# TRAFFIC CONTROL DEVICES

# (Road Signs)


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# Trucks reason for 11.5% road deaths in 2015

**Times of India, News Paper 10-12-2016**

# Introduction

- Integral part of any road design
- Often the forgotten part of the road design
- Often there is limited information for concept design audits
- Generally supplied at detailed design audit stage

# Reasons for lack of information

- The standards are broad and allow for engineering judgment

- The designer has not got the right skills to design the correct signs and lines

# Traffic Control Devices

- Road Signs
- Road Markings
- Road Studs
- Road Lighting

# Traffic Signs General

## Objective of road signs

- ✓ To notify road users of regulations and provide warning and guidance needed for safe, uniform and efficient operation.
- ✓ To promote road safety and efficiency by providing orderly movement of all road users on all roads

## Principles of Road Signs

Road sign should meet five basic requirements

1. Fulfil a need
2. Command attention
3. Convey a clear and simple meaning
4. Command respect from road users; and
5. Give adequate time for response

# Classification of Road Signs

## Mandatory/Regulatory Signs

- These signs indicate the prohibition upon certain kind of vehicle manoeuvre
- They are with red circular ring and diagonal bars with black symbols or arrows or letters on white background.
- Mandatory signs giving positive instructions are circular with white symbol on a blue background. They indicate what driver must do compulsorily.

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

Prohibitory Regulation


Operational Control

Compulsory Direction Control


# Classification of Road Signs contd..

## Cautionary/Warning Signs

- They are used to caution and alert the road users to potential danger or existence of certain hazardous conditions either on or adjacent to the roadway
- They are triangular in shape with red border and black symbol in white background
- Examples of these signs are Hairpin Bend. Narrow Bridge, Gap in Median, School Ahead etc

Cautionary/
Warning

## Informatory /Guide Signs

- It indicates location and direction to facilities like "fuel station" or "eating place" or "parking“
- They are rectangular in shape.

Facility
Information


Direction
Information

**Colour pattern for direction information signs is given in Table 8.3. The colours chosen for informatory or guide signs shall be distinct for different categories of roads.**

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 |

# Siting of Signs With Respect to the Carriageway

- **For two lane roads**
  - Left side of the carriageway, repeated on the other side of the carriageway
- **For multilane divided roads**
  - The signs may be placed on left side of each carriageway
- **For 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
- Without kerb and with or without shoulder, the extreme edge of the ground mounted sign at a distance of 600 mm to 3 m from the carriageway or paved shoulder edge.
- For roads with kerbs. it shall not be less than 300 mm away from kerb line
- Gantry mounted signs should be mounted on columns preferably 7 m or more
- 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
- 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.

# Provision of overhead signs

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**

# Orientation of Signs

- 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.

- 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.

- 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

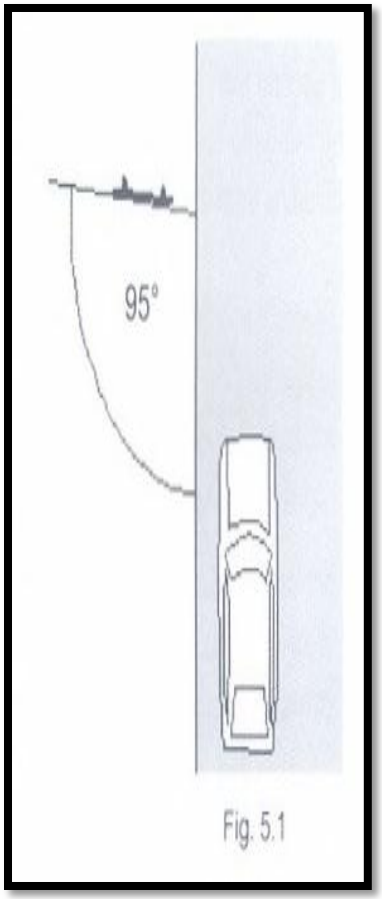
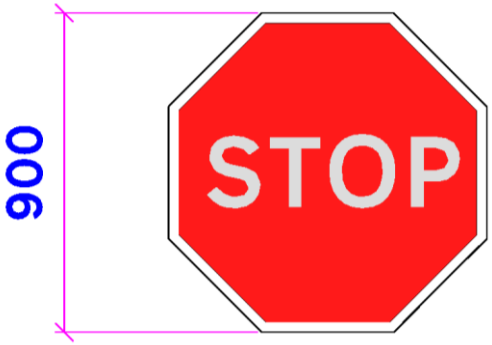


Fig. 5.1

# STOP Sign

**Purpose**

- This is for indicating priority for the right of way. Required to stop before entering a major road.



