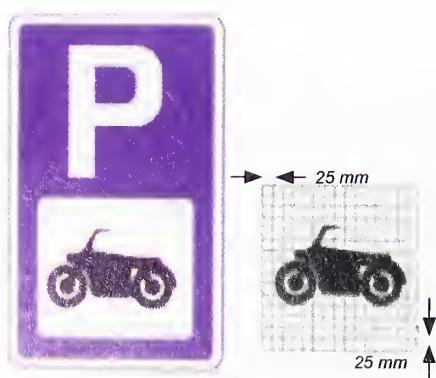


Fig. 18.05 Scooter and
Motorcycle Parking

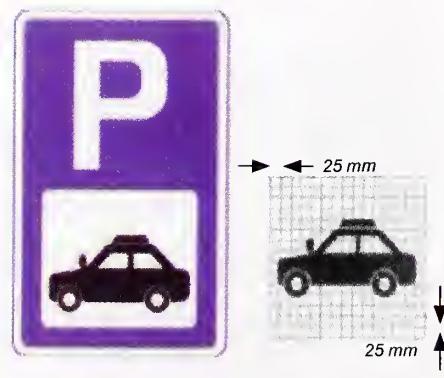


Fig. 18.06 Taxi Parking

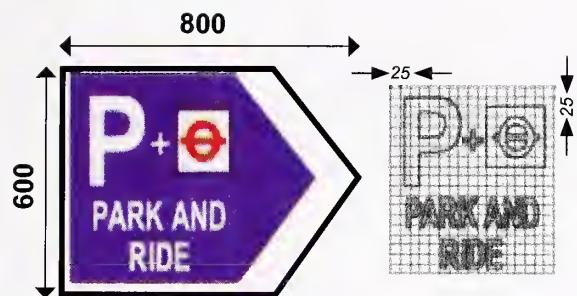
PLATE - IV (Continued)

Fig. 18.07 Park and Ride

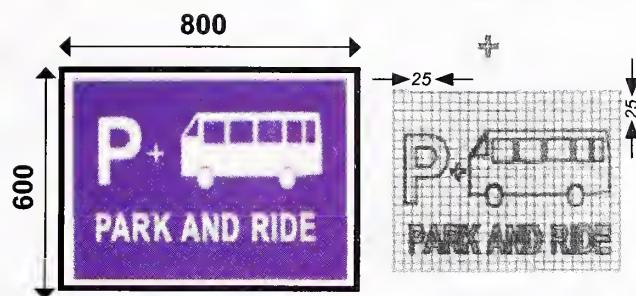


Fig. 18.08 Park and Ride

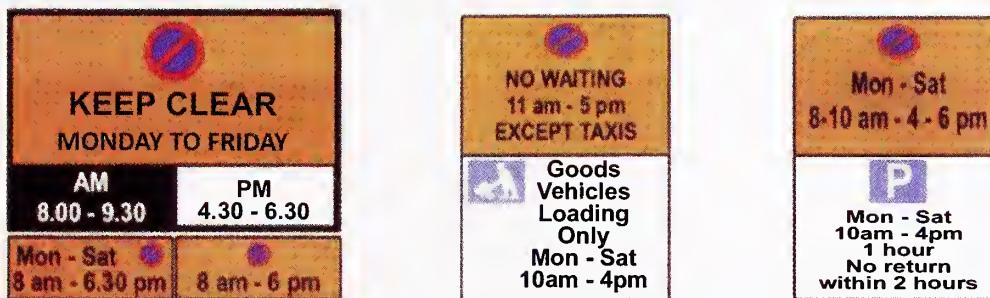


Fig. 18.09 Parking Restriction Signs for Traffic Mana

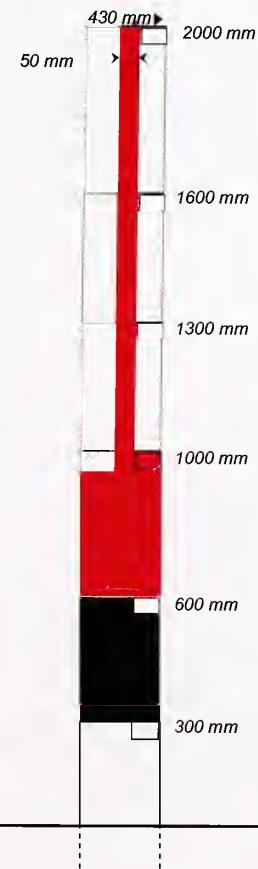


Fig. 18.10 Flood Gauge

PLATE - IV (Continued)

SIGNS FOR PERSONS WITH DISABILITIES

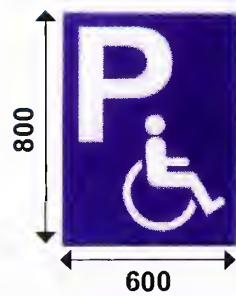
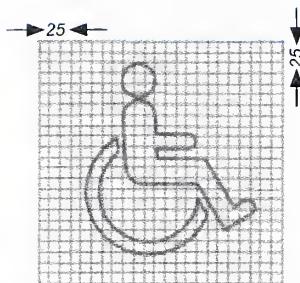
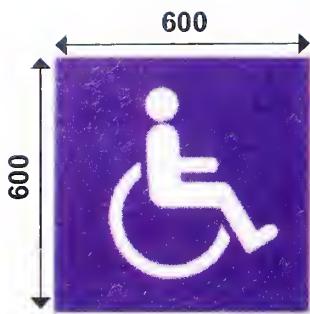


Fig. 19.01 International Symbol of Accessibility

Fig. 19.02 Parking Information

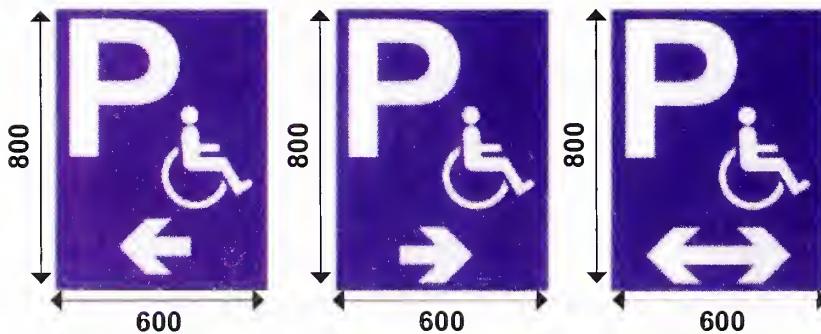


Fig. 19.03 Parking Areas

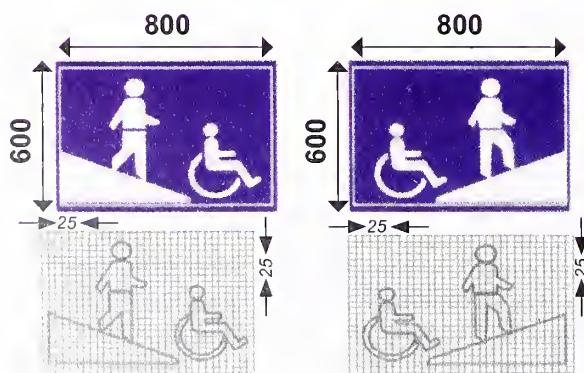
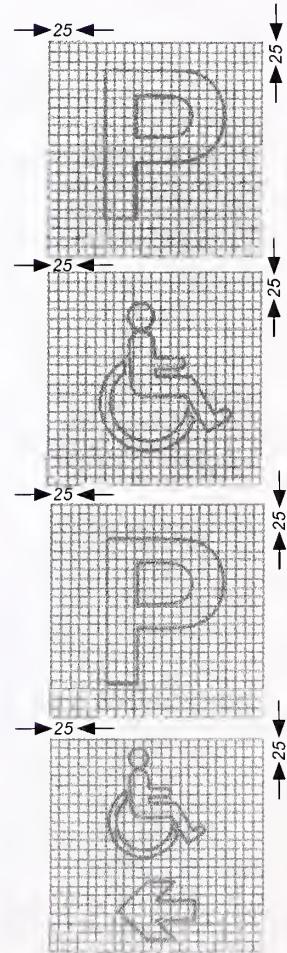


