

**Some of the Road**  
**Improvement Measures in**  
**Bangalore – way forward**

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# **Improvement Measures to be Implemented on Top Priority**

- ⦿ **pedestrian facilities**
- ⦿ **road user discipline**
- ⦿ **education & enforcement measures**
- ⦿ **junction improvements**

# **1. Pedestrian Facilities to be Up-graded**

## **Side walks / foot-paths on all main roads**

- ⦿ user friendly surface
- ⦿ safe cross slope and gradient (no steps)
- ⦿ adequate width

# Safe pedestrian crossings at-grade

- ⦿ at mid blocks (with pedestrian actuated signals)
- ⦿ at uncontrolled intersections
- ⦿ at signalised intersections
- ⦿ at all bus stops

# Grade separated pedestrian crossings

- ⦿ along high traffic density corridors
- ⦿ recent initiatives with escalators
- ⦿ sky-walks

# Benefits of improving pedestrian facilities

- ⦿ pedestrian safety
- ⦿ increase in walk mode for short trips
- ⦿ increase in carriageway space for vehicular traffic
- ⦿ pedestrian crossings at identified locations only
- ⦿ increase in travel speed of vehicles

## 2. Road User Discipline - Pavement markings

- ⦿ lane marking
- ⦿ marking for turning movements
- ⦿ stop line and 'Stop' sign / 'Yield' sign at intersections with major roads
- ⦿ marking turning movements at intersections