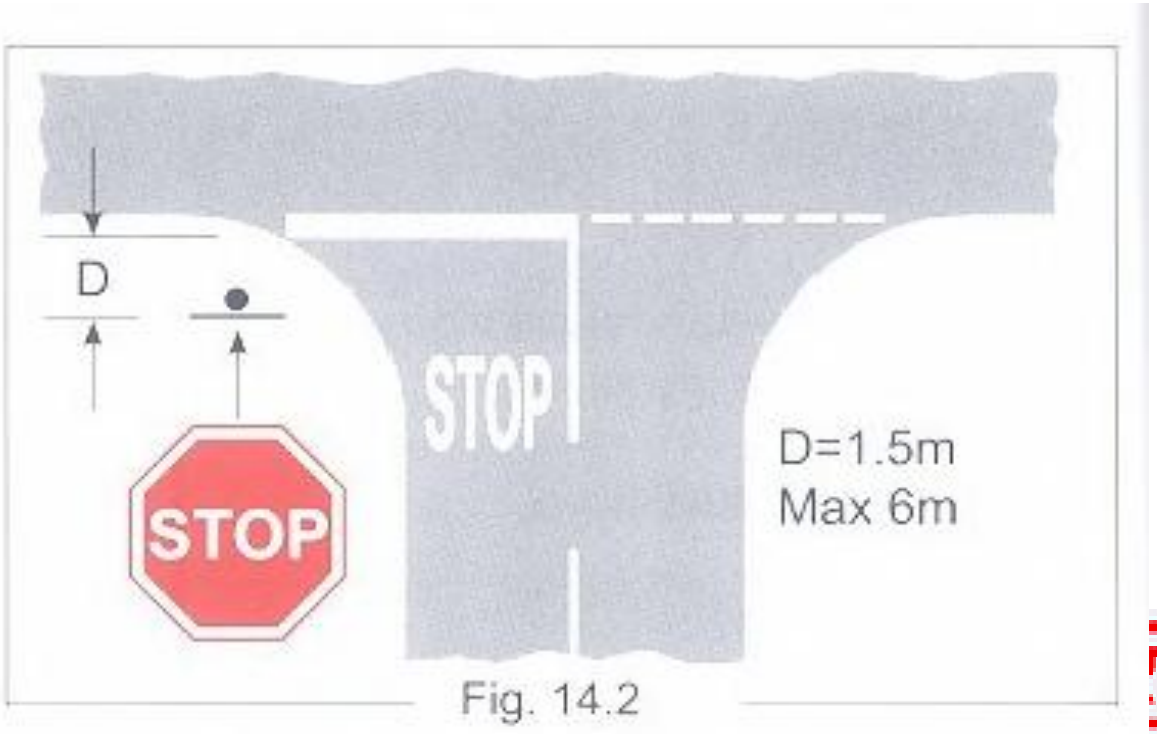




Fig. 14.2

# GIVE WAY Sign

**Purpose**

- The GIVE WAY sign is used to assign right-of-way to traffic on certain roadways at intersections.