Fig. 19.04 Ramped Entrance
to Subway/Over Bridge

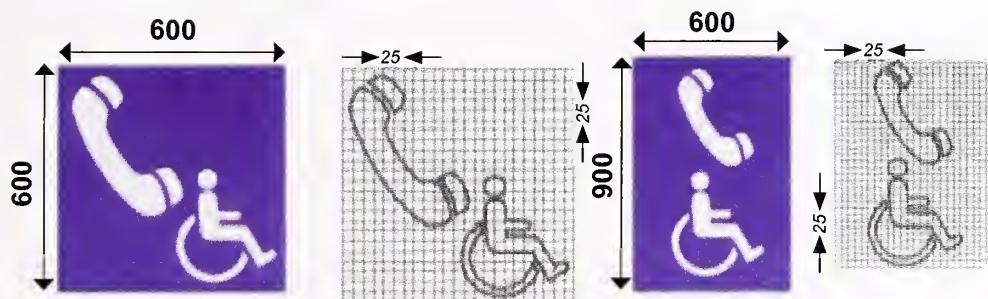


Fig. 19.05 Telephone Facilities



Fig. 19.06 Toilet Facilities

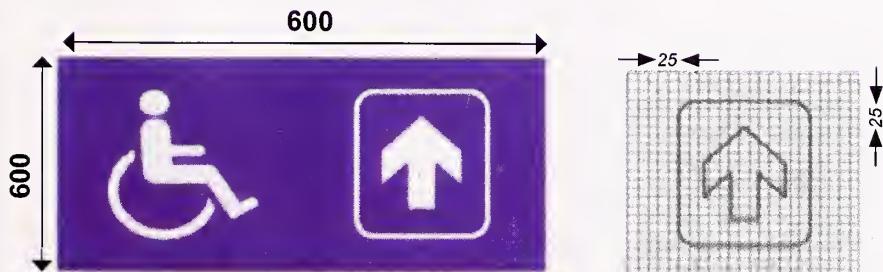
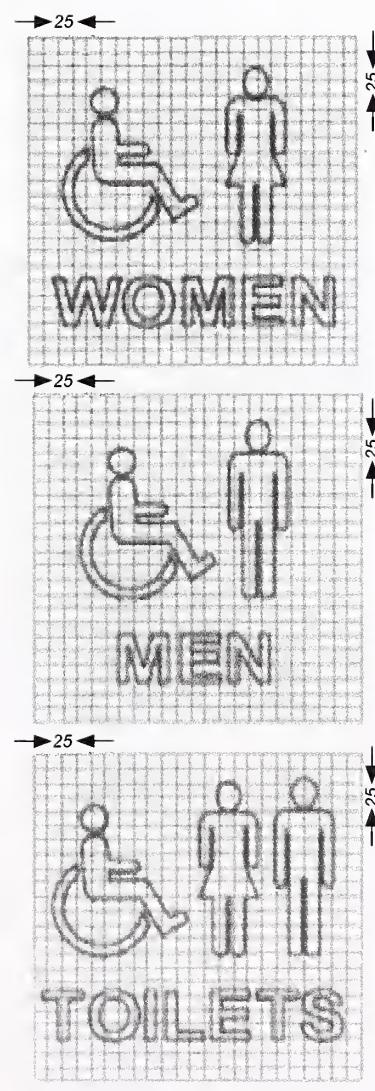


Fig. 19.07 Way Finding

PLATE - IV (Continued)

ROUTE MARKER SIGNS



Fig. 20.01 State Highway
Route Marker Sign



Fig. 20.02 National Highway
Route Marker Sign

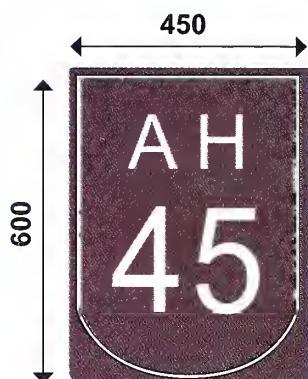


Fig. 20.03 Asian Highway
Route Marker Sign



Fig. 20.04 Expressway
Route Marker Sign

Annexure I to VI

Annexure – I
(Section 14.1)

LIST OF MANDATORY/REGULATORY SIGNS

I. STOP AND GIVE WAY SIGN

- 1) Stop
- 2) Give Way
- 3) Give Way to Buses Exiting the Bus Bay

II. PROHIBITORY SIGNS

- 1) Bullock Carts Prohibited
- 2) Bullock and Hand Carts Prohibited
- 3) Hand Carts Prohibited
- 4) Tongas Prohibited
- 5) Horse Riding Prohibited
- 6) Caravan not Allowed
- 7) Buses Prohibited
- 8) Cars Prohibited
- 9) Trucks Prohibited
- 10) Tractor Prohibited
- 11) Construction Vehicle Prohibited
- 12) Articulated Vehicles Movement Prohibited
- 13) Two Wheeler Prohibited
- 14) Cycles Prohibited
- 15) Horn Prohibited
- 16) No Entry
- 17) One Way
- 18) Left Turn Prohibited
- 19) Right Turn Prohibited
- 20) Overtaking Prohibited
- 21) U- Turn Prohibited
- 22) Right Turn & U-Turn Prohibited
- 23) Priority to Vehicles from the Opposite Direction

III. NO PARKING AND NO STOPPING SIGNS

- 1) No Standing
- 2) No Stopping and No Standing

- 3) Definition Plate to Fig. 14.28(Optional)
- 4) No Parking
- 5) Definition Plate to Fig. 14.29(Optional)
- 6) Parking not Allowed on Footpath
- 7) Parking not Allowed on Half of Footpath

IV. VEHICLE CONTROL SIGNS AND SPEED LIMIT

- 1) Axle Load Limit
- 2) Height Limit
- 3) Length Limit
- 4) Load Limit
- 5) Width Limit
- 6) Maximum Speed Limit
- 7) Maximum Speed Limit (Vehicle Type)
- 8) Stop for Police Check

V. RESTRICTION ENDS SIGN

- 1) Restriction Ends

VI. COMPULSORY CONTROL AND OTHER SIGNS

- 1) Compulsory Ahead
- 2) Compulsory Ahead or Right Turn
- 3) Compulsory Ahead or Left Turn
- 4) Compulsory Turn Right
- 5) Compulsory Turn Left
- 6) Compulsory Turn Right (In Advance of Junction)
- 7) Compulsory Turn Left (In Advance of Junction)
- 8) Compulsory Keep Left
- 9) Compulsory Keep Right
- 10) Pass Either Side
- 11) Minimum Speed Limit
- 12) Compulsory Cycle Track/Cycle Only
- 13) Compulsory Cyclist and Pedestrian Route
- 14) Pedestrian Only
- 15) Compulsory Snow Chain
- 16) Bus Way/Buses Only
- 17) Compulsory Sound Horn

Annexure – II**(Section 15.1)****LIST OF CAUTIONARY/WARNING SIGNS**

- 1) Left Hand Curve
- 2) Right Hand Curve
- 3) Right Hairpin Bend
- 4) Left Hairpin Bend
- 5) Right Reverse Bend
- 6) Left Reverse Bend
- 7) Series of Bend
- 8) Degree Loop
- 9) Side Road Right
- 10) Side Road Left
- 11) Y-Intersection
- 12) Cross Road
- 13) Roundabout
- 14) Traffic Signals
- 15) T-Intersection
- 16) T-Intersection Major Road Ahead
- 17) Major Road Ahead
- 18) Staggered Intersection
- 19) Merging Traffic Ahead (From Left)
- 20) Merging Traffic Ahead (From Right)
- 21) Narrow Road Ahead
- 22) Road Widens
- 23) Narrow Bridge Ahead
- 24) Steep Ascent
- 25) Steep Descent
- 26) Reduced Carriageway (Left Lane(s) Reduced)
- 27) Reduced Carriageway (Right Lane(s) Reduced)
- 28) Start of Dual Carriageway
- 29) End of Dual Carriageway
- 30) Gap in Median
- 31) Pedestrian Crossing
- 32) School Ahead
- 33) Built-up Area
- 34) Two Way Operation
- 35) Two Way Traffic on Cross Road Ahead Warning
- 36) Lane Closed (Two Lane Carriageway)

- 37) Lane Closed (Three Lane Carriageway)
- 38) Lane Closed (Four Lane Carriageway)
- 39) Traffic Diversion on Dual Carriageway
- 40) Men at Work
- 41) + Supplementary Plate "END" at the Leaving Side of Work Zone
- 42) Danger Warning
- 43) Deaf Persons Likely on Road Ahead
- 44) Blind Persons Likely on Road Ahead
- 45) Cycle Crossing
- 46) Cycle Route Ahead
- 47) Dangerous Dip
- 48) Speed Breaker
- 49) Rumble Strip
- 50) Rough Road
- 51) Dangerous Ditch
- 52) Loose Gravel
- 53) Slippery Road
- 54) Slippery Road Because of Ice
- 55) Opening or Swing Bridge
- 56) Overhead Cables
- 57) Playground Ahead
- 58) Quay Side or River Bank
- 59) Barrier
- 60) Sudden Side Winds
- 61) Tunnel Ahead
- 62) Ferry
- 63) Trams Crossing
- 64) Falling Rocks
- 65) Cattle Crossing
- 66) Wild Animal
- 67) Queues Likely Ahead
- 68) Airport
- 69) Unguarded Railway Crossing
- 70) Guarded Railway Crossing
- 71) Single Chevron (Normal)
- 72) Single Chevron (>100kmph Speed)
- 73) Double Chevron
- 74) Triple Chevron
- 75) Object Hazard (Left)
- 76) Object Hazard (Right)
- 77) Two way Hazard Marker

Annexure – III**(Section 16.1)**

**RULES AND TECHNICAL ADVISORY FOR DESIGN OF
INFORMATORY ROAD SIGNS**

The list of direction and place identification signs given in first part and second part of **Annex-III** describes the rules for designing the direction signs and Plate-III pictorially presents design rules for direction signs.

i) DIRECTION AND PLACE IDENTIFICATION SIGNS

- 1) Stack Type Advance Direction Sign (Shoulder Mounted) **Fig. 16.01**
- 2) Map Type Advance Direction Sign (Shoulder Mounted) **Fig. 16.02**
- 3) Map Type Advance Direction Sign for Roundabout (Shoulder Mounted) **Fig. 16.03**
- 4) Flag Type Direction Sign **Fig. 16.04**
- 5) Reassurance Sign **Fig. 16.05**
- 6) Place Identification Sign **Fig. 16.06**
- 7) Truck Lay –By **Fig. 16.07**
- 8) Toll Booth Ahead **Fig. 16.08**
- 9) Weigh Bridge Ahead **Fig. 16.09**
- 10) Gantry Mounted Advance Direction Sign Ahead of a Grade Separated Junction **Fig. 16.10**
- 11) Gantry Mounted Advance Direction Sign Ahead of an At-Grade Junction **Fig. 16.11**
- 12) Gantry Mounted Sign Far Advance of an Interchange in a Full Access Controlled Highway **Fig. 16.12**
- 13) Lane Dedicated Gantry Signs **Fig. 16.13**
- 14) Shoulder Mounted Sign in Advance of a Grade Separated Junction in Full Access Controlled Highway **Fig. 16.14**
- 15) Expressway Sign **Fig. 16.15**
- 16) Gantry Mounted advance Direction Sign Ahead of a Flyover in Urban/City Roads **Fig. 16.16**
- 17) Definition/Supplementary Plates **Fig. 16.17**

ii) RULES FOR DESIGN OF DIRECTION INFORMATION SIGN

The rules for design of direction information sign given in following subsections shall be read in conjunction with the pictorial presentation in **Plate III** and all direction boards shall be designed accordingly. It should be noted that **Plate III** has not been shown in colour since colour pattern for different kind of roads varies and the colour pattern shall be taken from **Table 8.3**.

