

# ROAD SAFETY PLANNING AND GEOMETRIC DESIGN

## UNIT-III

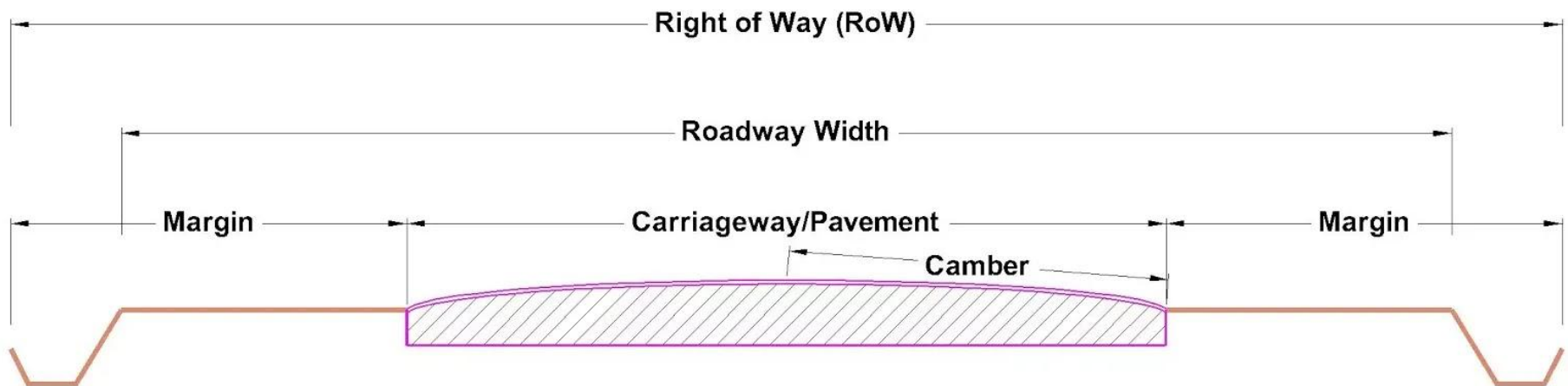
# content

- Vehicle And Human Characteristics
- Road Design and Road Equipment's,
- Redesigning Junctions,
- Cross Section Improvements
- Reconstruction and Rehabilitation of Roads.
- Road Maintenance
- Traffic Control
- Vehicle Design and Protective Devices
- Post Accident Care

# Importance Road safety and geometric design

- right of way,
- formation width,
- road margin,
- road shoulder,
- carriage way,
- side slopes,
- Kerbs (Curbs),
- formation level,
- camber and
- gradient Right of way

- **Right of way (ROW)** or land width is the width of land acquired for the road, along its alignment. It should be adequate to accommodate all the crosssectional elements of the highway and may reasonably provide for future development

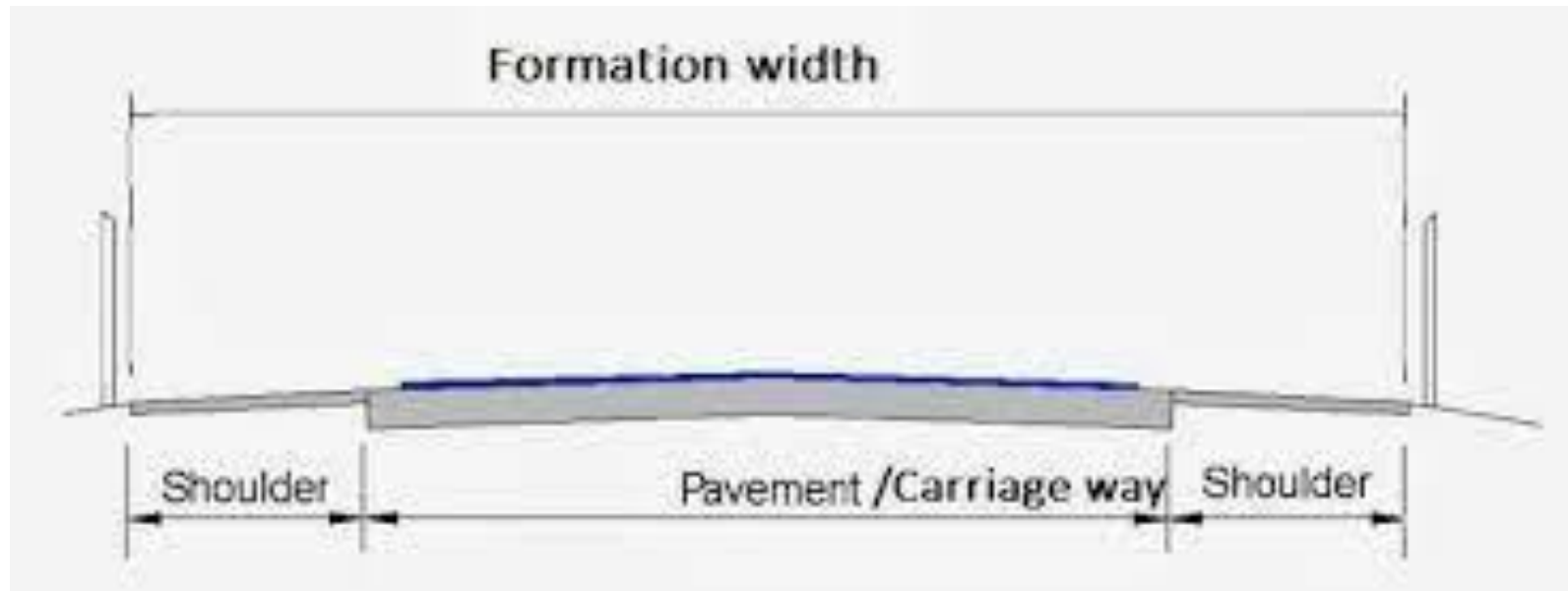


# Factors Affecting Right of Way

- Width of formation
- Height of embankment
- Side slopes
- Drainage system
- Sight distances consideration on horizontal curves
- Future extension

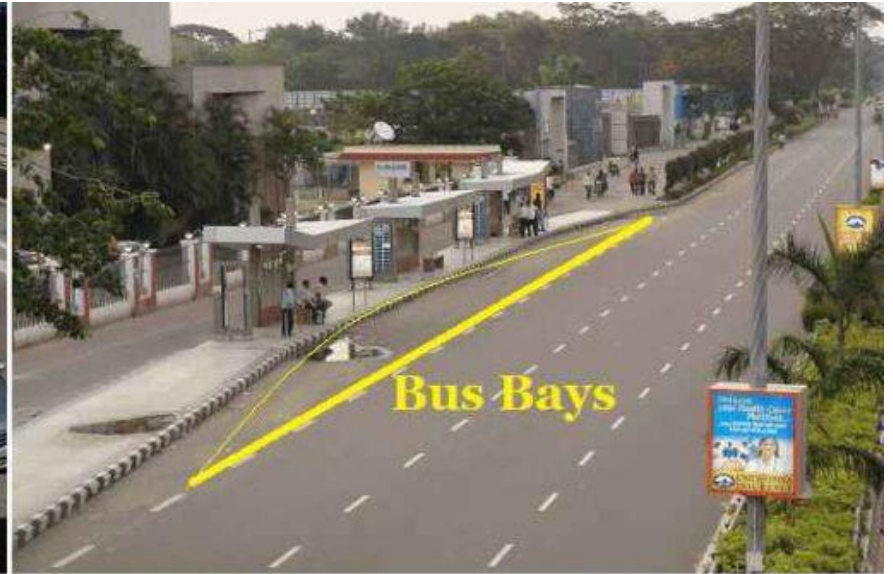
# Formation width

- Width of formation or roadway width is the sum of the widths of pavements or carriage way including separators and shoulders. This does not include the extra land in formation/cutting.



## **Road margin**

- The portion of the road beyond the carriageway and on the roadway can be generally called road margin.
- Various elements that form the road margins are given below.





# **1. Shoulders**

- Shoulders are provided along the road edge and is intended for accommodation of stopped vehicles.
- serve as an emergency lane for vehicles and provide lateral support for base and surface courses.
- The shoulder should be strong enough to bear the weight of a fully loaded truck even in wet conditions.
- The shoulder width should be adequate for giving working space around a stopped vehicle.
- It is desirable to have a width of 4.6 m for the shoulders. A minimum width of 2.5 m is recommended for 2-lane rural highways in India.

## **2. Parking lanes**

Parking lanes are provided in urban lanes for side parking.

Parallel parking is preferred because it is safe for the vehicles moving on the road.

The parking lane should have a minimum of 3.0 m width in the case of parallel parking.

## **Bus-bays**

- Bus bays are provided by recessing the kerbs for bus stops.
- They are provided so that they do not obstruct the movement of vehicles in the carriage way.
- They should be at least 75 meters away from the intersection so that the traffic near the intersections is not affected by the bus-bay.

## **Service roads**

- Service roads or frontage roads give access to access controlled highways like freeways and expressways.
- They run parallel to the highway and will be usually isolated by a separator and access to the highway will be provided only at selected points.
- These roads are provided to avoid congestion in the expressways and also the speed of the traffic in those lanes is not reduced.





Picxy



## **Cycle track**

- Cycle tracks are provided in urban areas when the volume of cycle traffic is high. Minimum width of 2 meter is required, which may be increased by 1 meter for every additional track.

## **Footpath**

- Footpaths are exclusive right of way to pedestrians, especially in urban areas.
- They are provided for the safety of the pedestrians when both the pedestrian traffic and vehicular traffic is high. Minimum width is 1.5 meter and may be increased based on the traffic.
- The footpath should be either as smooth as the pavement or more smoother than that to induce the pedestrian to use the footpath.



