



KERALA

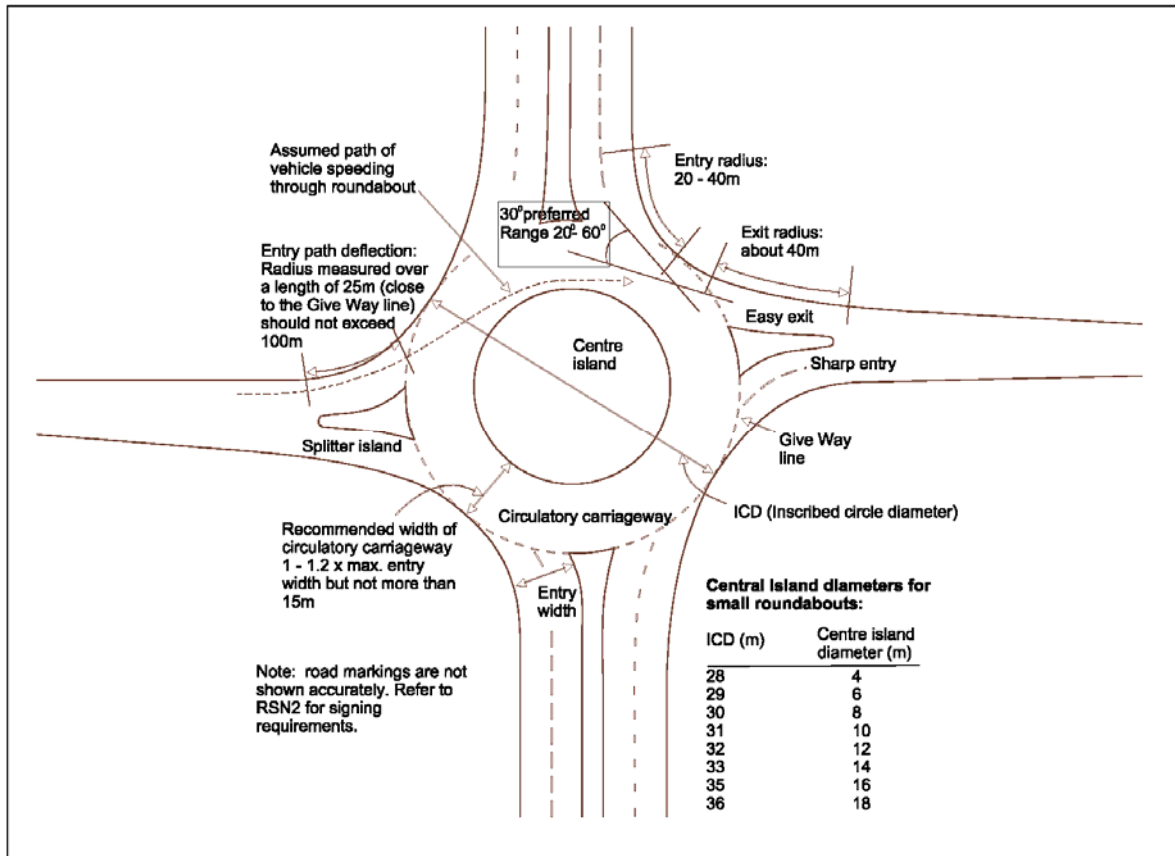
Public Works Department

By

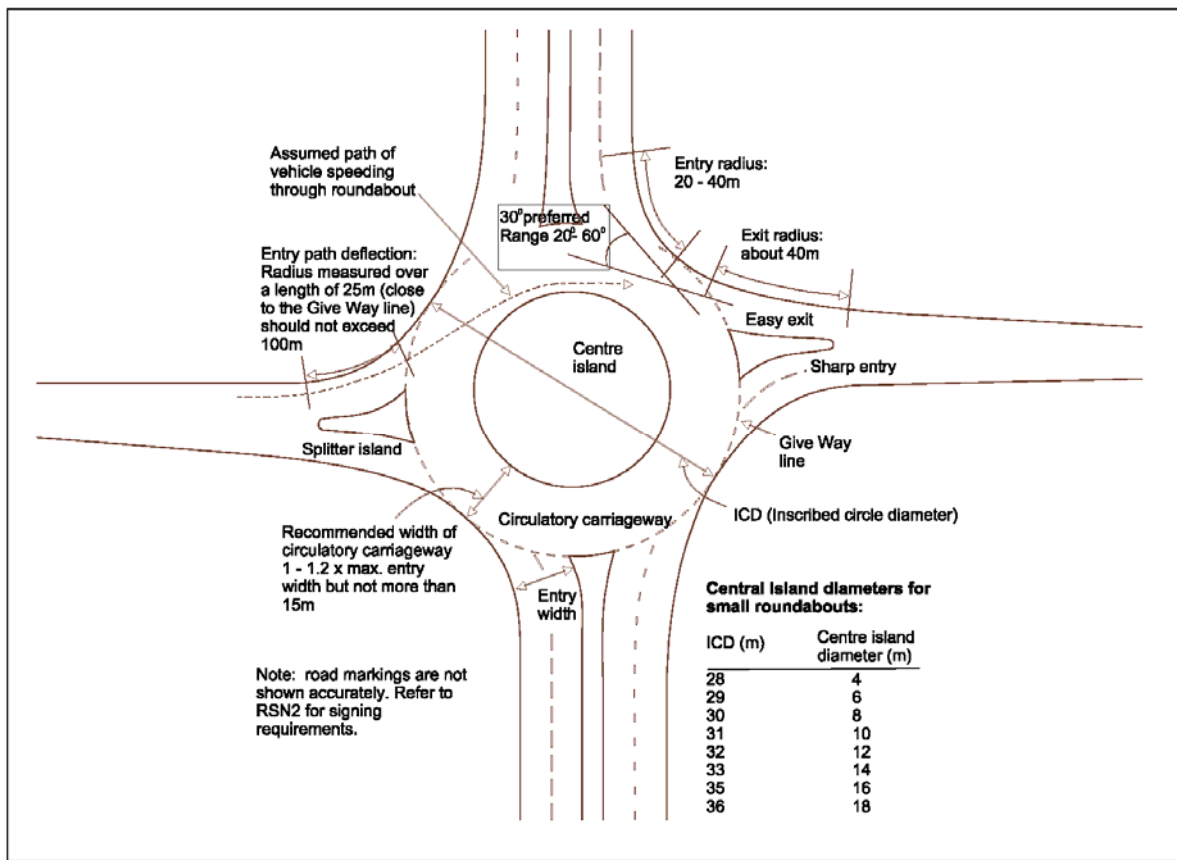
ROAD SAFETY CELL