1) Alphabets

The “Transport Medium” font shall be used for English and “Hindi7” for Hindi and for regional language it shall be as per local practice. The arrows for directions boards shall also be taken

from “Transport Medium” font. The height of lettering for design of direction sign shall be taken from **Table 11.1** for the speed of the road in which the sign is to be placed.

2) Common Principles for design of layouts for Direction Signs

The common principles to be observed while designing shoulder and gantry mounted direction signs are given in the subsection below and the specific principles for different type of direction board are given under respective subsections. The common principles for design of direction boards (**Figs. 16.01 to 16.16**) are:

- The height mentioned in **Table 11.1** refers to the height of lower case “x” and upper case shall be 1.4 times of lower case “x” height.
- The design pattern shown in **Figs. 16.01 to 16.16** expressed the design of layout of direction sign in terms of stroke width and “x” height. Stroke width (s/x) shall be $\frac{1}{4}$ of lower case “x” height.
- All place names on a sign shall be in letters of the same size, regardless of the relative importance of the place name. A smaller letter size may only be used for a name which is too long to fit into a reasonable sized sign and which cannot be hyphenated or abbreviated.
- Letters are generally placed in an imaginary tile of 2 times “x” height i.e. 8 s/w height and the placement of English lettering is pictorially presented in **Fig. 16.01** whereas as Hindi lettering shall be placed within 2 times “x” height i.e. within 8 s/w height.
- Related words on the same line shall be separated by $1\frac{1}{2}$ s/w.
- Route letters and route number shall be separated by $1\frac{1}{2}$ s/w.
- Route letters shall be 2 s/w away place name when on same line.
- There shall be 3 s/w spaces between a route number and a bracketed route number on same line.
- The border shall be $1\frac{1}{2}$ s/w wide.
- Internal corner radius of outer border shall be 2 s/w and other internal radius shall be 1 s/w.
- Within panel, the borders shall be separated from the top and sides of imaginary tile by $2\frac{1}{2}$ s/w and on bottom by $1\frac{1}{2}$ s/w.

In addition to the common principles laid out in this section, the specific principles for design of different types of signs are given in following sections:

3) Layouts of Stack Type ADS Fig. 16.01

- Forward destination and arrow shall be the top panel and shall be right aligned.
- Left destination and arrow shall be the second panel and shall be left aligned.
- Right destination and arrow shall be the third panel and shall be right aligned.

- The arrows other than the right angle shall be set at 45 degree.
- Figured kilometer if at all given shall be on the same line and shall be at a distance of 3 s/w.
- The arrow shall also be transport medium and shall be 16 s/w long and 8 s/w wide and shall be 2.5 s/w from the border and letterings and shall be placed vertically at center of panel with equal space from top and bottom border.
- The font height for different speed shall be taken from **Table 11.1** and design is presented pictorially in **Fig. 16.01**.

4) Layouts of Map Type ADS (Fig. 16.02), other than Roundabouts

- The width of route symbol shall be 6 s/w when indicating a NH and SH and Urban roads and 4 s/w for MDR and 2½ s/w for village roads.
- The tips of route symbol shall be chamfered 60 degree.
- Side turning symbol shall be extended 2/3rd of distance from the forward symbol to the border as shown in **Fig. 16.02**.
- When there is more than one destination related to a route symbol, all places names should be stacked, with their initial letter aligned. Initial letter of English and Hindi should also be aligned.
- Forward destination shall be centered on the forward route symbol.
- The map type signs with only one side turning, the forward destination shall be displaced from the center to range right or left with outside extremity of the right or left turning destinations.
- Back and side destinations shall normally be below the route symbol and shall be placed at 18 s/w from forward destination.
- There shall be a minimum of 4 s/w between vertical route symbol and the nearest place name or route number laterally and minimum 3 s/w vertically between the route symbol and place name.
- Forward symbol shall be minimum of 12 s/w and imaginary tile of destination name shall be placed above the route symbol.
- The bottom of forward symbol shall be 1½ s/w from bottom border.
- The font height for different speed shall be the from **Table 11.1**.

5) Layouts of Map Type ADS (Fig. 16.03), for Roundabouts

- The width of route symbol shall be 6 s/w when indicating a NH, SH and Urban roads and 4 s/w for MDR and 2½ s/w for village roads.
- The tips of route symbol shall be chamfered 60 degree.
- Side turning symbol shall be extended 2/3rd of distance from the forward symbol to the border.
- When there is more than one destination related to a route symbol, all places

names should be stacked, with their initial letter aligned. Initial letter of English and Hindi also should be aligned.

- Forward destination shall be centered on the forward route symbol.
- On signs with one side turning, the forward destination shall be displaced from the center to range right or left with outside extremity of the right or left turning destinations.
- Back and side destinations shall normally be below the route symbol and shall be placed at 18 s/w distance.
- The roundabout symbol shall have 12 s/w outer radius and 7 s/w inner radius and both concentric circles shall be discontinued as shown in **Fig. 16.03**.
- There shall be a minimum of $2\frac{1}{2}$ s/w vertically between the route symbol and place name and place name shall be placed horizontally in such a way that imaginary tile touches the imaginary circle of radius 2s/w more than the outer circle of roundabout symbol.
- Forward symbol shall be minimum of 12 s/w and imaginary tile shall be placed above the route symbol.
- The bottom of forward symbol shall be $1\frac{1}{2}$ s/w from bottom border.
- The font height for different speed shall be from **Table 11.1**

6) Layouts of Flag Type Direction Sign (Fig. 16.04)

- The appropriate end of sign plate shall be chamfered 120 degree, the pointed end being reduced 1 s/w.
- The chevron shall be placed $3\frac{1}{2}$ s/w from the end border and $1\frac{1}{2}$ s/w from the edge of top and bottom borders.
- Place name shall be separated $1\frac{1}{2}$ s/w from the chevron.
- The width of chevron shall be 4 s/w when used with two lines of information, $3\frac{1}{2}$ s/w with one line and $4\frac{1}{2}$ s/w with 3 lines and 5 s/w when used with 4 lines.
- The font height for different speed shall be taken from **Table 11.1** (Column 7 & 8).

7) Layouts of Reassurance Sign (Fig. 16.05)

- The kilometrage shall be centered over place names and similarly route number if at all used.
- Place names shall be aligned left.
- Kilometrage shall follow related place names on the same line and shall be aligned right. There shall be minimum 3 s/w between longest place names and kilometrage.
- Farthest destination shall be the top panel and nearest on bottom panel.

- The font height for different speed shall be the from **Table 11.1** (Column 7 & 8).

8) Layouts of Place Identification Sign (Fig. 16.06)

- The lines of legend shall be centered one over the other.
- The font height for different speed shall be the from **Table 11.1** (Column 7 & 8).

9) Layouts of Truck Lay-by Sign (Fig. 16.07)

- The length of truck symbol shall be same as that of “Lay-by” writings and vertically shall be placed at 2.5 s/w from imaginary tile of writings and 2.5 s/w from top border.
- The arrow shall be 3 s/w from left border and 3 s/w from truck symbol.
- The arrow shall be 20 s/w high and 10 s/w wide and shall be inclined at 45 degree as shown in **Fig. 16.07**.
- The font height for different speed shall be from **Table 11.1** (height shown in brackets of Column 7 & 8).

10) Layouts of Toll Booth Ahead Sign (Fig. 16.08)

- The height of barrier symbol shall be 20 s/w and shall be 2.5 s/w gap from bottom imaginary tile and from left and top borders.
- The arrow shall be 16 s/w and shall be placed 8 s/w from right border as shown in **Fig.16.08**.
- The font height for different speed shall be from **Table 11.1** (height shown in brackets of Column 7 & 8).

11) Layouts of Weigh Bridge Ahead Sign (Fig. 16.09)

- The truck symbol shall be 16 s/w high and shall be placed 2.5 s/w from the imaginary tile and from top and left border.
- The arrow shall be 16 s/w and shall be placed vertically at the center of imaginary tile and the top border and horizontally at 3 s/w from right border as shown in **Fig. 16.09**.
- The font height for different speed shall be taken from **Table 11.1** (height shown in brackets of Column 7 & 8).

12) Layouts of Gantry Mounted ADS Ahead of a Grade Separated Junction (Fig. 16.10)

- The arrow shall be 16 s/w and shall be inclined 45 degree.
- There shall be dividing line of 1 s/w width between panels indicating left and forward destination.
- The lettering on both sides shall be 2.5 s/w from dividing line as shown in **Fig. 16.10**.
- The font height for different speed shall be taken from **Table 11.1**.

13) Layouts of Gantry Mounted ADS Ahead of an At-grade Junction (Fig. 16.11).

- The arrow shall be 16 s/w and shall be inclined 90 degree or 45 degree depending upon the junction layout.
- There shall be dividing line of 1 s/w width between panels indicating left, forward and right destinations.
- The lettering on both sides shall be 2.5 s/w from dividing line as shown in Fig. 16.11.
- If kilometrage is shown, it shall be 2.5 s/w from destination names.
- The font height for different speed shall be taken from **Table 11.1**.