## **Guard rails**

- They are provided at the edge of the shoulder usually when the road is on an embankment.
- They serve to prevent the vehicles from running off the embankment, especially when the height of the fill exceeds 3 m.
- Various designs of guard rails are there.
- Guard stones painted in alternate black and white are usually used.
- They also give better visibility of curves at night under headlights of vehicles.





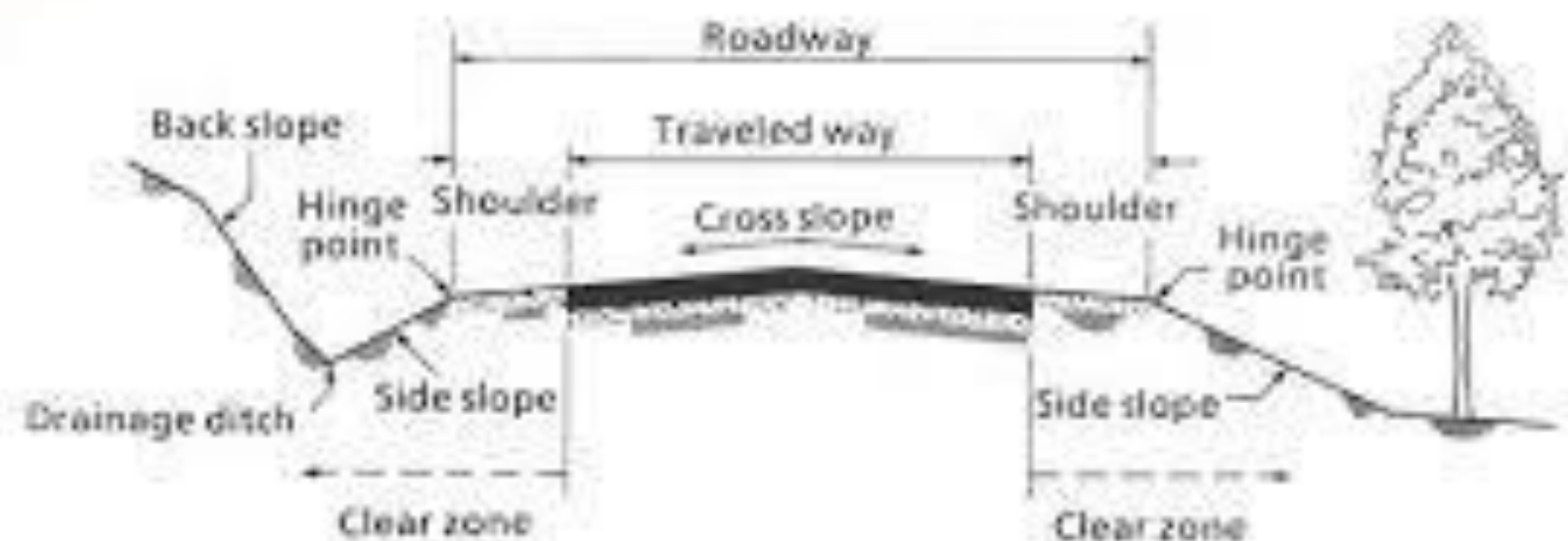
# Carriage way

- It is the width of the road which is used by the traffic for moving on it.
- It is generally central portion of the total land width and is paved and surfaced with the bituminous concrete for service to the road users.
- Width of the carriage way depends on the number of the lanes in the road which again depends on the class of the highway.
- If it is higher level road like NH then it will need more numbers of lanes and therefore the carriageway width will be more.

# Side Slope

- Side slopes are important in maintaining the stability of the roadbed and pavement structure as well as providing an area for the safety of errant vehicles.
- Side slopes are constructed in both fill (embankment) areas (those falling above the natural ground level) and cut areas (those falling below the natural ground level).
- As a general reference, slopes in embankment areas are commonly referred to as fill slopes or front slopes.
- When it is determined that no parallel ditch section is needed the front slope is graded to meet natural ground.

### Clear zone illustration



**Hinge Point**      Point where the slope rate changes.

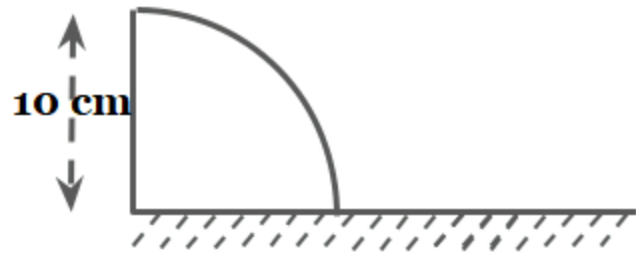
**Clear Zone**      That area along the side of the traveled way including the shoulder that is available for recovery of an errant vehicle.

# Kerb (Curbs)

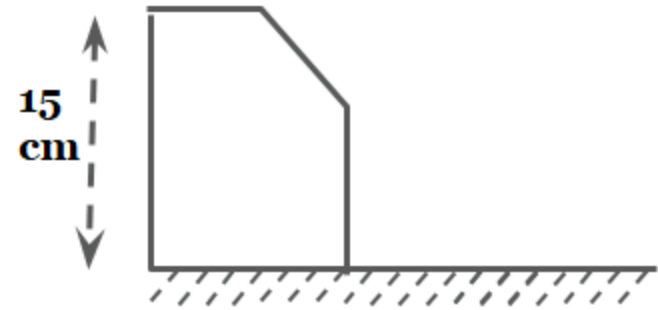
- Kerbs indicate the boundary between the carriage way and the shoulder or islands or footpaths.

## **Low or mountable kerbs :**

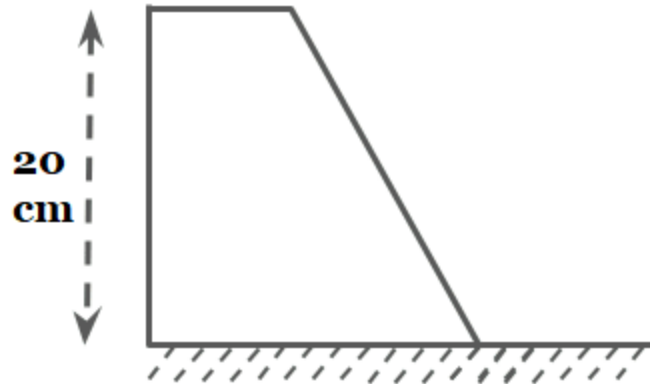
- This type of kerbs are provided such that they encourage the traffic to remain in the through traffic lanes and also allow the driver to enter the shoulder area with little difficulty.
- The height of this kerb is about **10 cm** above the pavement edge with a slope which allows the vehicle to climb easily. This is usually provided at medians and channelization schemes and also helps in longitudinal drainage



**Low or Mountable type Kerb**



**Semi- Barrier type Kerb**



**Barrier type kerb**



## **Semi-barrier type kerbs :**

- When the pedestrian traffic is high, these kerbs are provided.
- Their height is 15 cm above the pavement edge. This type of kerb prevents encroachment of parking vehicles, but at acute emergency it is possible to drive over this kerb with some difficulty.

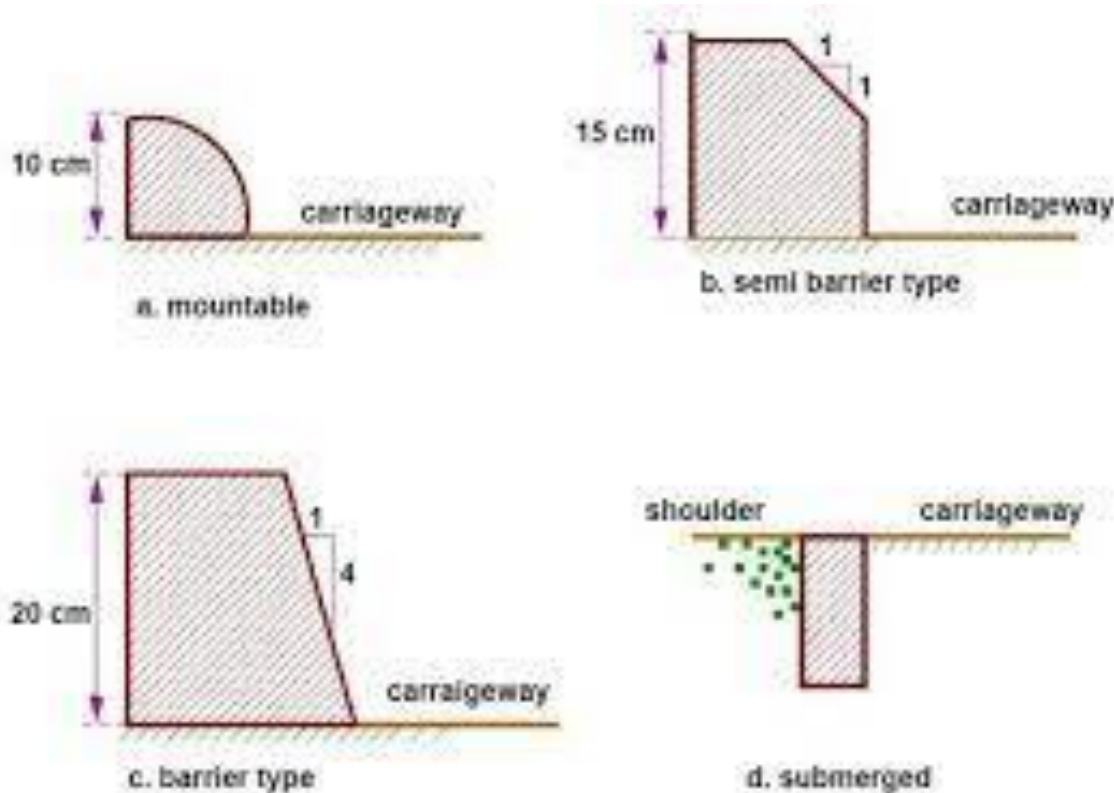
## **Barrier type kerbs :**

- They are designed to discourage vehicles from leaving the pavement.
- They are provided when there is considerable amount of pedestrian traffic.
- They are placed at a height of 20 cm above the pavement edge with a steep batter.