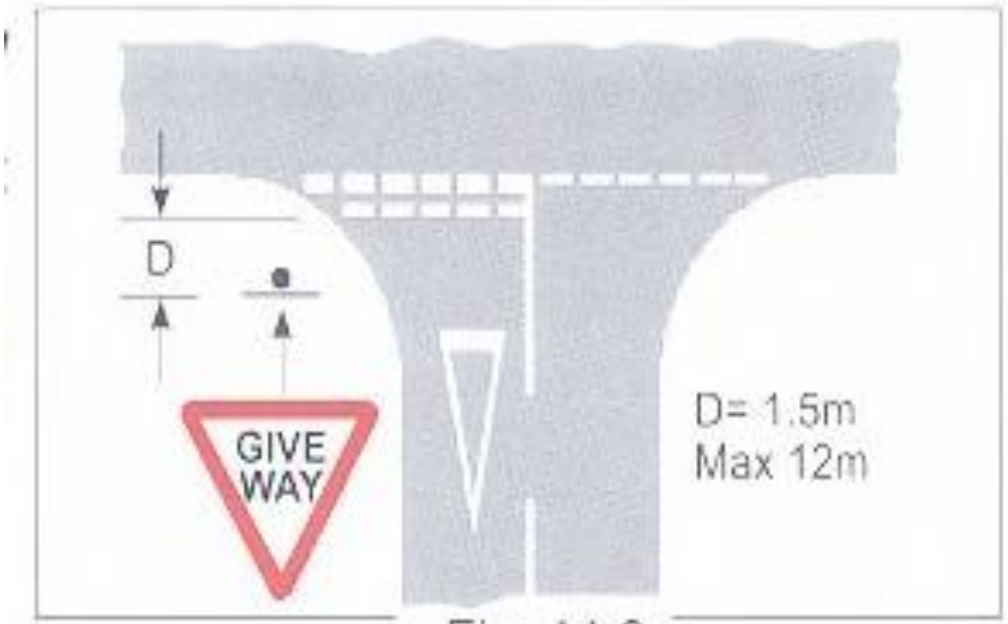




Fig. 14.3

# Advance Direction Signs

- 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.

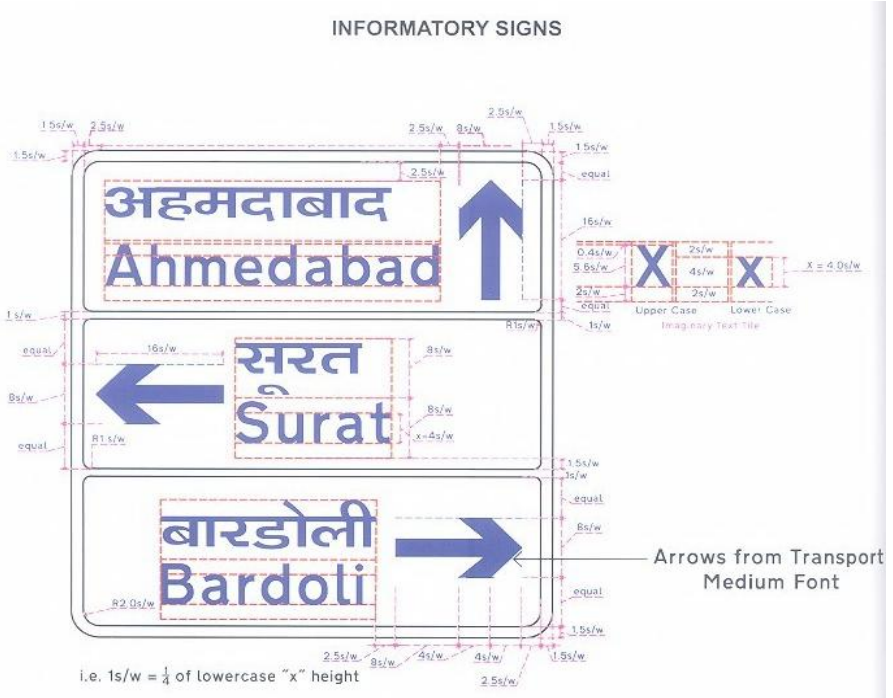



Fig. 16.01 Stack type Advance Direction Sign
(Shoulder Mounted)