14) Layouts of Gantry Mounted ADS Ahead of a Grade Separated Junction Ahead of a Full Access Controlled Highway (Fig. 16.12)

- The arrow shall be 16 s/w and shall be inclined 45 degree.
- The top panel shall for destination leaving to either left slip road or loop and bottom panel shall with forward destinations.
- The distance to exit point shall be shown either in kilometer or meter as shown in Fig. 16.12.
- The right vertical faces of top and bottom panel shall be set apart by minimum 14.5 s/w laterally.
- The font height for different speed shall be from **Table 11.1**.

15) Layouts of Lane Dedicated Gantry Mounted Signs (Fig. 16.13)

- The downward arrow shall be 17 s/w wide and shall be 7 s/w high.
- The distance between two downward arrows i.e. between two pointed end is width of one lane width for the particular highway as shown in Fig. 16.13.
- The font height for different speed shall be taken from **Table 11.1**.

16) Layouts of Shoulder Mounted Map Type ADS for Full Access Controlled Highway (Fig. 16.14)

- The width of route symbol shall be 5 s/w.
- Length of left route symbol is 24 s/w as shown in Fig 16.14.
- The font height for different speed shall be taken from **Table 11.1**.

17) Expressway Ahead Sign (Fig. 16.15)

- The expressway symbol shall be 16 s/w high.
- Chevron shall be 4 s/w wide as shown in Fig. 16.15
- The font height for different speed shall be taken from **Table 11.1**

18) Gantry Mounted Sign Ahead of a Flyover in Urban/City Roads (Fig. 16.16)

- The Flyover symbol and other design shall be as per **Fig. 16.16.**
- The font height for different speed shall be taken from **Table 11.1**

19) Definition/ Supplementary Plates (Fig. 16.17)

- The border shall be 1 s/w.
- Writings shall be in upper case.
- For definition and supplementary plate, lettering and border shall be black on white background.
- Font height shall be 50 mm to 100 mm depending upon the need

Annexure – IV
(Section 17.1)

I -FACILITY INFORMATION SIGNS

- 1) Eating Place
- 2) Light Refreshment
- 3) Resting Place
- 4) First Aid Post
- 5) Toilet
- 6) Filling Station(Fuel Pump)
- 7) Hospital
- 8) Public Telephone
- 9) U-Turn Ahead
- 10) Pedestrian Subway
- 11) Foot Over Bridge
- 12) Chair Lift
- 13) Police Station
- 14) Picnic Site
- 15) Repair Facility
- 16) Railway Station/Metro Station/Monorail Station
- 17) Industrial Area
- 18) Cycle Rickshaw Stand
- 19) Taxi Stand
- 20) Auto Rickshaw Stand
- 21) Home Zone
- 22) Camp Site
- 23) Airport
- 24) Golf Course
- 25) National Heritage
- 26) No Through Road
- 27) No Through Side Road
- 28) Toll Road Ahead
- 29) Guide Sign on Toll Lane Portal
- 30) Country Border
- 31) Entry Ramp for Expressway
- 32) Exit Ramp for Expressway
- 33) Expressway Symbol

- 34) End of Expressway
- 35) Bus Stop
- 36) Bus Lane
- 37) Contra Flow Bus Lane
- 38) Cycle Lane
- 39) Contra Flow Cycle Lane
- 40) Holiday Chalets
- 41) Emergency Exit

II - PARKING SIGNS

(Section 18.1)

- 1) Parking
- 2) Auto Rickshaw Parking
- 3) Cycle Parking
- 4) Cycle Rickshaw Parking
- 5) Scooter and Motorcycle Parking
- 6) Taxi Parking
- 7) Park and Ride
- 8) Parking Restriction Signs for Traffic Management
- 9) Flood Gauge

III - SIGNS FOR DISABLED PERSONS

(Section 19.1)

- 1) International symbol of Accessibility
- 2) Parking Information
- 3) Parking Areas
- 4) Ramped Entrance to Subway/Over Bridge
- 5) Telephone Facilities
- 6) Toilet Facilities
- 7) Way Finding

IV - ROUTE MARKER SIGNS

(Section 20.1)

- 1) State Highway Route Marker Sign
- 2) National Highway Route Marker Sign
- 3) Asian Highway Route Marker Sign
- 4) Expressway Route Marker Sign