# Submerged kerbs :

- They are used in rural roads.
- The kerbs are provided at pavement edges between the pavement edge and shoulders.
- They provide lateral confinement and stability to the pavement.



# Vehicle And Human Characteristics

Designing a highway facility, it is essential to know the characteristics of the road user and the vehicles.

The road users include the drivers of vehicles, pedestrians and cyclists.

The human behaviour which can be studied under the following groups:

## **Physiological**

*(i) Vision*

*(ii) Hearing*

## **Psychological**

*(i) Perception*

*(ii) Intellection*

*(iii) Emotion*

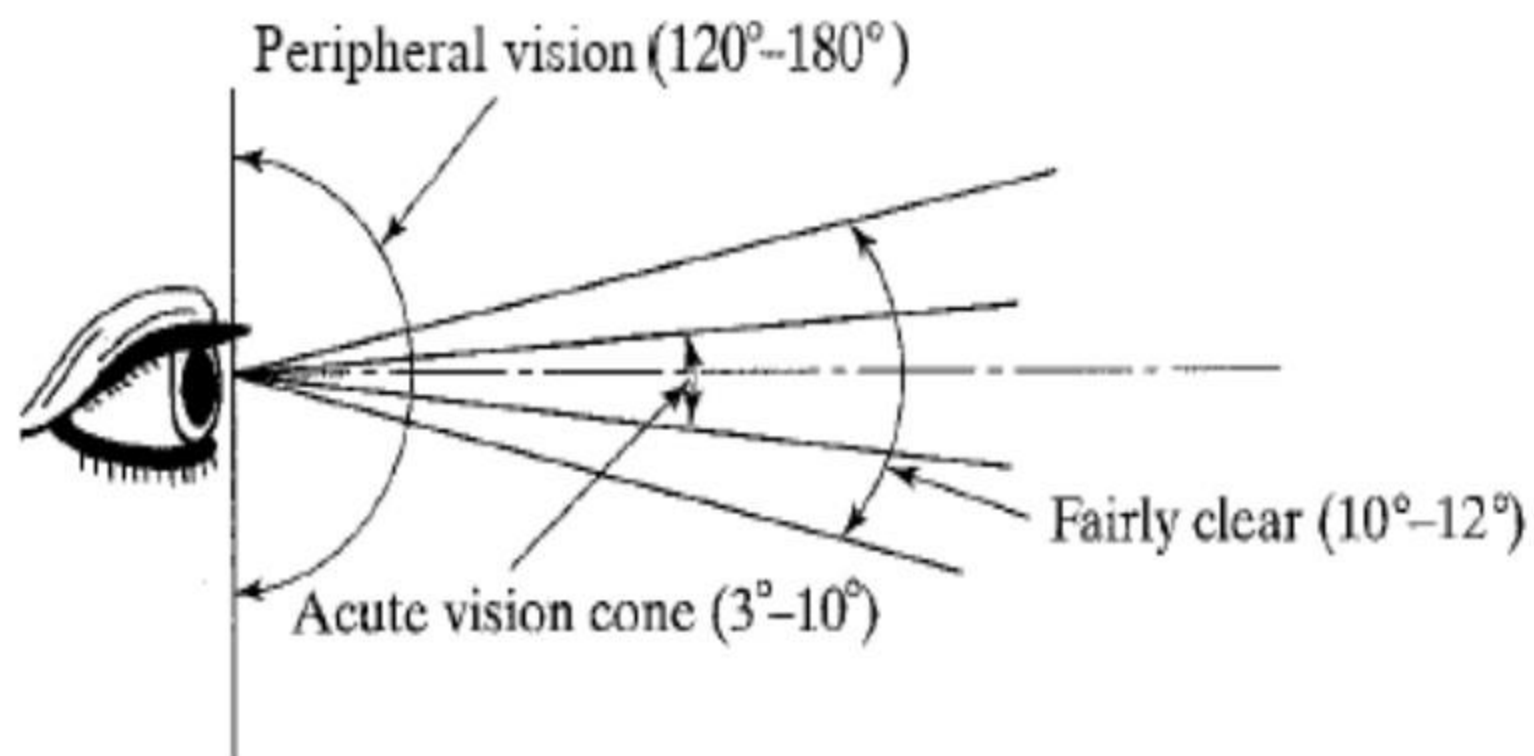
*(iv) Volition*

# Physiological

## (i) Vision

The most important characteristic of drivers is their ability to see!

- Field of Vision
- Color Blindness



- Acute or clear vision cone- $3^{\circ}$  to  $10^{\circ}$  around the line of sight; legend can be read only within this narrow field of vision.
- Fairly clear vision cone- $10^{\circ}$  to  $12^{\circ}$  around the line of sight; color and shape can be identified in this field.
- Peripheral vision-This field may extend up to  $90^{\circ}$  to the right and left of the centerline of the pupil, and up to  $60^{\circ}$  above and  $70^{\circ}$  below the line of sight.
- Stationary objects are generally not seen in the peripheral vision field, but the movement of objects through this field is detected.

# Visual Deficits

- Some of the more common problems involve cataracts, glaucoma, peripheral vision deficits, ocular muscle imbalance, depth perception deficits, and color blindness.
- Unfortunately, one of the most common forms of color blindness involves the inability to discern the difference between red and green. ▫ The location of colors on signal heads has long been standardized, with red on the top and green on the bottom of vertical signal heads.
- On horizontal heads, red is on the left and green on the right.

# **PRT or PIEV**

- **P**erception of cue or stimulus
- **I**nterpretation
- **E**valuation of appropriate response (i.e., decision)
- **V**olition or physical response (i.e., reaction)

# perception-reaction time (PRT).

The second critical driver characteristic is

## **perception-reaction time (PRT).**

- *Detection.* In this phase, an object or condition of concern enters the driver's field of vision, and the driver becomes consciously aware that something requiring a response is present.
- *Identification.* In this phase, the driver acquires sufficient information concerning the object or condition to allow the consideration of an appropriate response.
- *Decision.* Once identification of the object or condition is sufficiently completed, the driver must analyze the information and make a decision about how to respond.
- *Response.* After a decision has been reached, the response is now physically implemented by the driver.



# Factors Affecting PRT

- Age
- Fatigue
- Complexity of Reactions
- Presence of Drugs or Alcohol

# **Pedestrian Characteristics**

- One of the most critical safety problems in any highway and street system involves the interactions of vehicles and pedestrians.
- Walking Speeds  
1 to 1.2 m/s for 85%
- Gap Acceptance - 38 m
- Pedestrian Comprehension of Controls

# Vehicle Characteristics

- Braking and deceleration
- Acceleration
- Low-speed turning characteristics
- High-speed turning characteristics
- Size
- Weight

# Road Design and Road Equipment's

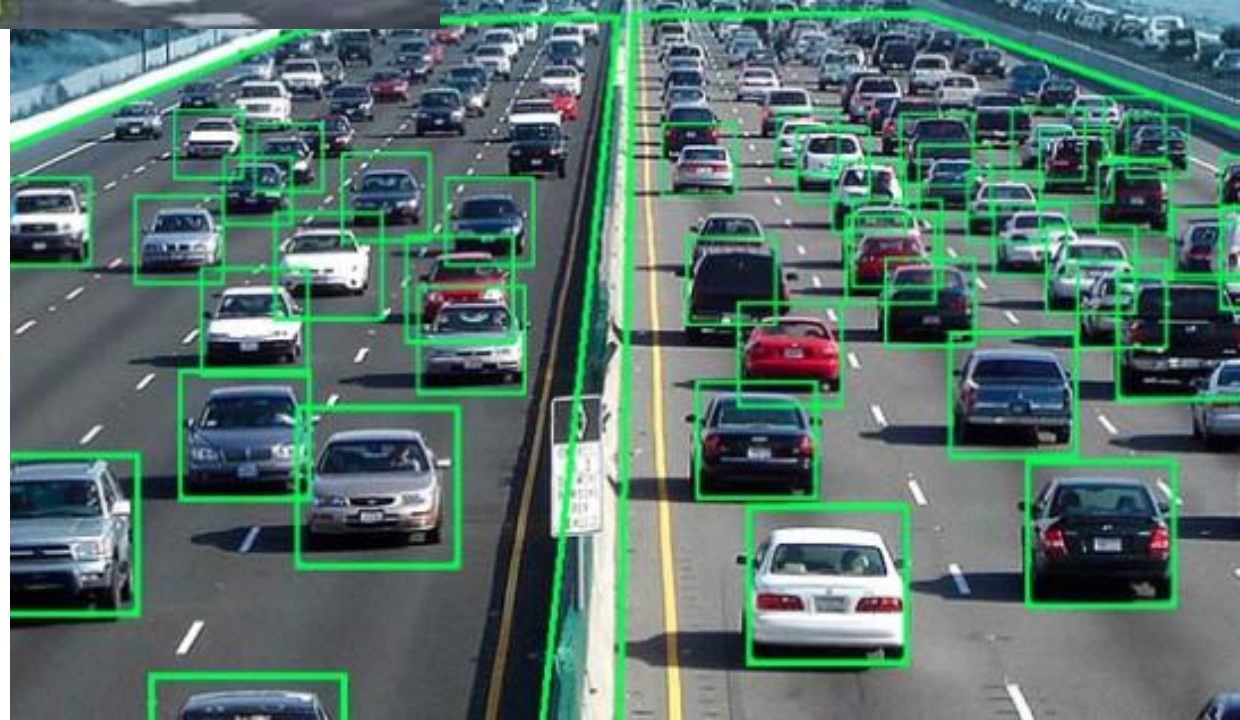
- Road design, through its elements such as template (width, full bench/side cast), curve widening and grade affect the potential for erosion.