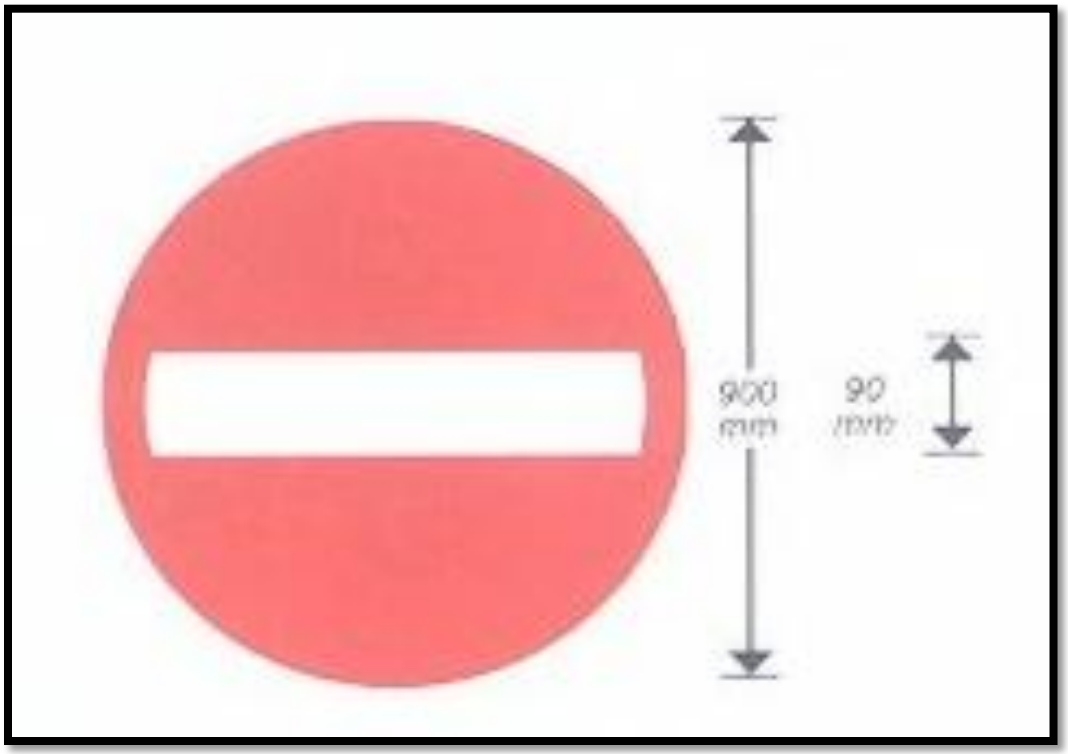
# Substandard gantry directional sign board, same sign is used for both direction traffic






# 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.**



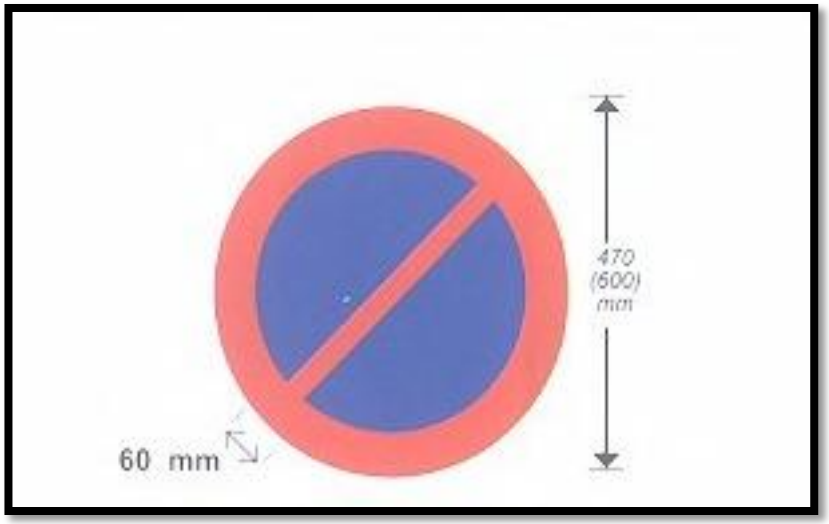
# Priority to Vehicles from Opposite Direction