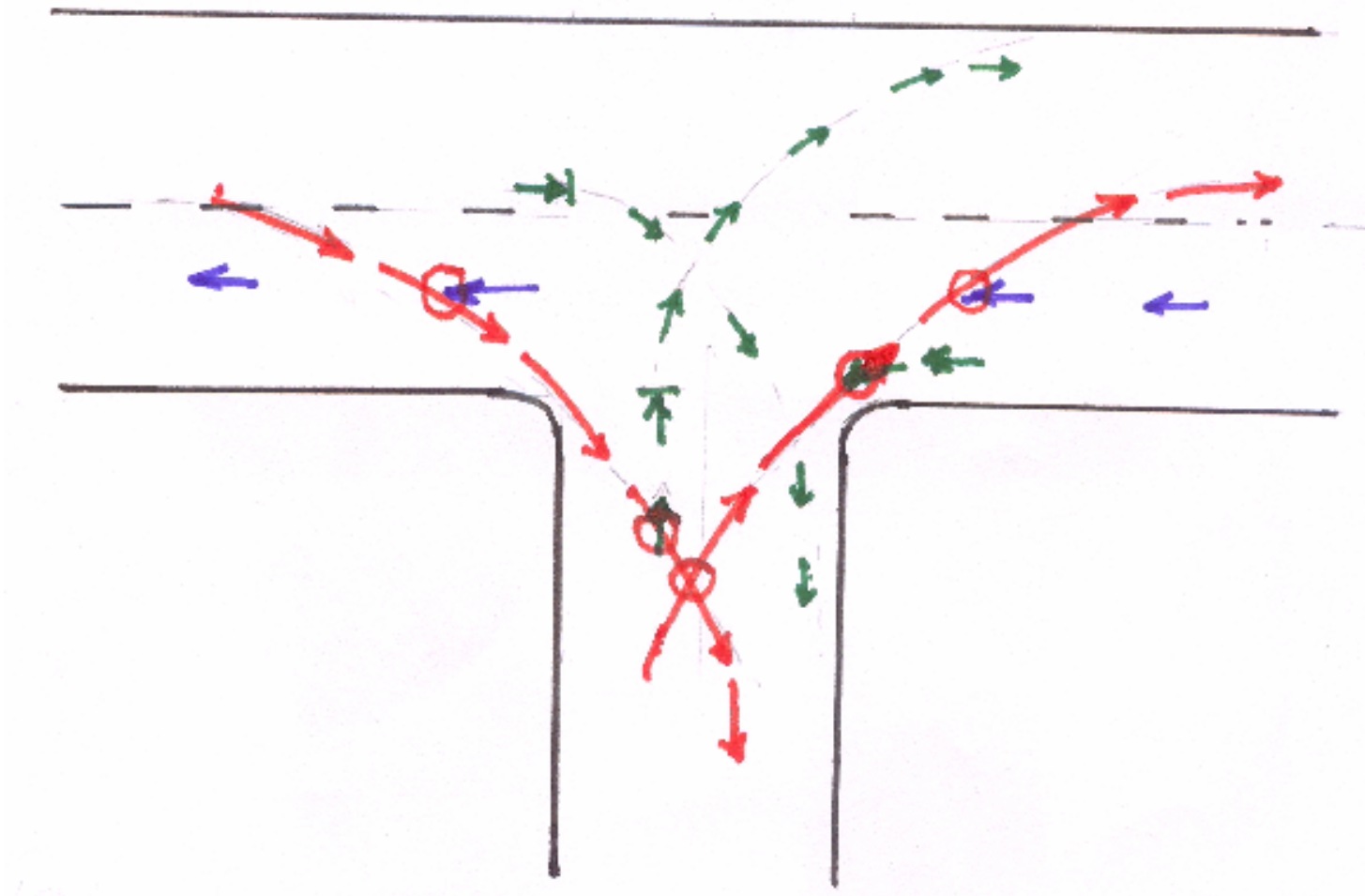
## ***Lane discipline***

- ⦿ overtaking from right only
- ⦿ lane changes only with advance indication
- ⦿ right lane reserved as fast lane (on arterial roads)
- ⦿ prohibition of HCV, LCV & AR getting to fast lane