# Road design Involves.

- Traffic Surveys
- Topographic Surveys
- Drainage Studies
- Soil Surveys
- Material Survey
- Pavement Evaluation Studies

# Traffic surveys

- Traffic surveys aim to capture data that accurately reflects the real-world traffic situation in the area.
- It may be counting the number of vehicles using a road or collecting journey time information for example, but there are many other types of data that traffic surveys collect.



# Topographical survey

A topographical survey, also known as a land survey or topographical land survey also known as contours.

Topographical land survey measures and identifies the exact location and specifications of natural and human made features within an area of land.





# Drainage Studies

- Road drainage consists of removing or controlling surface water and subsurface water away from the road surface and the subgrade supporting it.
- Part of the rain water flows on the ground or road surface, while the other part percolates into the ground and reaches the ground water table, raising its level.
- The subgrade soil above the ground water table may raise through the soil pores due to the phenomenon of capillarity.

# Soil Survey

- The systematic examination, description, classification, and mapping of soils in an area.
- Soil surveys are classified according to the kind and intensity of field examination.
- Various laboratory tests on soil are also being carried out.

## Soil Profiles of Detail Soil Survey



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer



Dark brown silty clay loam surface layer

# Material survey

- Materials such as road aggregates, bitumen, tar cement concrete, and any other required for the construction of the road.
- Hence material survey is also carried out in which its suitability, durability, availability has prime importance and various laboratory test on-road materials are also being carried out.





# Pavement Evaluation Studies

- Evaluation of pavement could be defined as the measure of structural adequacy of the pavement.
- Pavement performance depends on the number of standard axle, drainage condition of pavement, temperature, soil present in sub grade, rainfall etc.

- Class I :The highest standard streets of 4 or more lanes to serve inter-city or intra-city, high speed, through traffic with partial access control
- Class II :High standard streets of 2 or more lanes to serve inter-city or intra-city, high speed, through traffic with/without partial access control
- Class III :Intermediate standard streets of 2 or more lanes to serve inter-district, moderate speed, through or access traffic without access control
- Class IV :Low standard streets of 1 travel way to serve access to the road side land lots



# Design speed.

- The design speed of Type II shall be the value according to the class as follows.
- Class I : 60 km/h
- Class II : 60 or 50 km/h
- Class III : 40 or 30 km/h
- Class IV : 30 or 20 km/h

# Types of Road Equipments used in road construction

- The Crawler Tractor A construction vehicle that moves on tracks instead of wheels.
- The tracks spread the vehicle's weight over a larger surface area, enabling the tractor to exert a lower force per unit area on the ground.
- This allows the tractor to safely traverse over moister ground.
- A variety of attachments can be added to the crawler tractor there by maximizing its usability.
- When a dozer blade is attached to the front of the crawler tractor it is commonly known as a "bulldozer".
- With a loader attachment, it becomes a crawler loader.



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# The Hydraulic Excavator

- The hydraulic excavator is most commonly used for digging rocks and soil, but with its many attachments it can also be used for cutting steel.
- The hydraulic excavator breaking concrete, drilling holes in the earth, laying gravel onto the road prior to paving, crushing rocks, steel, and concrete, and even mowing landscapes.
- Hydraulic excavators have an operating weight of 20,000 pounds (9,072 kg) or higher.



# Motor Scraper

- Motor scrapers, also known as self-propelled scrapers, are large motorized machines used for digging, hauling and leveling out materials in a variety of construction jobs.
- Running on massive rubber tires, these machines quickly move large quantities of earth around a construction site.





# The Wheel Loader

- The wheel loader, also known as a front end loader or bucket loader, is one of the most widely used machines in construction today and is noted for its extreme versatility and payload capacity to perform multiple tasks at a low cost.
- Wheel loaders are primarily used in construction applications such as material handling, digging, load-and-carry, road building, and site preparation.
- Some models even come in waste handling versions. Top manufacturers of wheel loaders by rank include Caterpillar, Deere & Co., Komatsu, and Volvo.





# The Motor Grader

- A motor grader, known as patrol, or maintainer, is a piece of heavy machinery used to create a smooth, wide, flat surface.
- Traditionally, the grader is used for road maintenance its main function is to flatten surfaces before the application of asphalt.
- Presently, these machines are also commonly used for fine grading, spreading, and earthmoving.
- They can be used for clearing debris and brush, as well as for snow removal.
- A variety of attachments convert the motor grader into a more versatile machine, enabling the machine to do things such as dig shallow holes



# The Rollers

- Rollers are used to compact loose foundation, such as soil, gravel, asphalt, and bituminous materials and are primarily used for construction or agriculture applications.
- The rolling process ensures that foundations are compacted thoroughly so the materials are solid and do not come loose.



# The Compactors

- Compactors are machines frequently used to compact materials such as soil in order to increase its density for construction.
- In addition, compactors are utilized in landfill tasks.
- Common varieties are plate tampers (also known as rammers), vibratory plates, compactors (also known as tamping foot rollers), and vibratory pad foot compactors.





# Asphalt Road Paver

- A paver is an engineering vehicle used to lay asphalt on roadways.
- It is normally fed by a dump truck.
- A separate machine, a roller, is then used to press the hot asphalt mix, resulting a smooth, even surface.
- The sub-base being prepared by use of a grader to trim crushed stone to profile after rolling.





# Redesigning Junctions

- An intersection (also called road junction) is defined as the general area where two or more highways join or cross.
- Since an intersection involves conflicts between traffic in different directions, its scientific design can control accidents and delay and can lead to orderly movement of traffic.
- Intersections represent potentially dangerous locations from point of view of traffic safety.
- It is believed that well over half the fatal and serious road accidents in built-up areas occur at junctions.

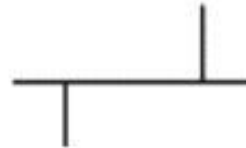
# Types of Junctions.



T-Junction



Y-Junction



Staggered  
Junction



Staggered and  
Skewed Junction



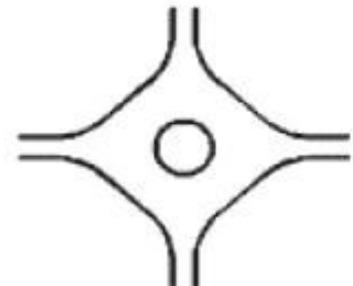
Cross Roads



Scissors  
Junction



Multileg  
Junction



Rotary intersection  
(Roundabout)

# Junction Redesign involves.

- Closure of medians at certain intersections.
- Prohibition of right turns.
- Providing adequate corner radii.
- Providing sufficient turning radii.
- Flaring approaches towards intersections.
- Providing channelizers / division islands.
- Providing signs / lane markings / lighting  
Pavement Markings and Signage
- It is recommended that proper signs be installed at appropriate locations.

# ***Alignment and vertical profile***

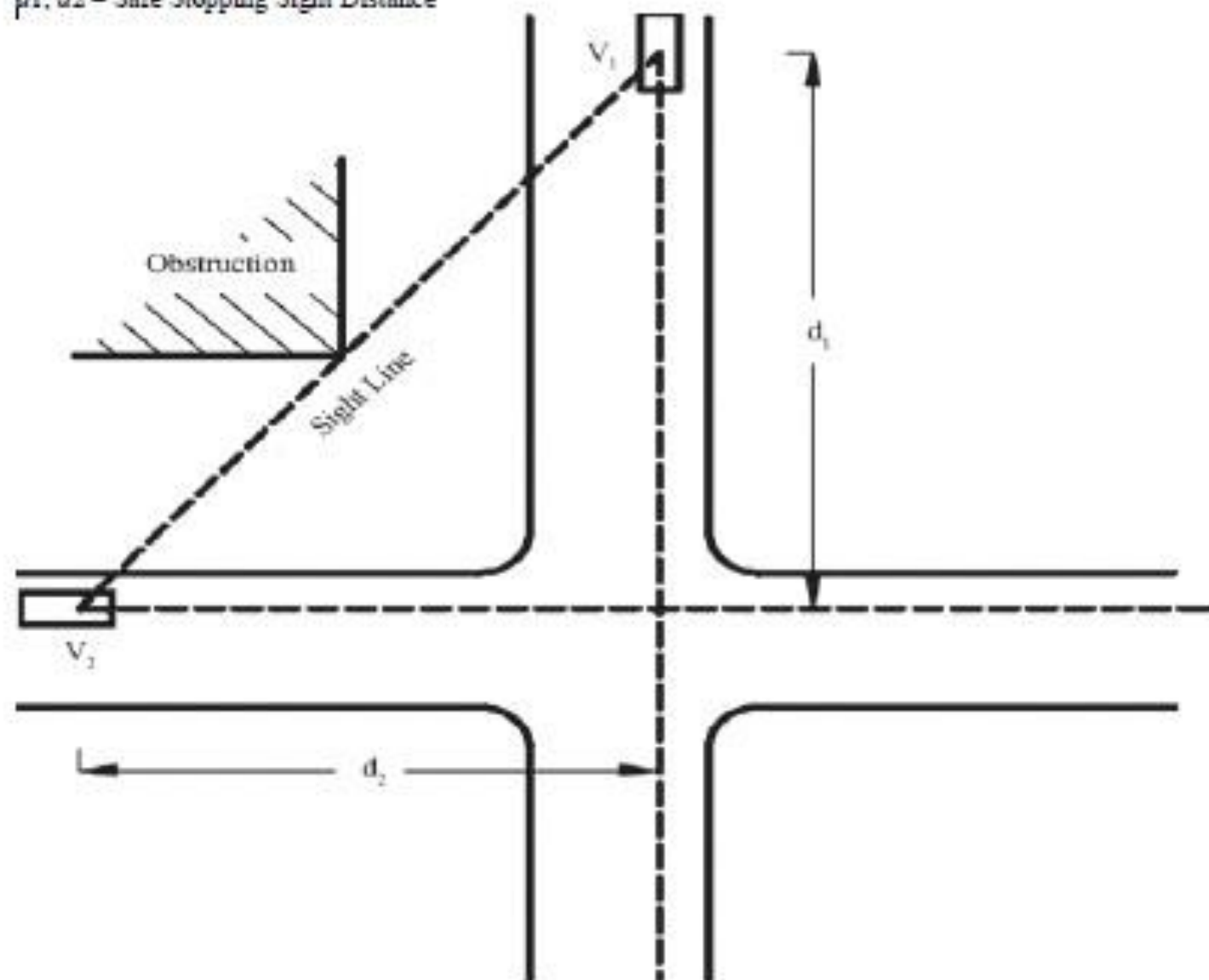
- In view of the conflict and hazard involved at intersections,
- This requires that the alignment be as straight and gradients as low as practicable.
- It is desirable that the intersection roads meet at or nearly at right angles. For this purpose, it may be necessary to modify the alignment of the roads.