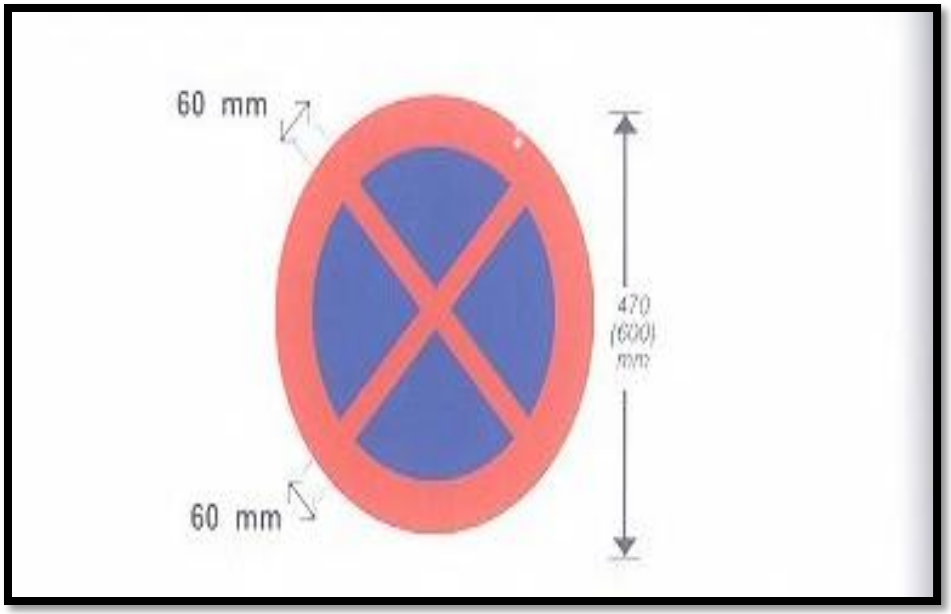
• The sign shall be used to indicate that drivers must give priority to vehicles from opposite direction.

• 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.

# No Stopping and No Standing Signs



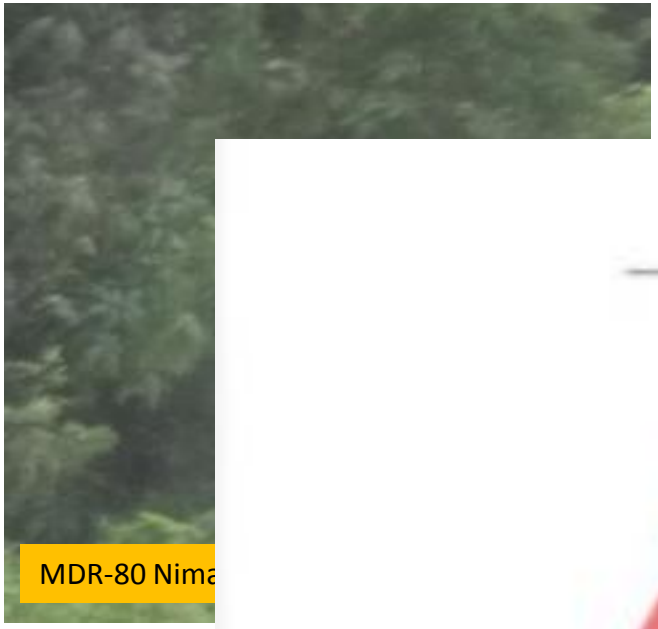



**Built Up Area**

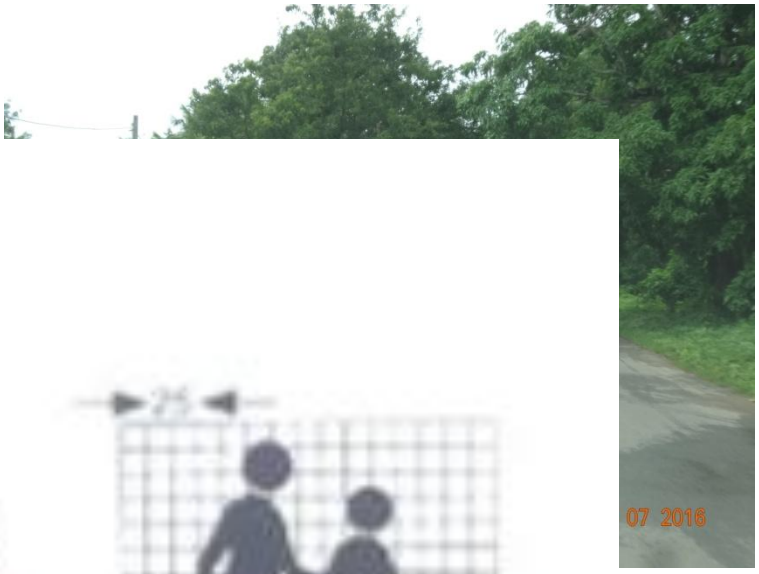
• The sign shall be used to caution the vehicles about Built up Area.