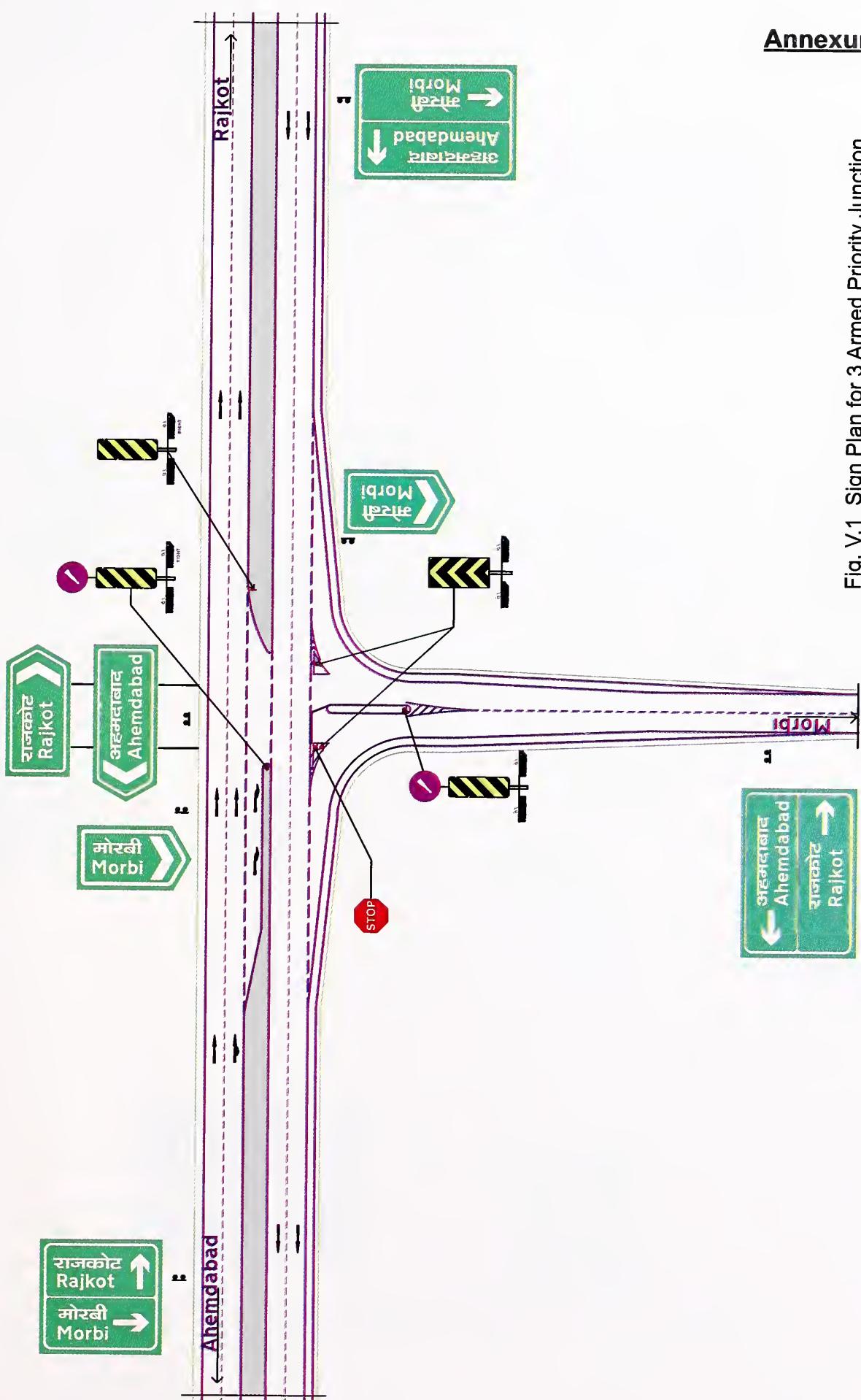
Annexure V

Fig.V.1 Sign Plan for 3 Armed Priority Junction

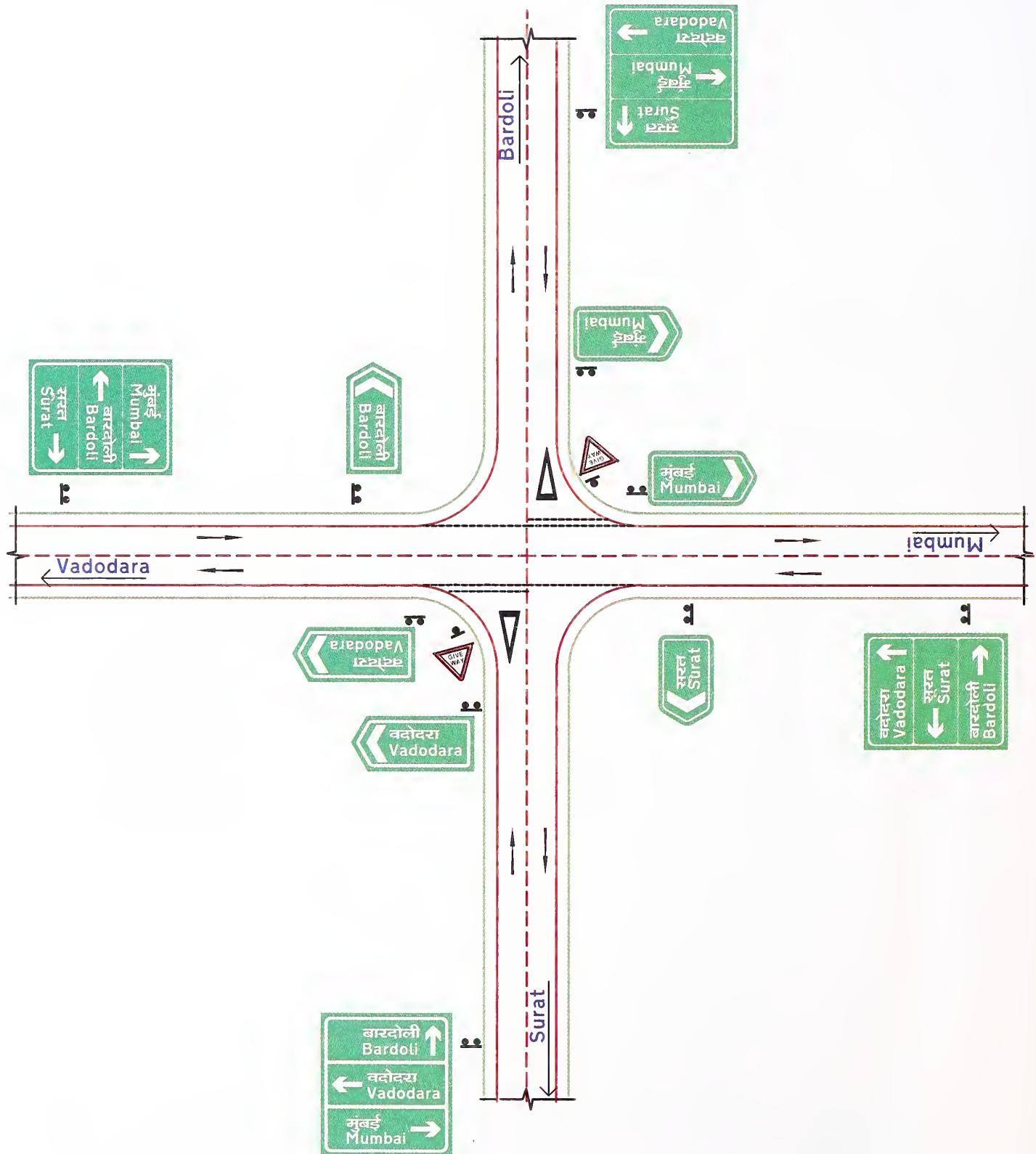
Annexure V

Fig. V.1 Sign Plan for a 4 Armed Priority Junction

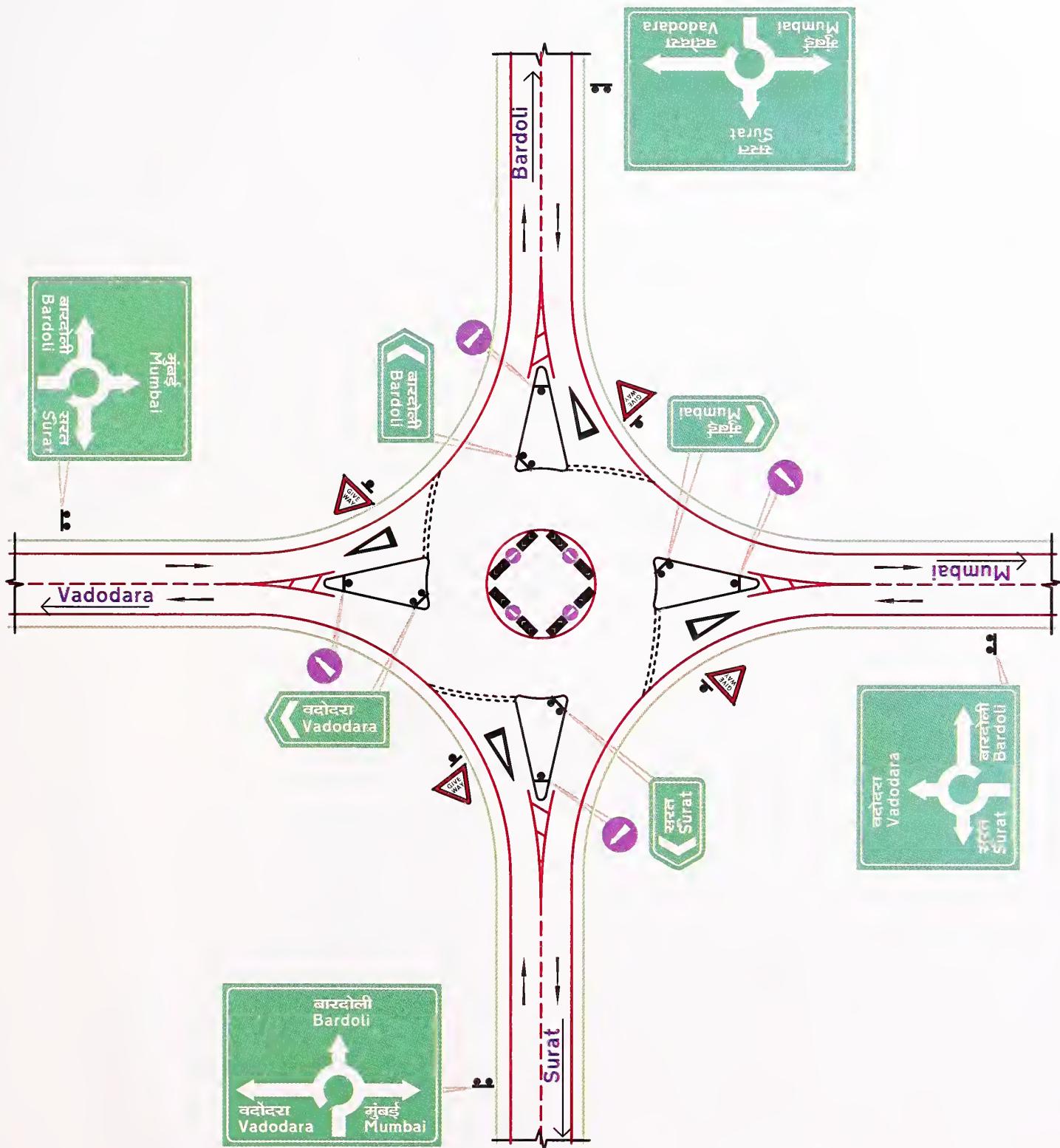
Annexure V

Fig V.3 Sign Plan for 4 Armed Roundabout

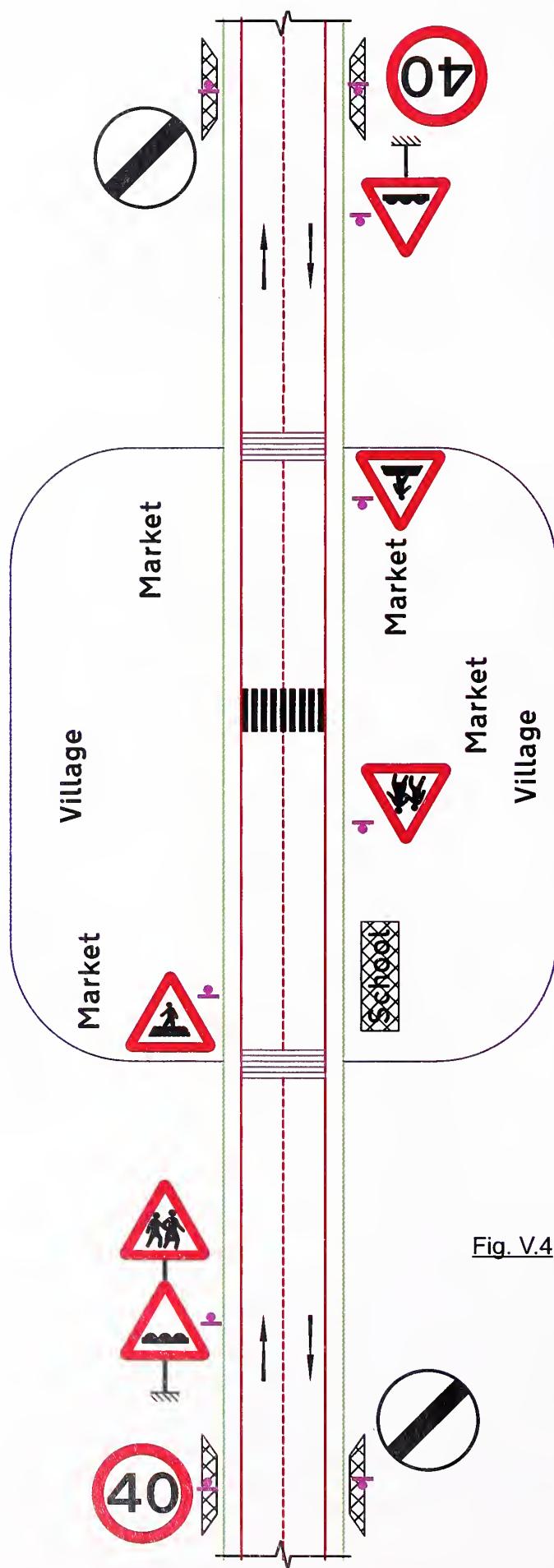


Fig. V.4

Sign Plan for a Highway
Passing Through Village/
Ribbon Development Area

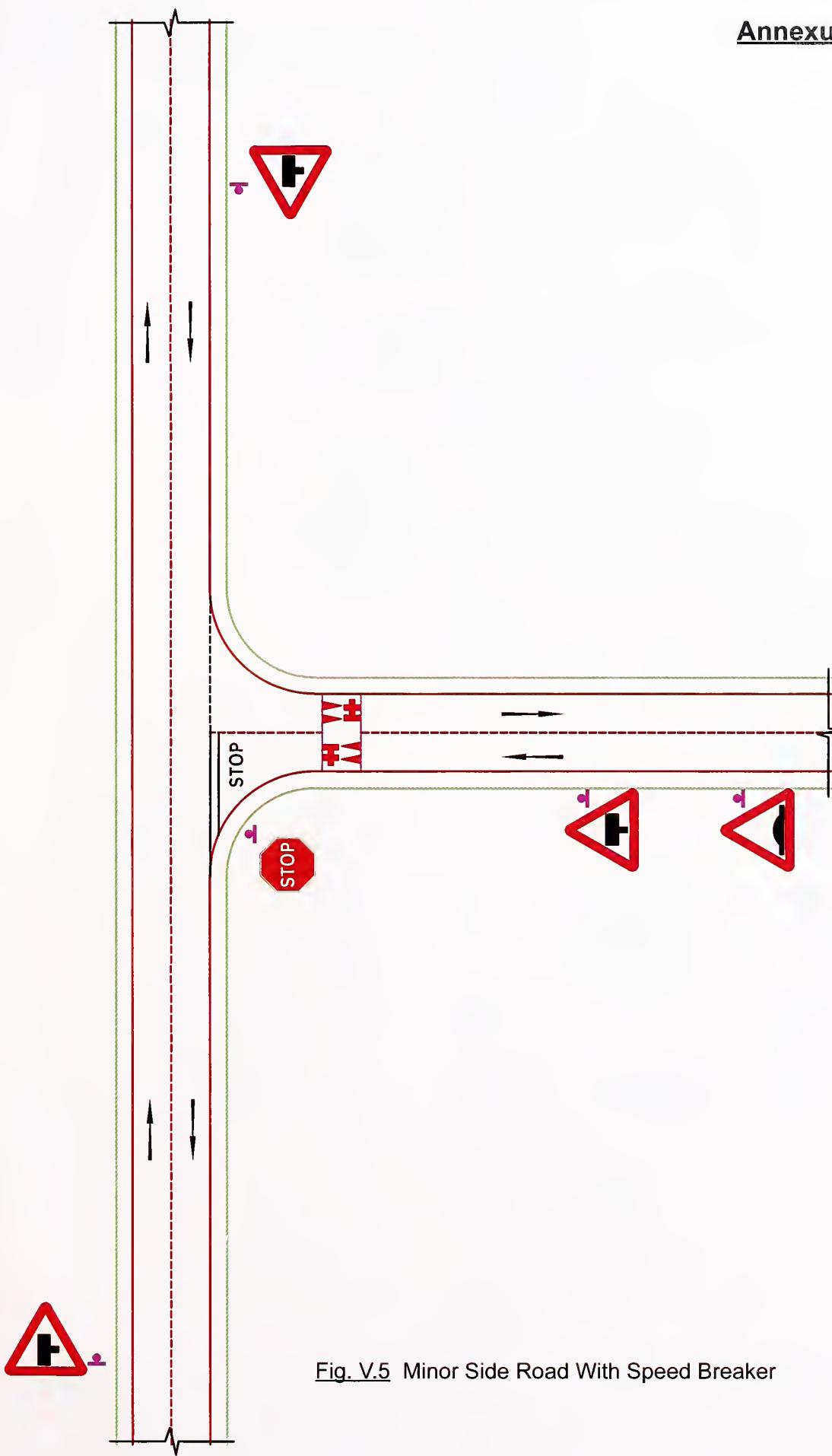
Annexure V

Fig. V.5 Minor Side Road With Speed Breaker

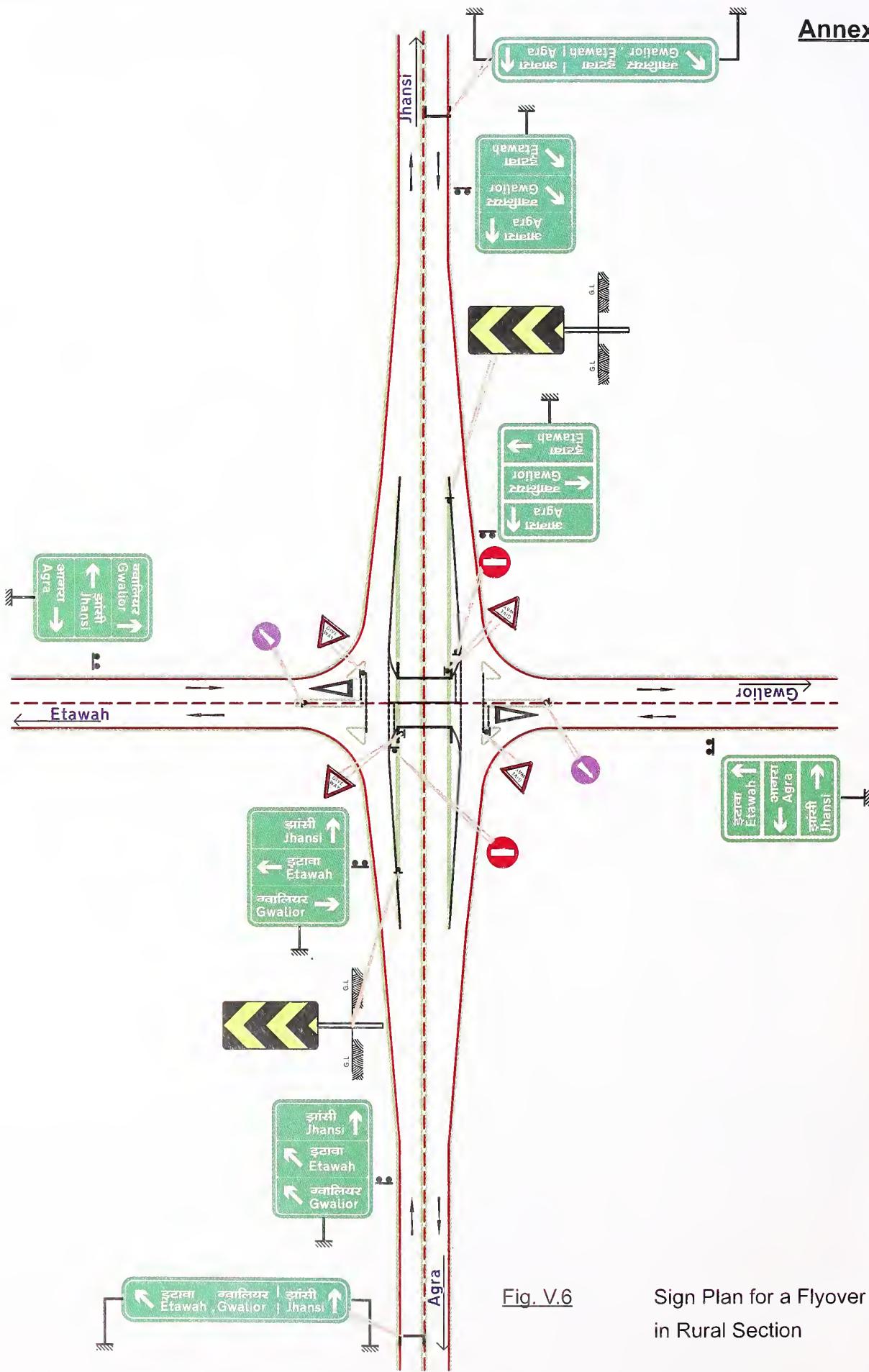
Annexure V

Fig. V.6

Sign Plan for a Flyover Approach
in Rural Section

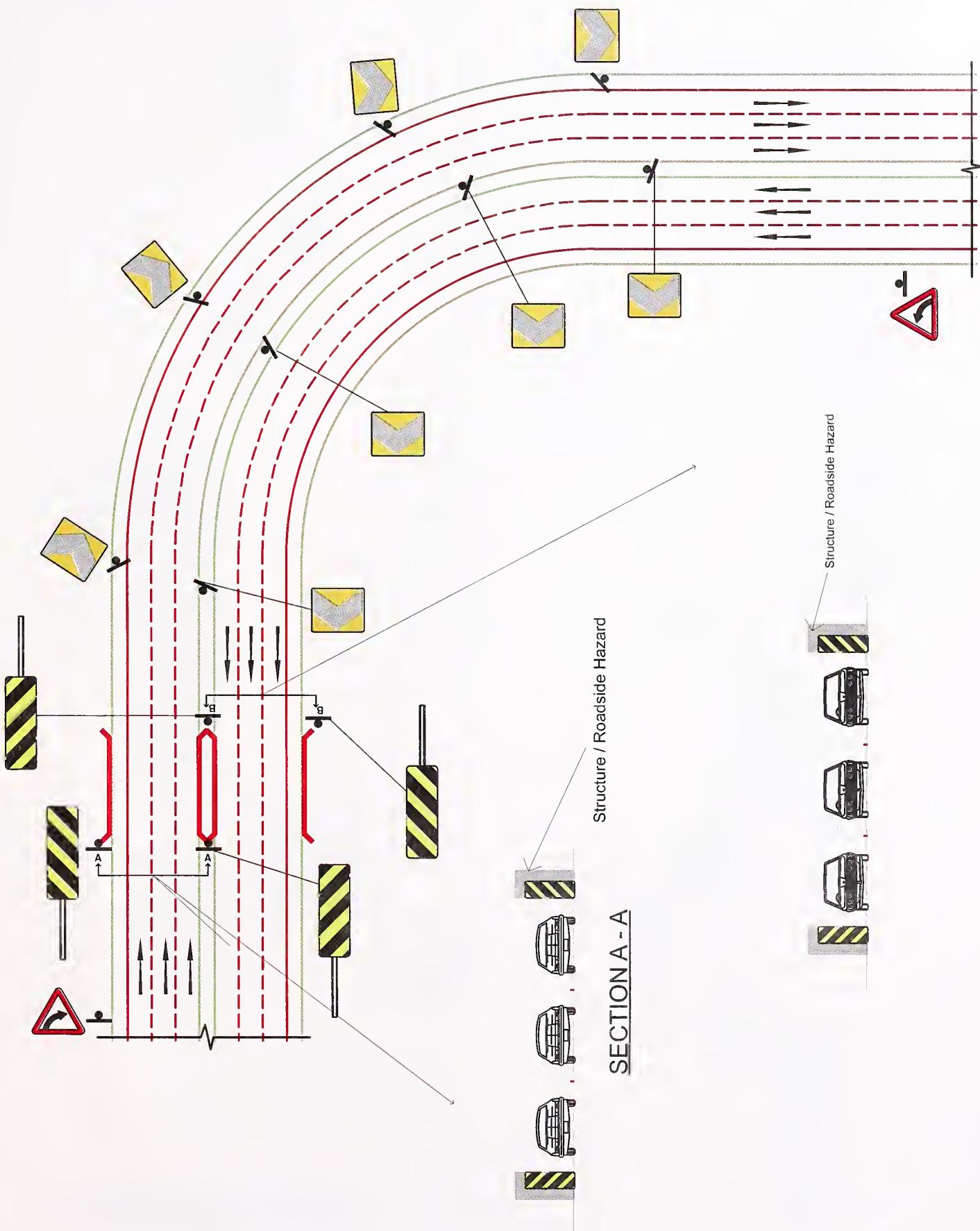
Annexure V

Fig V.7 Sign Plan for Curve Delineation in a Divided Highway

Annexure V

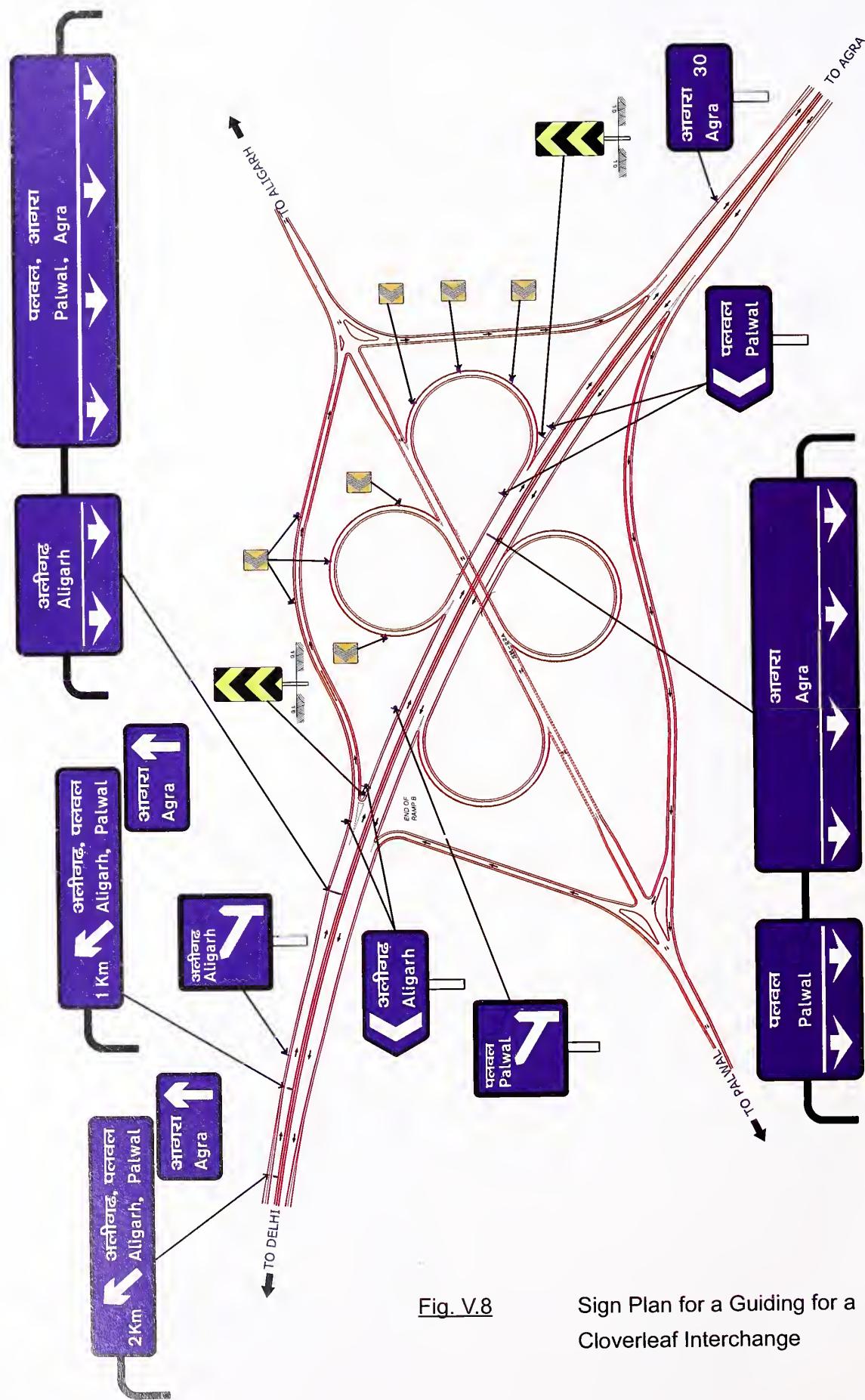


Fig. V.8

Sign Plan for a Guiding for a Cloverleaf Interchange

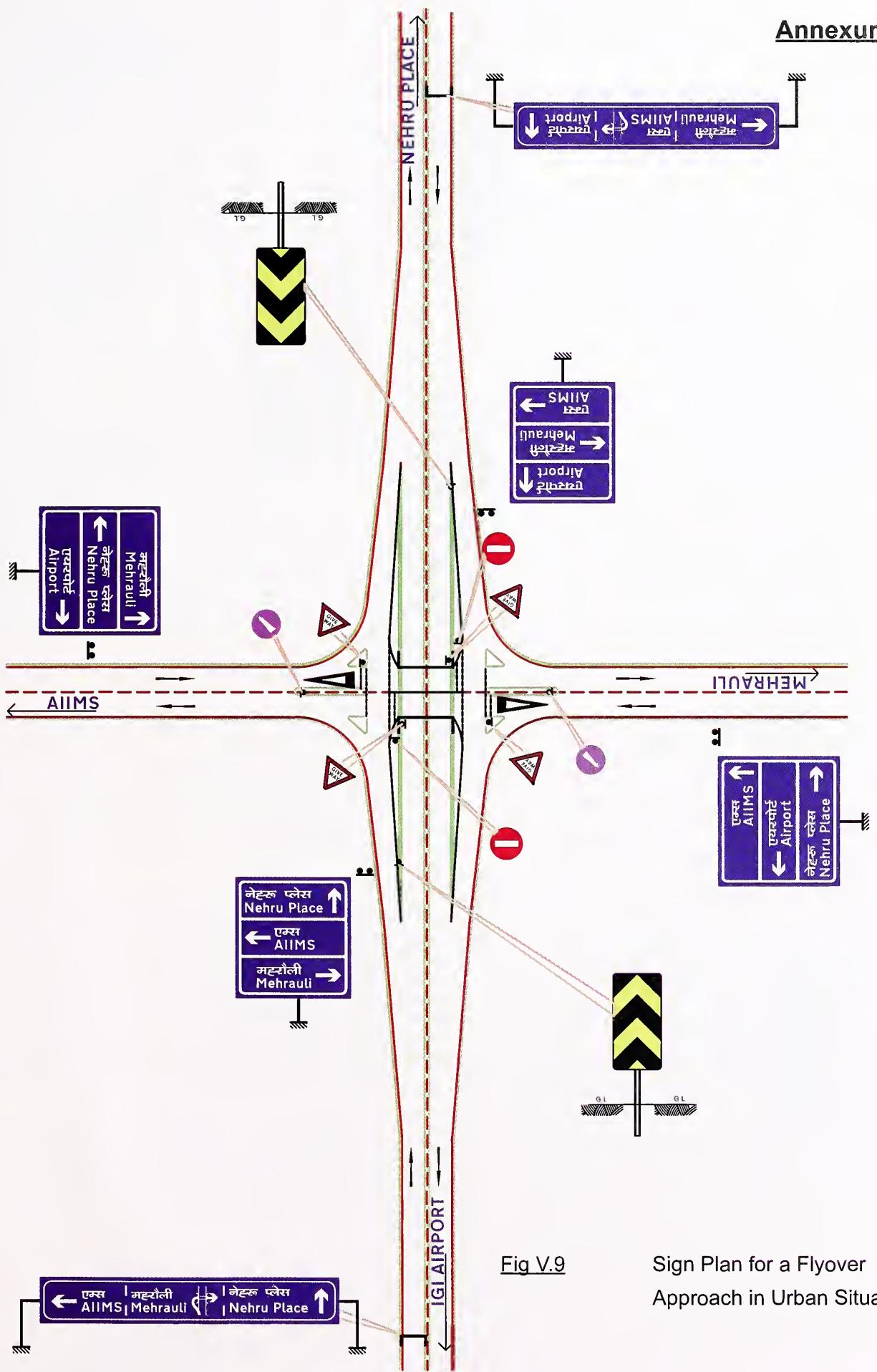
Annexure V

Fig V.9
Sign Plan for a Flyover
Approach in Urban Situation

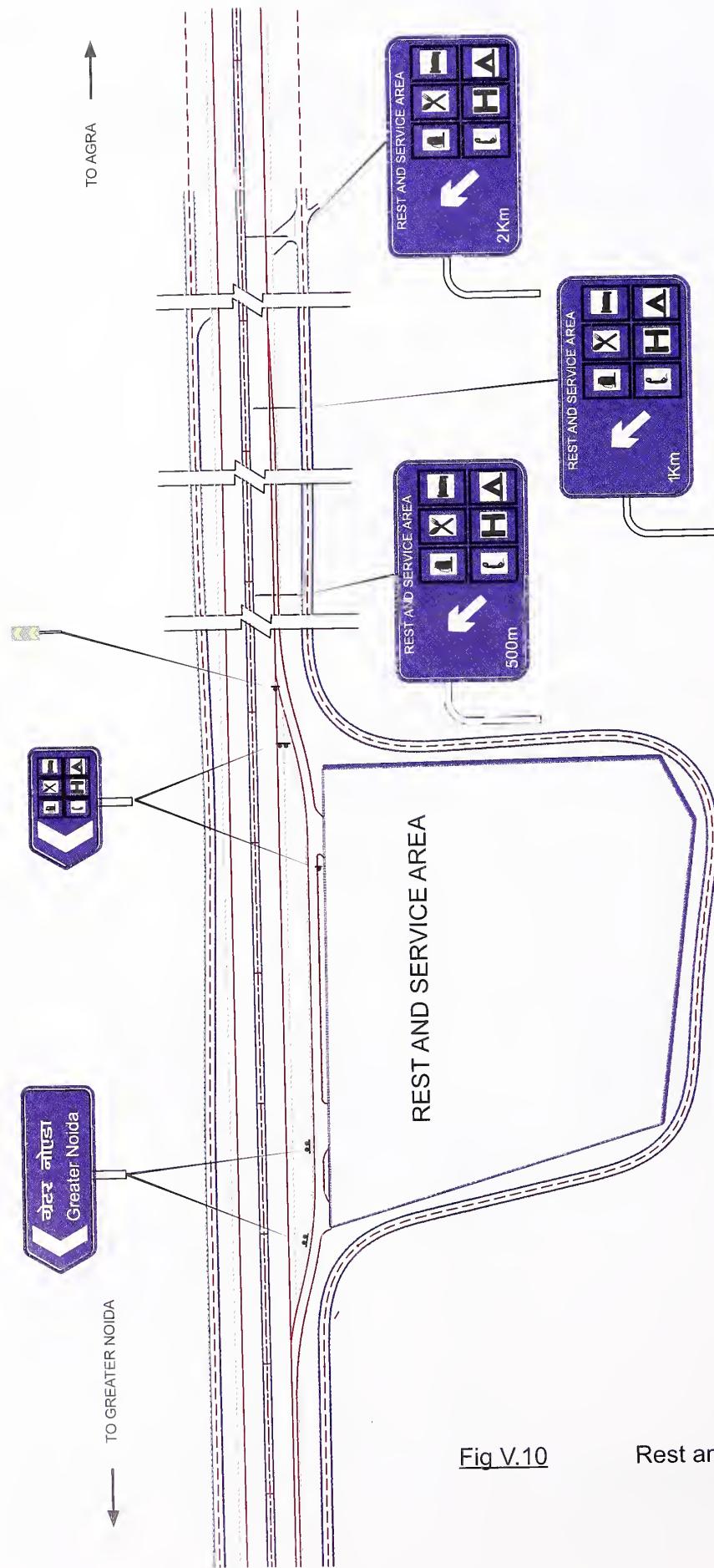


Fig V.10

Rest and Service Area

Annexure VI

DETERMINATION OF "X" HEIGHT FOR DIRECTION SIGNS (SHOULDER & GANTRY MOUNTED)

From the diagrams, "C" is the distance from the sign where a driver is expected to stop reading the sign i.e. the point where a driver would turn his head through 10° or more.