# ***Visibility at Intersections***

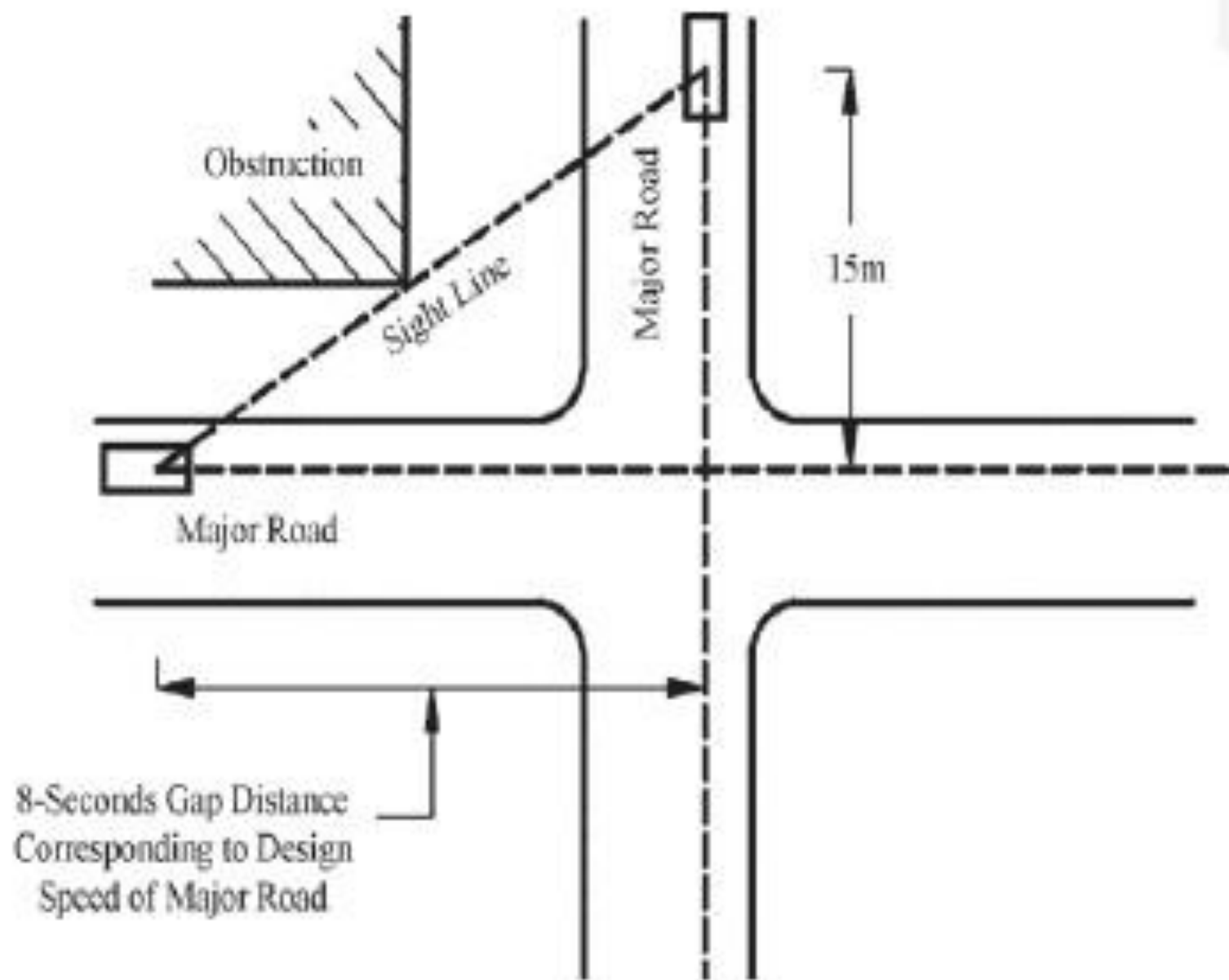
- The safety of traffic can be ensured only if the visibility is full and unimpeded along both roads.
- Any obstructions should be clear of the minimum visibility triangle for a height of 1.2 metres above the roadway.

- On intersections involving a major road and a minor road, it is customary to control traffic on the minor road by STOP or GIVE WAY sign or road markings.
- Such intersections are known as priority intersections
- On priority intersections, the visibility provided should be such that drivers approaching from the minor road are able to see the vehicles on the major road in good time and judge whether the required gap is available in the main road traffic stream for a safe crossing.
- For this purpose current Indian practice is to specify a visibility distance of 15 metres along the minor road

$V_1, V_2$  - Design Speed of Road  
 $d_1, d_2$  - Safe Stopping Sight Distance







# *Channelization of Islands*

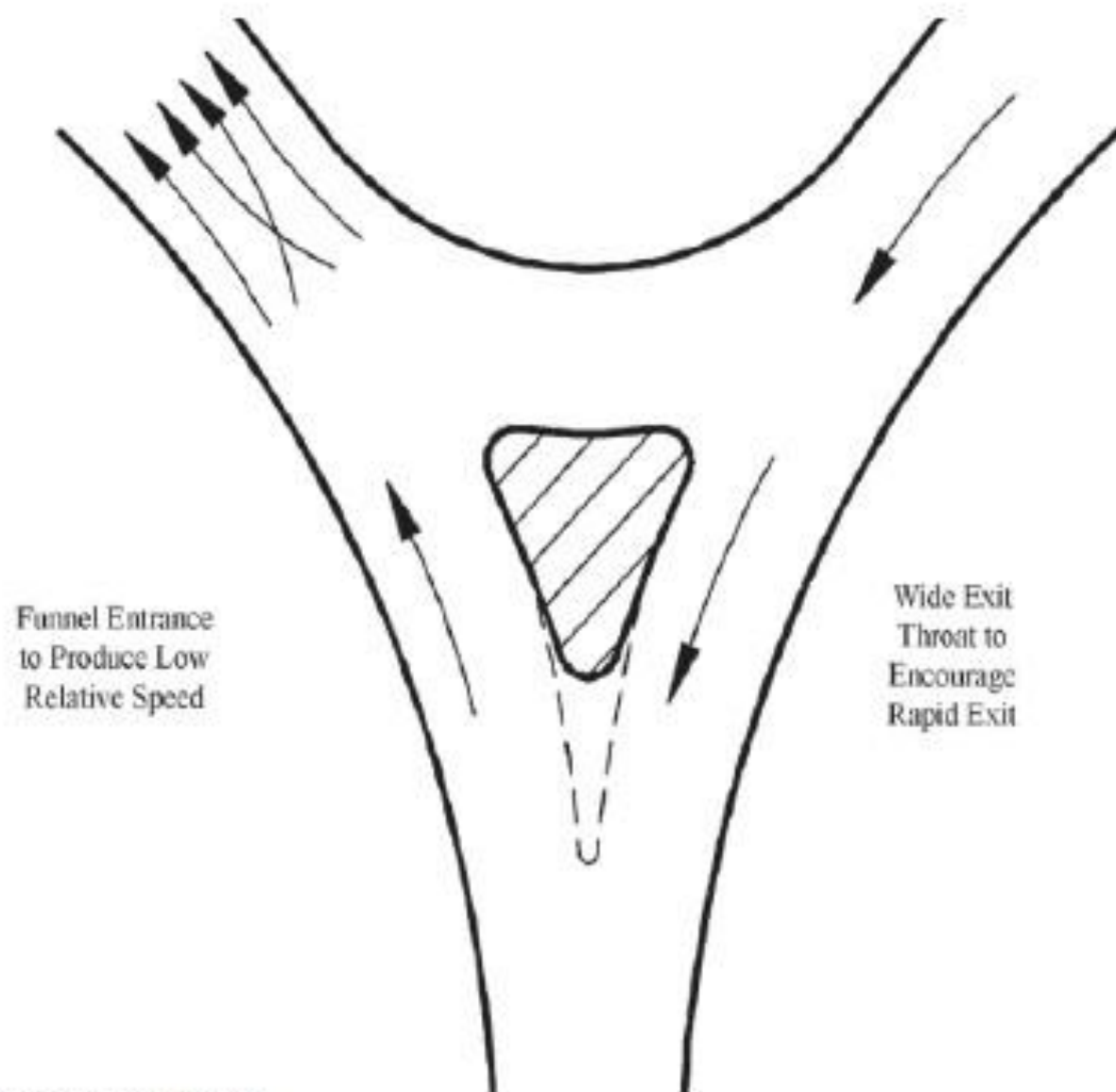
## **(i) Separation of Conflicts:**

- To diminish the number of possible vehicle conflicts, to reduce the possible
- area of conflicts in the carriageway and to present drivers with only one decision at a time.