•The sign shall be placed at the beginning of such area

# School Sign Board



MDR-80 Nima








Bhanipur to Jamankira MDR

MDR-80 Nimapara to Astaranga, Odisha

# Series of Bends





Fig. 15.07 Series of Bends

**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.

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 |

• Chevron signs should be visible for a sufficient distance to provide the road user with adequate time to react to the change in alignment

• 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.

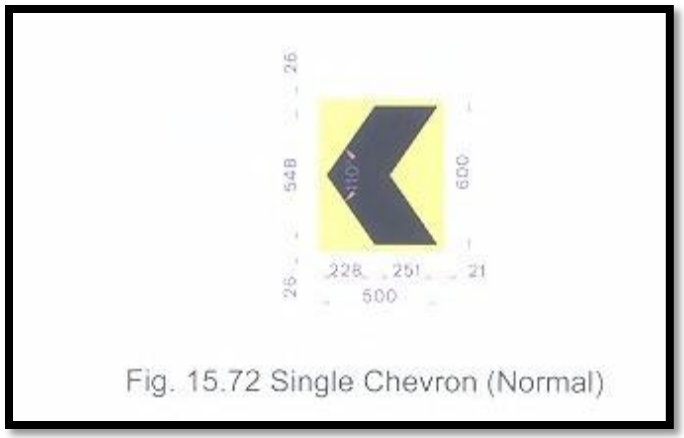


Fig. 15.72 Single Chevron (Normal)

Fig. 15.74 Double Chevron

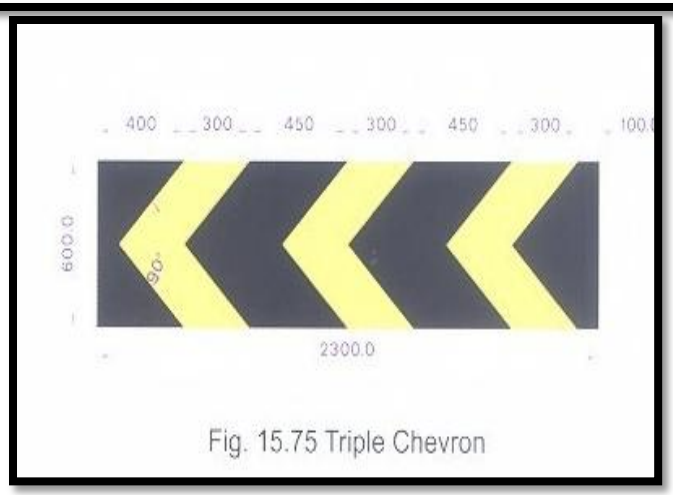


Fig. 15.75 Triple Chevron

**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.

Fig. 15.76 Object Hazard (Left)

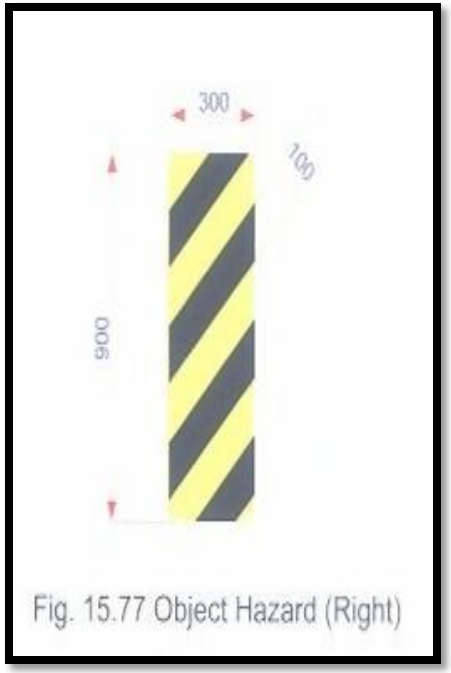


Fig. 15.77 Object Hazard (Right)