$$\text{i.e. } C = S \times \cotangent{10^\circ} = S \times 5.7$$

"S" is the off-set distance from the centre of the driving lane to the centre of the sign. This is measured from the centre of the right-hand-most lane on a dual carriageway.

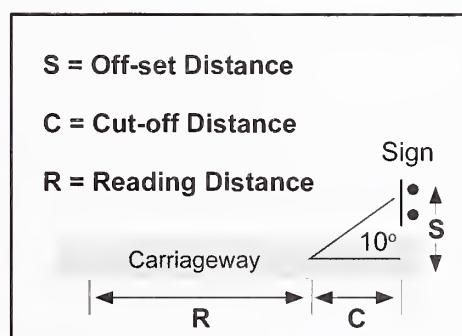
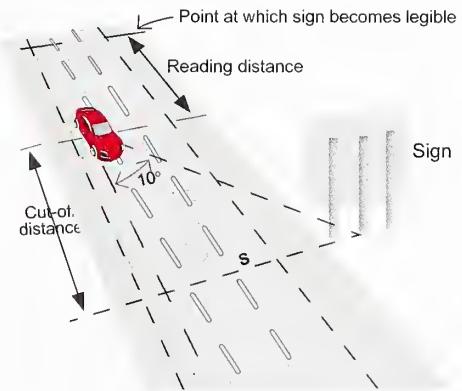
"R" is the distance travelled while reading the sign.

$$\text{Distance (R)} = \text{Reading Time} \times \text{Speed}$$

Reading time = $2 + (N/3)$ seconds; where N is the number of words or destinations on the sign. When N equals 6 the reading time is taken as 4 seconds. It allows driver to scan the sign twice to assimilate the information. The sign may be obscured for part of the time by virtue of other vehicles and the driver still needs to pay attention to the road ahead.

The x-height of the sign depends on the distance of the driver from the sign when he starts to read it. It is taken that, on average at a distance of 60 meters, the x height should be 100 mm and proportionately at 30 metres, the x-height would be 50 mm.

From the first principle, the "x" heights have been determined for various categories of Indian roads, which are given in **Table VI.1 to VI.3**.



| Table VI.1 Shoulder Mounted ADS | | | | | | | | | | |