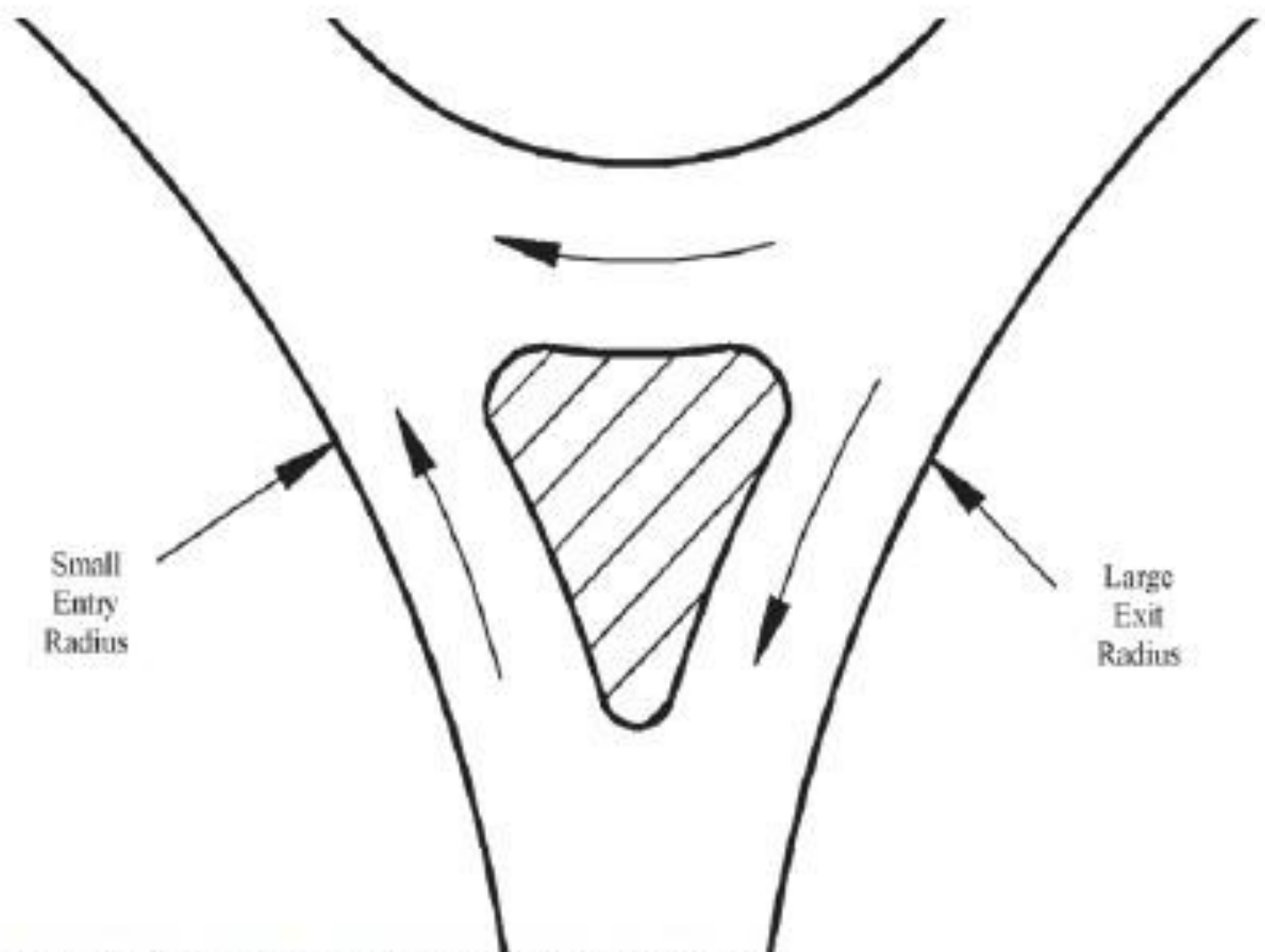
## **(ii) Control of Angle of Conflict:** Small angles of crossing cause severe accidents if they occur.

- Severity is reduced if the angle of conflict is controlled.

## **(iii) Control Speed:** To reduce the speed of traffic entering the intersection and increase the speed of traffic leaving the intersection, bending or funnelling by suitable channelization techniques is resorted.



*Fig. 7.32: Channelizing island*



*Fig. 7.33: Control of Radius of Entry and Exit for Control of Speed*



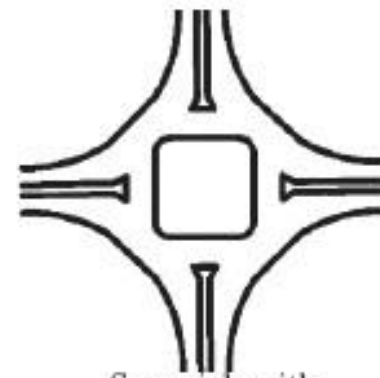


# Rotary intersections

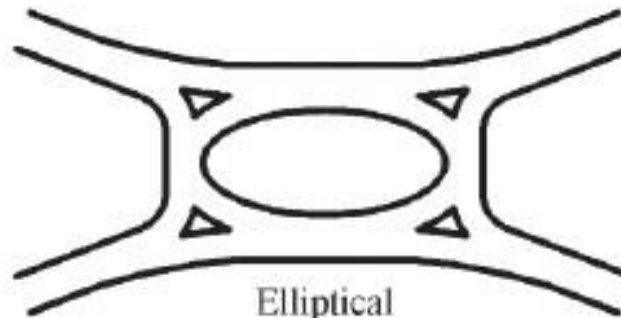
- A rotary intersection is a specialized form of at grade intersection laid out for movement of traffic in one direction round a central island.
- The vehicles from the converging areas are forced to move around the central island in a clockwise direction (in countries like India where the left-side rule of traffic prevails) in an orderly manner and weave out of the rotary movement into their desired directions.



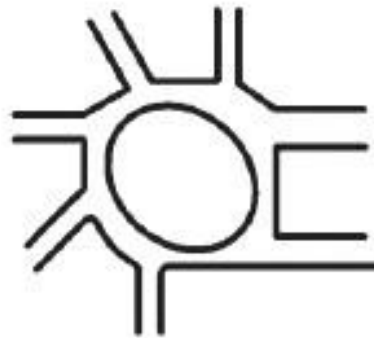
Circular



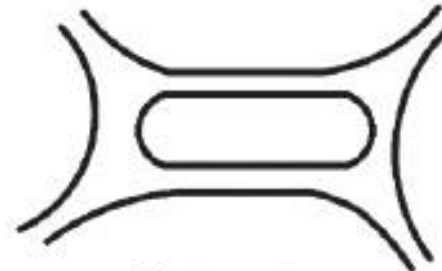
Squarish with  
Rounded Edges



Elliptical



Irregular



Rectangular  
with Rounded Edges

Fig. 7.63: Shape of Rotary Island



# Advantages of Rotary Intersection

- An orderly and regimented traffic flow is provided by rotary one-way movement.
- Individual traffic movements are subordinated in favour of traffic as a whole.
- Normally, all traffic proceeds simultaneously and continuously at fairly uniform, though low speed.
- Frequent stopping and starting are avoided.
- Weaving movements replace the usual angular crossing of typical at-grade intersections.
- Direct conflict is eliminated, all traffic streams merging or leaving at small angles.
- Accidents that occur from such movement are of minor nature, usually involving property damage only.
- All turns can be made with ease, although little extra travel distance is required for all movement except left turns.
- A rotary is specially suited for intersections with five or more intersection legs, and/or where there are heavy right-turning movements.
- For moderate traffic, rotaries are self-governing and need no control by police or traffic signals.

# Disadvantages of Rotary intersection.

- As the flow increases and reaches the capacity, weaving generally gives way to a stop and go motion as vehicles force their way into the rotary, being followed by vehicle waiting in the queue behind them.
- Under such conditions, vehicles, once having got into the rotary, may not be able to get out of it, because of vehicles across their path and the rotary may lock up.
- Once the rotary has locked up, the movement of the vehicles completely stops and the traffic will have to be ultimately sorted out by the police.
- *A rotary can accommodate no more traffic than a properly designed channelised layout.*
- *In some cases, rotaries have been eliminated and replaced by channelized intersection resulting in better operations.*
- *A rotary requires more land and may not be feasible in many built-up locations.*

- Because of the large and relatively flat land area required, topographic conditions in some localities may make it impracticable to develop rotary intersections.
- Where pedestrian traffic is large, a rotary by itself is not sufficient to control traffic and has to be supplemented by traffic police.
- When used on high speed roads, rotaries require extremely large size.
- Where the angle of intersection between two roads is too acute, it becomes difficult to provide adequate weaving length.
- When provided at close intervals they make travel troublesome.
- Traffic turning right has to travel a little extra distance.
- A rotary requires many warning and directional signs for safety. The central island and entrances and exits must be well lighted at night. These tend to make it costly.
- The rotary is not readily adaptable to stage development. Attempts at stage development generally result in some over-design when viewed from immediate traffic needs.

# Cross Section Improvements

- AASHTO defines the roadway's traveled way as *“the portion of the roadway for the movement of vehicles, exclusive of shoulders and bicycle lanes”*. This area usually contains two or more lanes for roadway traffic.

