TRAFFIC CONTROL DEVICES
Road Markings

Dr. A. Mohan Rao
Principal Scientist, Traffic Engineering and Road Safety Division
CSIR - Central Road Research Institute, Mathura Road
New Delhi - 110 025
E-mail: amrao.crri@nic.in
ROAD MARKINGS ( IRC 35)
Introduction

What is Road markings?

- Road markings are lines, patterns, words which are applied or attached to the carriageway
- Road markings normally include longitudinal markings, transverse markings, text and symbols etc. on the road surfaces.

Why we need Road markings?

- For guiding and controlling traffic on a highway and serve as a psychological barrier
- Channelize the pedestrians and cyclists movement into safe location
Colour Pattern for Markings

White

Because of the visibility and good contrast against the road surface, the white colour should be widely used for road markings.

Yellow

Longitudinal marking where to convey the message that “it is not permitted to cross the markings”. It also used to show parking restrictions and to impose other traffic control.

Blue

Indicate new and special markings which are not conventional. Blue is the colour of public transportation including three wheelers, scooter and rickshaws.

Green

Distinguish the bicycle and non-motorised transport facilities provided on the road. Green colour background should be marked at the intersection to give priority to the cyclists and pedestrians in crossing the road.
Where multiple road users are sharing the road space on hazardous locations, the red colour marking is primarily used to help people understand the danger.

Red marking is highly recommended on hazardous intersections and also at places where pedestrians traffic conflict with the motorized traffic.
Classifications of Road Markings

Pavement Markings are broadly classified into following seven categories based on the placement of markings:

1. **Longitudinal Marking (LM)**
2. **Transverse Marking (TM)**
3. **Hazard Marking (HM)**
4. **Block Marking (BM)**
5. **Arrow Marking (AM)**
6. **Directional Marking (OM)**
7. **Facility Marking (FM)**
No Overtaking Central Line
Longitudinal Marking for Undivided Roads

• Longitudinal marking at mid-block section of single/intermediate lane roads, where the carriageway is less than 5.5 m.

• Longitudinal marking at mid-block section for two lane roads, where the carriageway is 5.5 m to 7 m without any paved shoulder.
Four Lane Divided Road (One Carriageway Width more than 7.3 m)

• For 7.3 m road width the traffic lane line marking is made continuous where stopping sight distance is not available at vertical and horizontal curves, but shall be applied for short sections to avoid provocations by restricting no-overtaking in a one-directional multi-lane carriageway.
ROAD STUDS

Road studs are used (in series) across the carriageway to serve as Speed Arrestor coupled with eschewing warning through the creation of the rumbling sensation to the user.

Colour for Road Studs:

- **White** - To indicate traffic lane line and centre of carriageway.
- **Red** - Mainly to delineate left hand edge of the running carriageway
- **Yellow** - Aim to delineate the right hand edge of the running carriageway (multilane divided carriageways).
- **Green** - Green road studs are to be employed to indicate crossable edge line.
Road studs for Bi-Directional Road
Road Studs For Divided Carriageway – Colour matter and lateral placement
Road Studs for Diagonal & Chevron Markings

Bi-directional Road Studs,
Red Colour at 2m/4m/6m,
i.e. Spacing same as the spacing of diagonals marking

Diagonal Marking

Uni-directional Road Studs,
Red Colour at 2m/4m/6m,
i.e. Spacing same as the spacing of Chevron marking

Chevron Marking (Merging)

Uni-directional Road Studs,
Red Colour at 2m/4m/6m,
i.e. Spacing same as the spacing of Chevron marking

Chevron Marking (Diverging)
STOP AND GIVEWAY MARKINGS
Lane Change Markings and Nose Length in Multilane Highways

Deceleration Length (As per Design)

Exit Nose Length

Continuity Marking (LM21/LM22)

Lane Change Marking (LM28)
(Not allowing slip lane positioned traffic to switch over to through lane, however allowing through lane traffic to switch over to slip lane)

SLIP ROAD

Continuity Marking (LM21/LM22)

Lane Change Marking (LM29)
(Not allowing through lane traffic to switch over to slip lane; however allowing slip lane traffic to switch over to through lane)

Entry Nose Length

Taper/Nose Length = Taper Rate x Lateral Deflection
Marking for Road Hump
NOTE:
- In an Un-Signalised crossing, pedestrian crossing marking shall be around 2 to 3 m from stop line.
- In a Signalised crossing, pedestrian Marking around 1 to 1.5 m in advance of a primary signal.

Pedestrian Crossing
ZIG-ZAG Marking HM23/HM24 along with DM10

Read Section where parking has been restricted.

Kerb Painting also in yellow colour to establish the extent of restriction

Restriction Sign at 50m interval

DM10

No Parking
Markings for Objects adjacent to Carriageway

All objects located within 2.4 m from shoulder/kerb shall be painted
Warning Centre Line
Non-Overtaking Centre Line
Double Centre Line
TRAFFIC SIGNALS
Amount of Light Required to See During Hours of Darkness Doubles Every 13 Years

- Age 20: 100%
- Age 33: 200%
- Age 46: 400%
- Age 59: 800%
Normal Vision
Cataracts
Central Loss
Thank you!