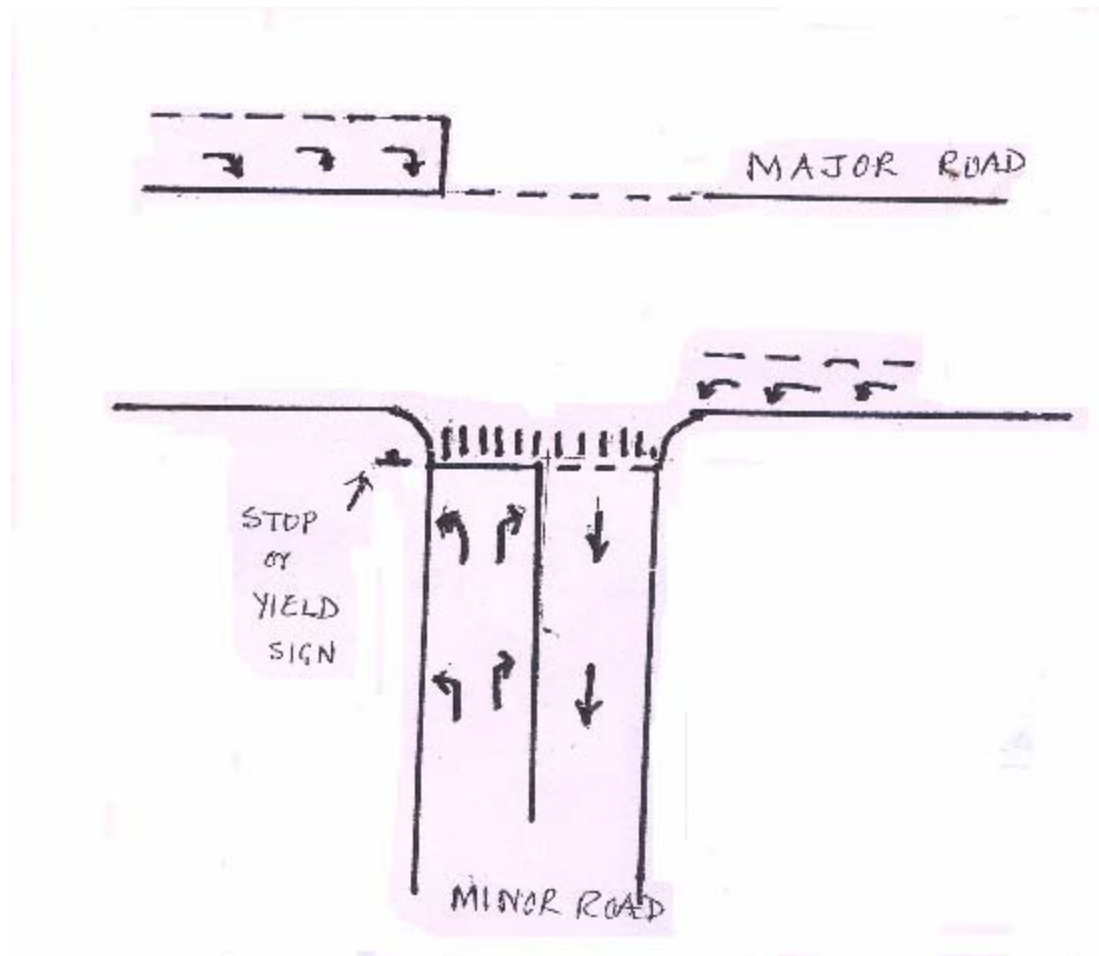


## **Stop and Go at Uncontrolled Intersections**

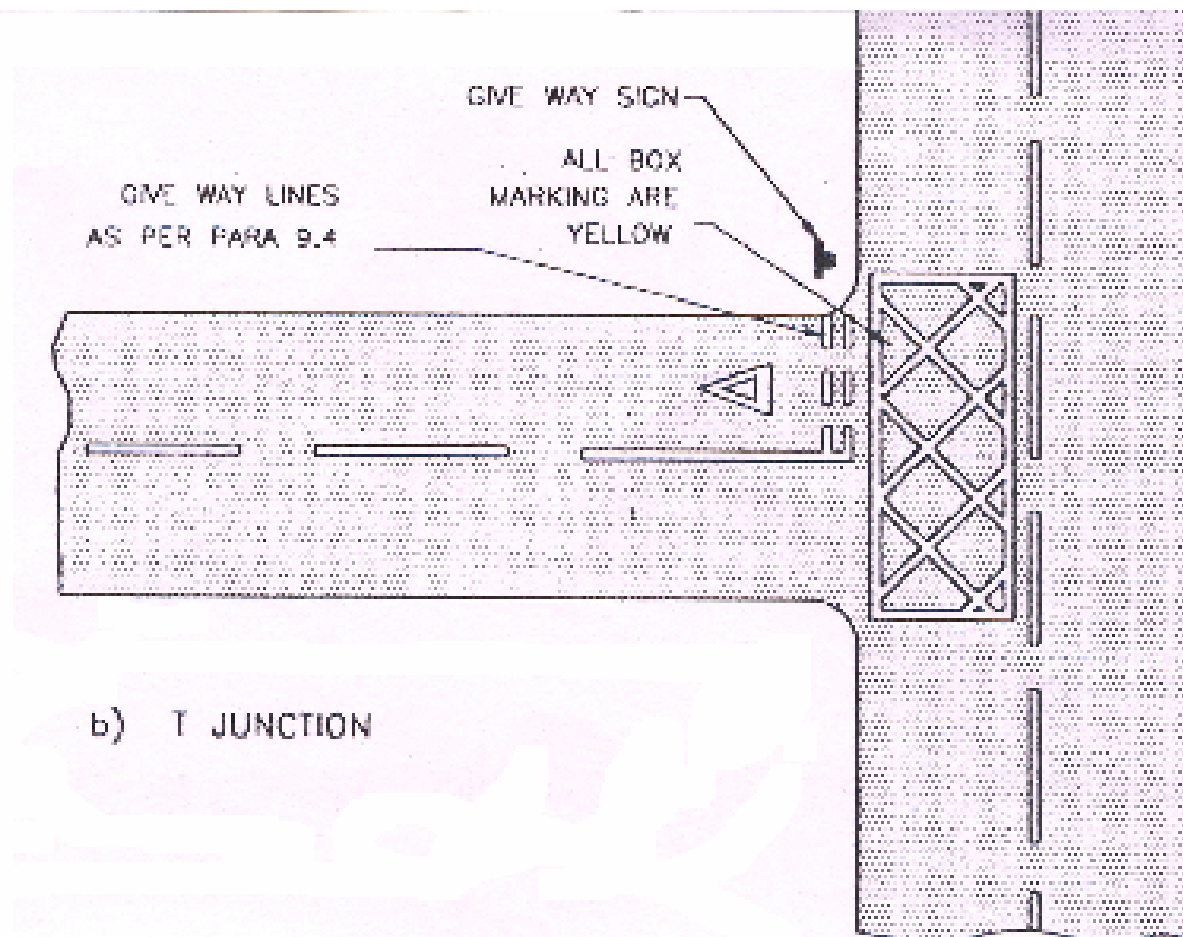
- ⦿ stop and go at uncontrolled intersections (on stop lines / signs)
- ⦿ wait for gap while entering even from left
- ⦿ yield for traffic flow from right
- ⦿ turning movements at intersections



**Turning Movement at Uncontrolled Intersections - Wrong Practice**



**Pavement Marking at Uncontrolled Intersections**



Typical Box Junction (Keep Clear) Markings (Ref. Para 9.12.1)

## Box Marking at Junction

# Road User Discipline – How ?

## *Education Drives*

- ⦿ Stage (1) Education Drives – through media
- ⦿ Stage (2) Education drives on road – through voluntary organisations
- ⦿ Stage (3) Issue of warning slips – through voluntary organisations

## Road User Discipline – How ? Enforcement Drives

- ⦿ Stage (1) Enforcement – penalty notice by post & cash fines
- ⦿ Stage (2) Enforcement - penalty notice based on video coverage
- ⦿ Stage (3) Nominal Point Fine
- ⦿ Stage (4) Point Fine as per published scale