# Reconstruction and Rehabilitation of Roads

- Four characteristics of pavement condition used in evaluating pavement rehabilitation needs are:
  - (1) pavement roughness (Rideability)
  - (2) pavement distress (surface condition),
  - (3) pavement deflection (structural failure), and
  - (4) skid resistance (safety).
- A variety of methods can be used to **rehabilitate pavements or to correct deficiencies** in a given pavement section

# PAVEMENT MAINTENANCE AND REHABILITATION

## MAINTENANCE

### SURFACE

#### PREVENTIVE

- FOG SEAL - ASPHALT
- REJUVENATORS
- JOINT SEALING
- SEAL COAT  
(WITH AGGREGATE)
- "THIN" BLANKET

#### CORRECTIVE

- PATCHING
- CRACK FILLING
- JOINT SEALING
- SEAL COAT  
(WITH AGGREGATE)
- FRICTION COURSE
- GROOVING
- "THIN" BLANKET
- SURFACE RECYCLING
- COLD PLANING
- DRAINAGE

### SUBSURFACE

#### PREVENTIVE

- DRAINAGE

#### CORRECTIVE

- SUBSEALING
- IN-SITU  
STABILIZATION  
MUDJACKING  
GROUTING  
INJECTION
- DRAINAGE

## (STRUCTURAL) REHABILITATION

### RECONSTRUCTION

### OVERLAYS

- ASPHALT CONCRETE  
(BOTH DENSE AND  
OPEN-GRADED)
- PORTLAND CEMENT  
CONCRETE

#### *NOTE:*

- INCLUDES USE OF :
- 1) UNTREATED  
AGGREGATE LAYERS
  - 2) FABRICS
  - 3) MEMBRANE  
INTERLAYERS

### RECYCLING

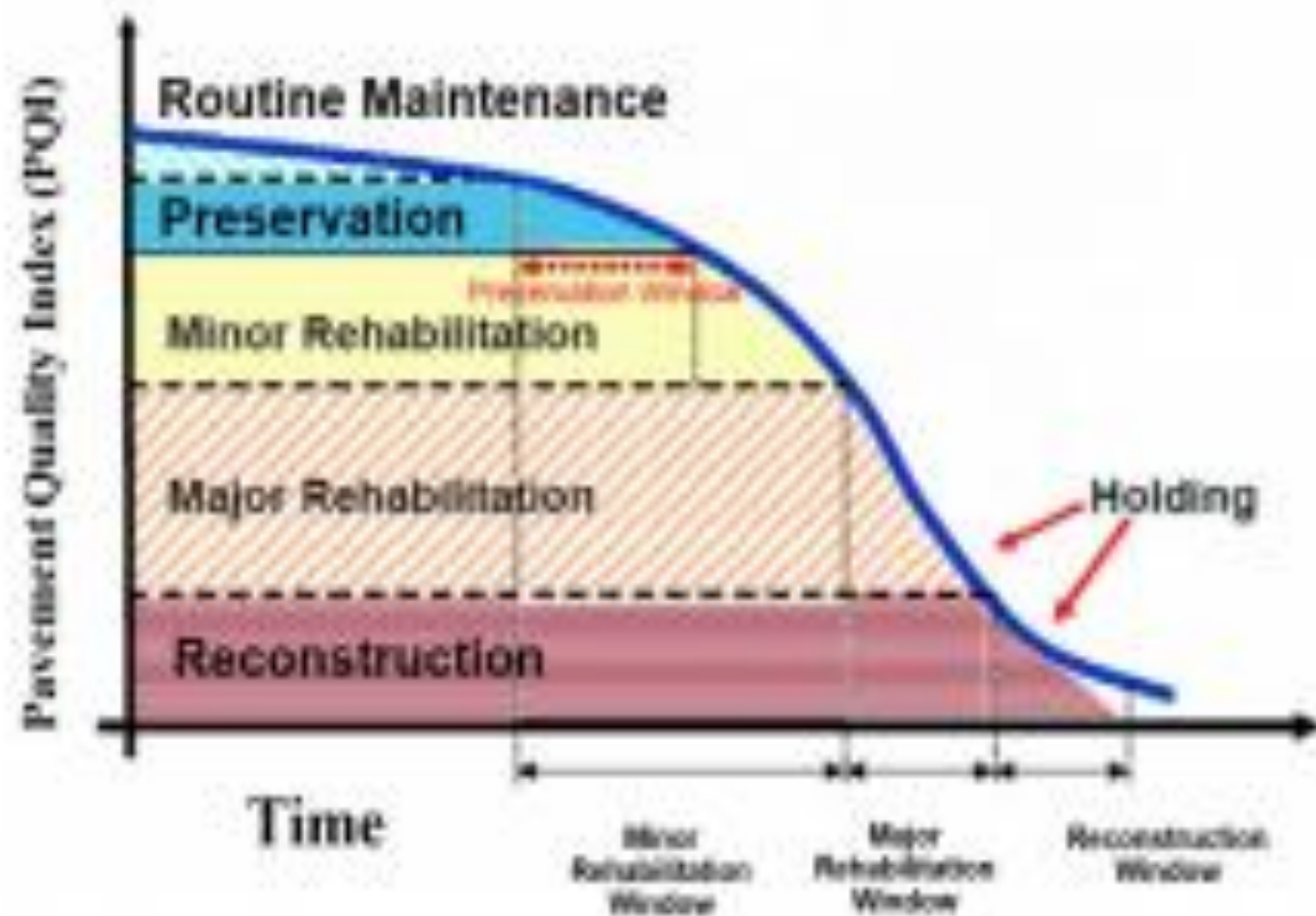
- IN-PLACE RECYCLING  
WITH OR WITHOUT  
ADMIXTURES
- CENTRAL-PLANT  
RECYCLING WITH  
OR WITHOUT  
ADMIXTURES

### COMBINATION OF RECYCLING AND OVERLAYS

- SURFACE RECYCLING  
WITH OVERLAYS

- The road maintenance phase takes place immediately after the project completion and spans towards the end of the project life-cycle
- **Maintenance and Rehabilitation (M&R) methods are presented under three categories:**
- **localized,**
- **global, and**
- **major.**

Localized M&R includes patching and crack sealing; global M&R includes applying fog seals and slurry seals; and major M&R includes overlays and recycling.





# Road Maintenance

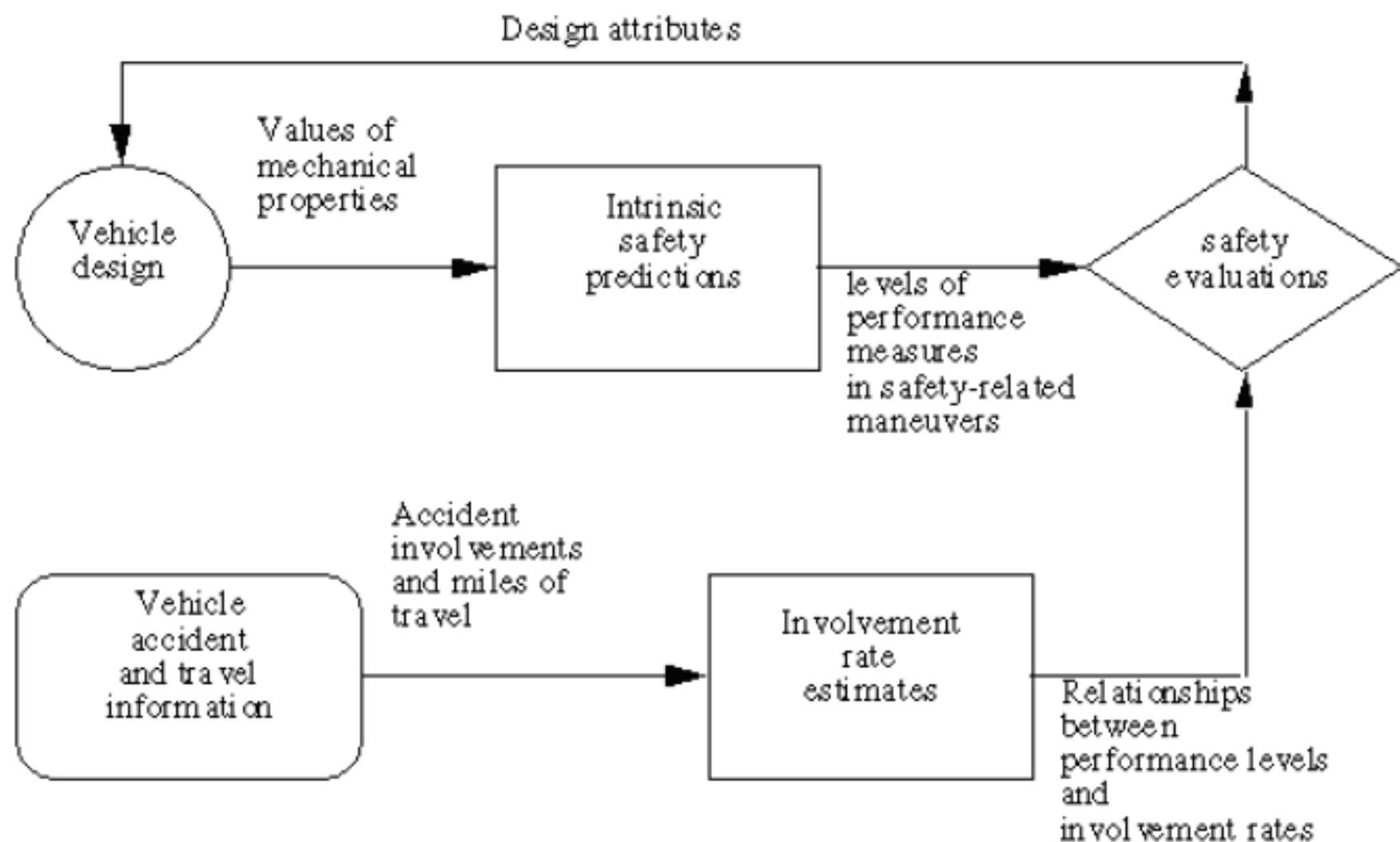
- It is necessary to undertake regular routine and periodic maintenance of roads and bridges as also traffic control devices as this also helps in enhancing road safety apart from smooth travel and reduced vehicle operating costs for road users.
- It is essential to attend to road damage before it becomes a safety hazard e.g. pot-hole repairs, heavy patch work, repair of expansion joints on bridge decks.
- Cleaning of bushes and trimming of tree branches to enhance visibility and ensure sight line need regular attention.