|---------------------------------|-------|---------------------|---------------------|----------------|-------------------------------|-------------------------------|---------------------|--------------------|----------------------------|----------------------------|
| Speed | | Reading time (secs) | Reading distance(m) | Cotangent (10) | No. of lanes in one direction | Distance from Driving Lane(m) | Cut off distance(m) | Total distance (m) | Upper Case "X" Height (mm) | Lower case "x" Height (mm) |
| kmph | m/sec | | | | | | | | | |
| 30 | 8.3 | 4.0 | 33.3 | 5.7 | 1 lane | 3.75 | 21.4 | 54.7 | 91 | 65 |
| 50 | 13.9 | 4.0 | 55.6 | 5.7 | 1 lane | 3.75 | 21.4 | 76.9 | 128 | 92 |
| 65 | 18.1 | 4.0 | 72.2 | 5.7 | 1 lane | 3.75 | 21.4 | 93.6 | 156 | 111 |
| 80 | 22.2 | 4.0 | 88.9 | 5.7 | 2 lane | 7.75 | 44.2 | 133.1 | 222 | 158 |
| 100 | 27.8 | 4.0 | 111.1 | 5.7 | 2 lane | 9.25 | 52.7 | 163.8 | 273 | 195 |
| 110 | 30.6 | 4.0 | 122.2 | 5.7 | 3 lane | 13.25 | 75.5 | 197.7 | 330 | 235 |
| 120 | 33.3 | 4.0 | 133.3 | 5.7 | 4 lane | 16.75 | 95.5 | 228.8 | 381 | 272 |

| Table VI.2 Gantry Mounted Signs | | | | | | | | | | | |
|---------------------------------|-------|---------------------|---------------------|----------------|-----------------|--------------------------------------|---------------------|--------------------|----------------------------|----------------------------|-------------------------------|