## 3. Junction Improvements

### *Uncontrolled intersections*

- ⦿ widening and introduction of channelising islands
- ⦿ widening for 15 to 20 m length and introduction of free left turn lanes with physical separators
- ⦿ If widening is not possible, pavement marking (Fig, 11 & 12)

## ***Signalised intersections***

- ⦿ At fixed time signals, to introduce three to four different signal settings with appropriate cycle and phases for different timings of the day depending on variations in traffic flow
- ⦿ Automatic change over of signal settings

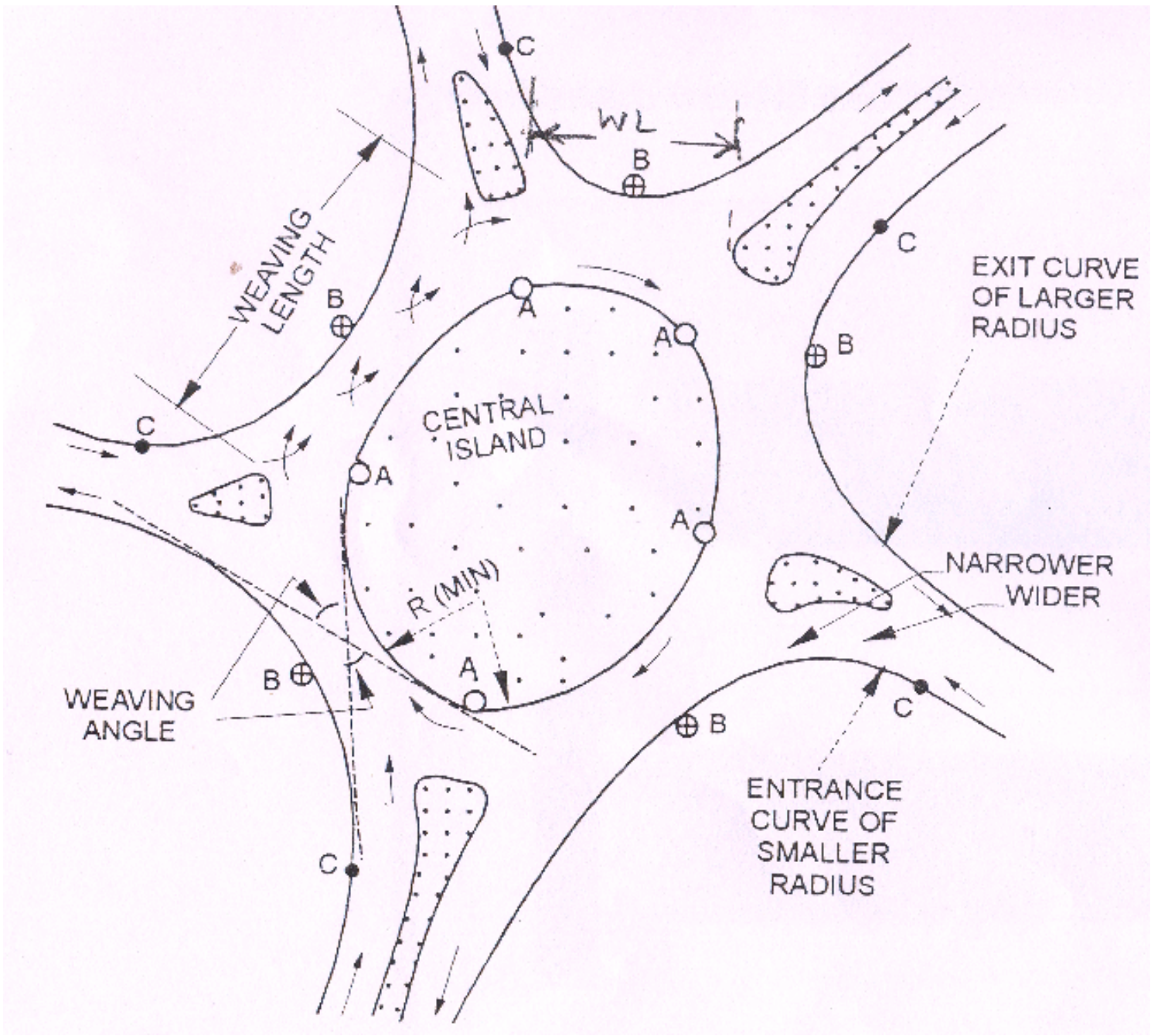


## ***Simple Progressive Signal System***

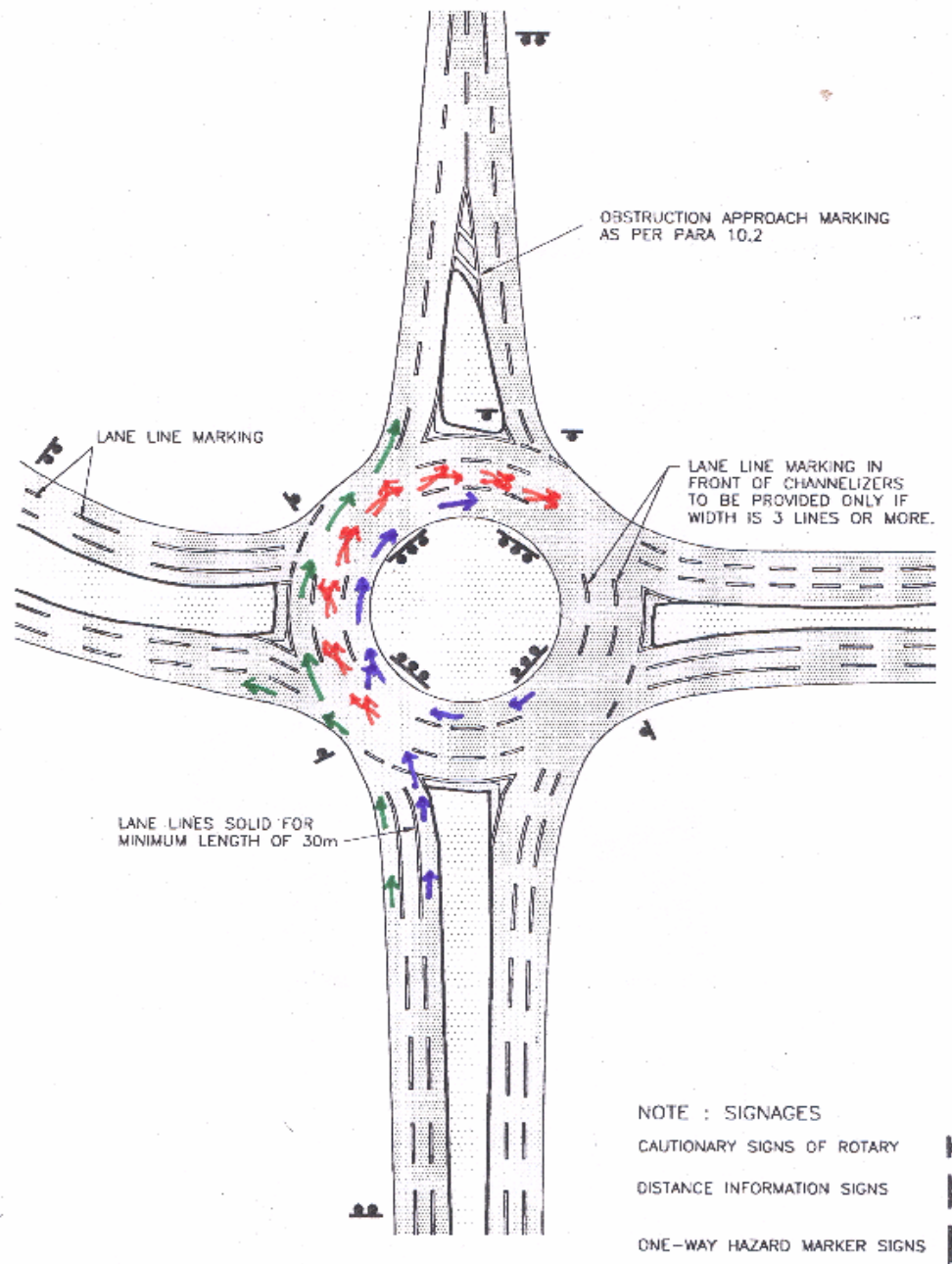
- ⦿ on one-way roads and divided roads
- ⦿ to group three to five adjacent signals and to be synchronised (time setting) for desired speed of 30 to 40 kmph during peak and off-peak hours
- ⦿ to install information boards informing the speed of synchronisation

# Inadequate Capacity of signalised Intersections and failures

- ⦿ widen the approaches by additional one or two lanes on each leg for adequate length
- ⦿ provide separate turning lanes with markings
- ⦿ reduction in queue length
- ⦿ reduction in signal cycle time
- ⦿ increase in capacity
- ⦿ helps for up-grading to grade separated intersection at a later date



**Rotary Intersection**



## Rotary Intersection

# Is changing over of a Signalised intersection to Rotary intersection a solution ?

- ⦿ principle and functioning of traffic rotary
- ⦿ capacity
- ⦿ advantages
- ⦿ limitations / failure