- Upkeep of traffic control devices – traffic signs, pavement markings, guardrails, parapets, crash barriers, crash cushions.
- Cleaning and clearing of side drains and maintaining camber on the pavement. Similarly, shoulders should be kept in good shape and special care taken to attend to edge break between the pavement and shoulders/berms.
- At causeways, there is need to ensure that depth gauges are installed.
- In hill areas, debris from rock fall and landslides need to be removed without delay.

# Vehicle Design and Protective Devices

## Braking System

- The quality of the overall braking system as an **accident-avoidance mechanism** depends upon the **ability to stop quickly** in a stable and controllable manner
- Truck stability and control during braking depend upon avoiding **wheel locking**. If the front wheels lock, the vehicle will not be responsive to steering. If the tractor rear wheels lock, a tractor-semitrailer may **jackknife**. If trailer wheels lock, a trailer swing may occur.
- All of these conditions are undesirable and each of them could lead to an accident. Each of them represents a situation in which the braking force demand at some axle set exceeds the amount of force capability available from the load on the axle set and the prevailing friction level of the tire/road interface.



- Safe Vehicles are the need of the hour as it mostly deals with In-vehicle technology that can save many precious lives on the roads and avert fatalities.

### **Various In-vehicle technologies are:**

- **Cruise Control**
- **Anti-Collision Devices**
- **Anti-Braking Systems (ABS)**
- **Electronic brake-force distribution (EBD)**
- **Electronic Stability Control (ESC)**
- **Car Breathalyzer**

# Various In-vehicle technologies are:

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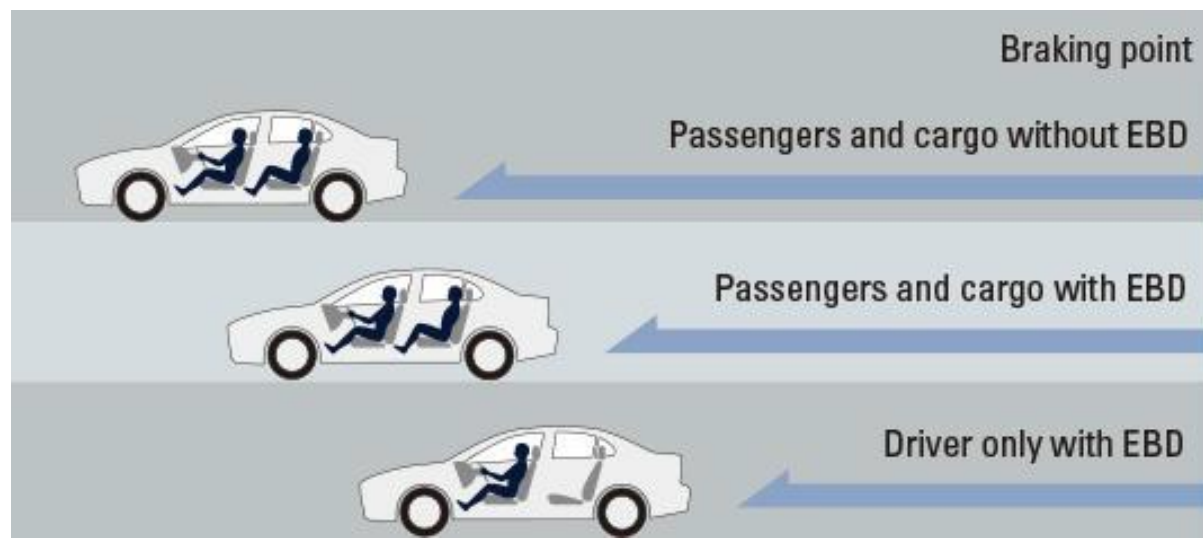
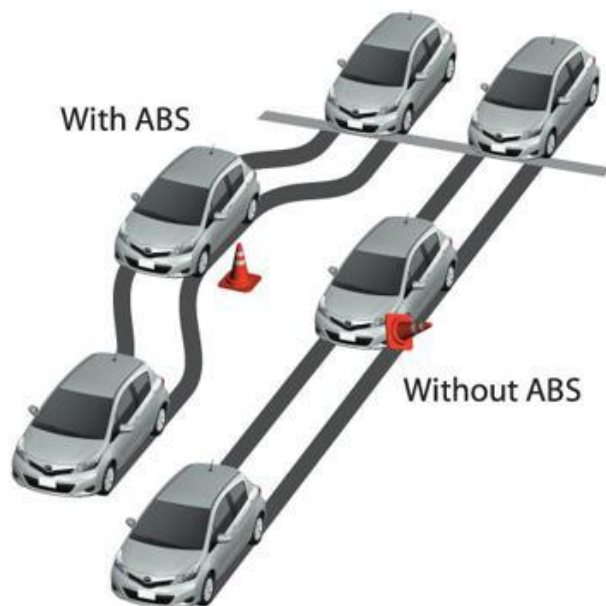
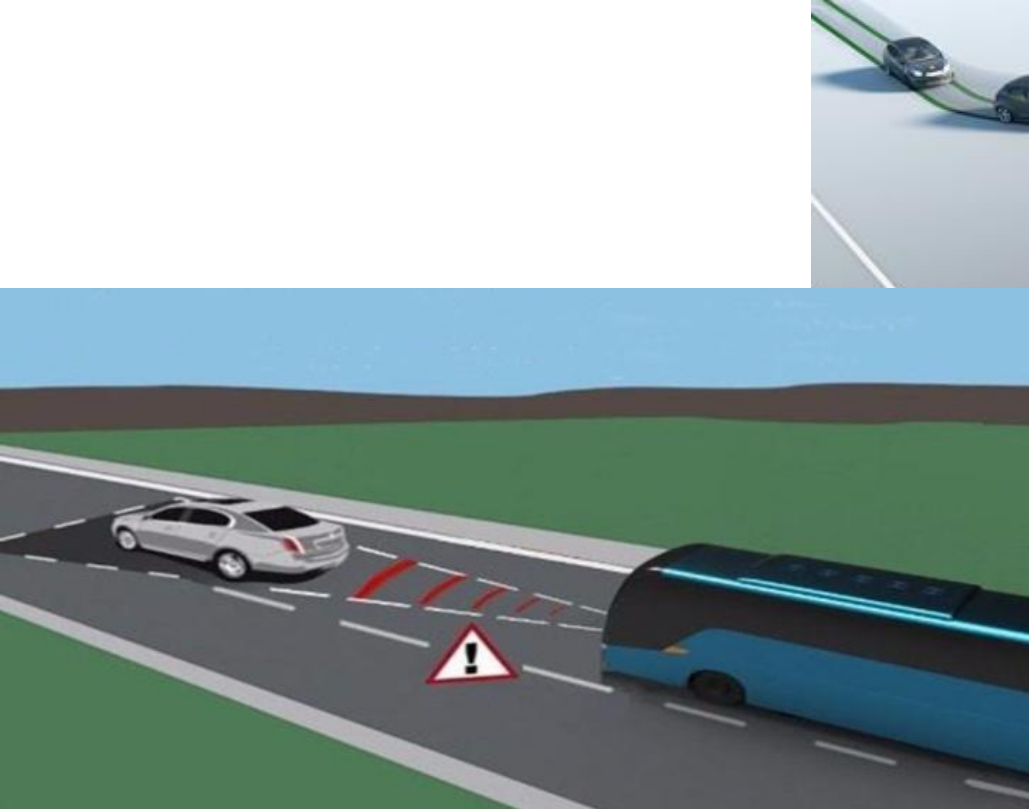
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# Post Accident Care

- Delays in detecting and providing care for those involved in a road traffic crash increase the severity of injuries.
- Care of injuries after a crash has occurred is extremely time-sensitive: delays of minutes can make the difference between life and death
- **ONE OF THE FIVE PILLARS OF ROAD SAFETY**
- This pillar of road safety aims to increase responsiveness to post-crash emergencies and improve the ability of health care systems to provide appropriate emergency treatment and longer term rehabilitation for crash victims.
- In India, trauma care systems are yet to develop fully across the country and are more of an urban phenomenon; now spreading to districts. In contrast, trauma care systems in HICs are driven by centralized and coordinated systems that focus on quality and timely access to trauma victims.



# Post Accident Care

- Trauma care in India needs to be responsive and inclusive and should be focusing on different levels of health care system along with engagement of private sector to provide timely care as well as to reduce costs.
- The objective of post crash care is to evaluate capabilities and practices of emergency services to road crash victims on highways and urban roads, including: on-site management; transport of victims to health facilities; emergency and trauma care services for the injured; coordination and financing of stakeholders involved in post crash services. Post crash management is a long-term effort.
- It needs to consider on-site care, transport of the injured to receive appropriate medical facilities, and the trauma care of the injured.
- Emergency communication systems, equipment and training for accident on-site care, and an ambulance service along priority roads are some of the first steps to be taken. The role of hospitals and health department is of paramount importance.

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