| Speed | | Reading time (secs) | Reading distance(m) | Cotangent (10) | Clear Height(m) | Height including depth of gantry (m) | Cut off distance(m) | Total distance (m) | Upper Case "X" Height (mm) | Lower case "x" Height (mm) | No. of lanes in one direction |
| kmph | m/sec | | | | | | | | | | |
| 30 | 8.3 | 4.0 | 33.3 | 5.7 | 6 | 8 | 45.6 | 78.9 | 132 | 94 | 1 lane |
| 50 | 13.9 | 4.0 | 55.6 | 5.7 | 6 | 8 | 45.6 | 101.2 | 169 | 120 | 1 lane |
| 65 | 18.1 | 4.0 | 72.2 | 5.7 | 6 | 8 | 45.6 | 117.8 | 196 | 140 | 1 lane |
| 80 | 22.2 | 5.0 | 111.1 | 5.7 | 6 | 8.5 | 48.5 | 159.6 | 266 | 190 | 2 lane |
| 100 | 27.8 | 5.0 | 138.9 | 5.7 | 6 | 8.5 | 48.5 | 187.3 | 312 | 223 | 2 lane |
| 110 | 30.6 | 6.0 | 183.3 | 5.7 | 6 | 9 | 51.3 | 234.6 | 391 | 279 | 3 lane |
| 120 | 33.3 | 6.0 | 200.0 | 5.7 | 6 | 9 | 51.3 | 251.3 | 419 | 299 | 4 lane |

| Constant | Number of place names (N) | (N/3) | Reading time (Secs) |
|----------|---------------------------|-------|---------------------|
| 2 | 6 | 2.0 | 4.0 |
| 2 | 6 | 2.0 | 4.0 |
| 2 | 8 | 2.7 | 4.7 |

(The Official amendments to this document would be published by the IRC in its periodical, 'Indian Highways' which shall be considered as effective and as part of the code/guidelines/manual, etc. from the date specified therein)