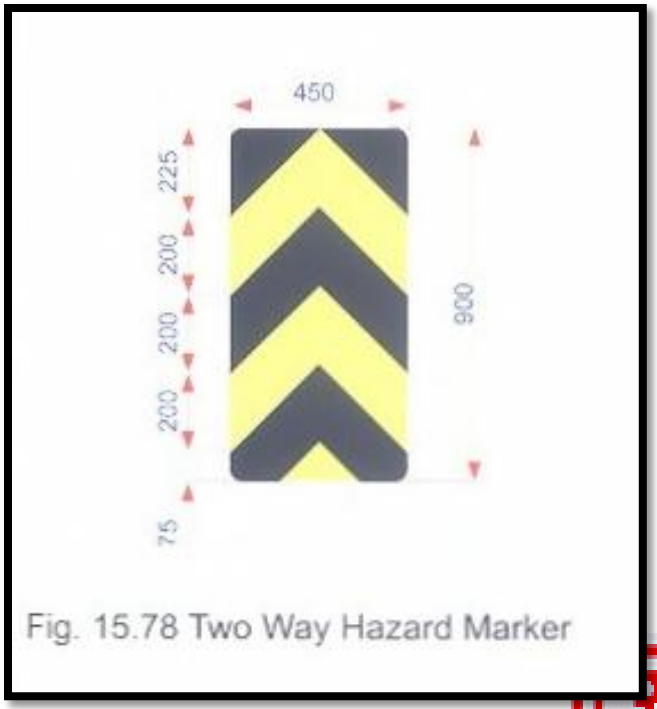


Fig. 15.78 Two Way Hazard Marker

# Route Marker Signs

Fig. 20.01 State Highway Route Marker Sign

State Highway Route Marker Sign

**Rectangular plate of 450 mm X 600 mm.**

Fig. 20.02 National Highway Route Marker Sign

National Highway Route Marker Sign

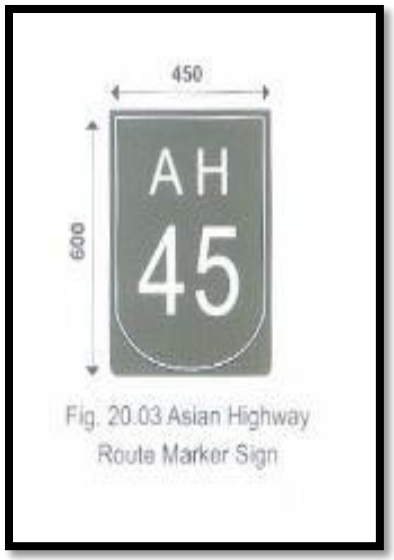


Fig. 20.03 Asian Highway Route Marker Sign

Asian Highway Route Marker Sign

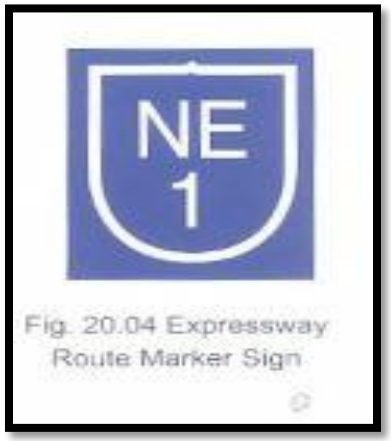


Fig. 20.04 Expressway Route Marker Sign

Expressway Route Marker Sign

# Improving Driver Expectancy

Absence of advance signing And markings result in approaching driver being unaware of intersection ahead

Rumble strips on shoulder to alert drivers who have strayed from carriageway before sharp curve

# Traffic Control Devices

Too many signs and smaller font size can cause problems in comprehensibility of signs for appropriate action in time.

# Traffic Control Devices for Better Road Safety

Clearly defined centre line and edge line


Non-uniformity of signs


Thank you!