10th September 2012

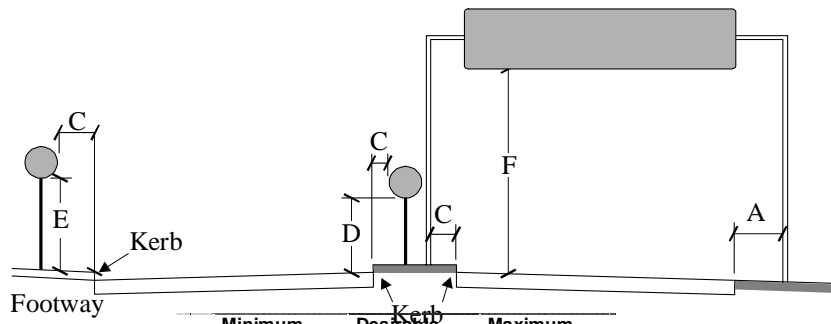
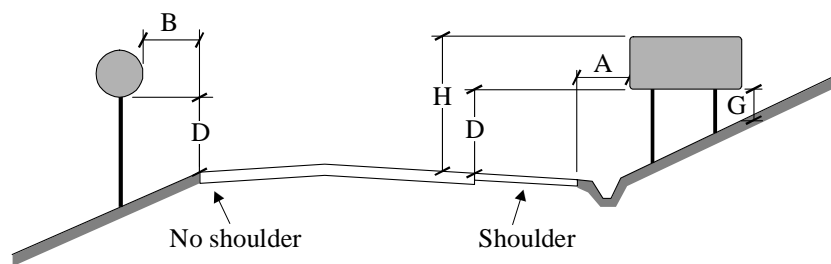
Roundabout Design



Roundabout Design



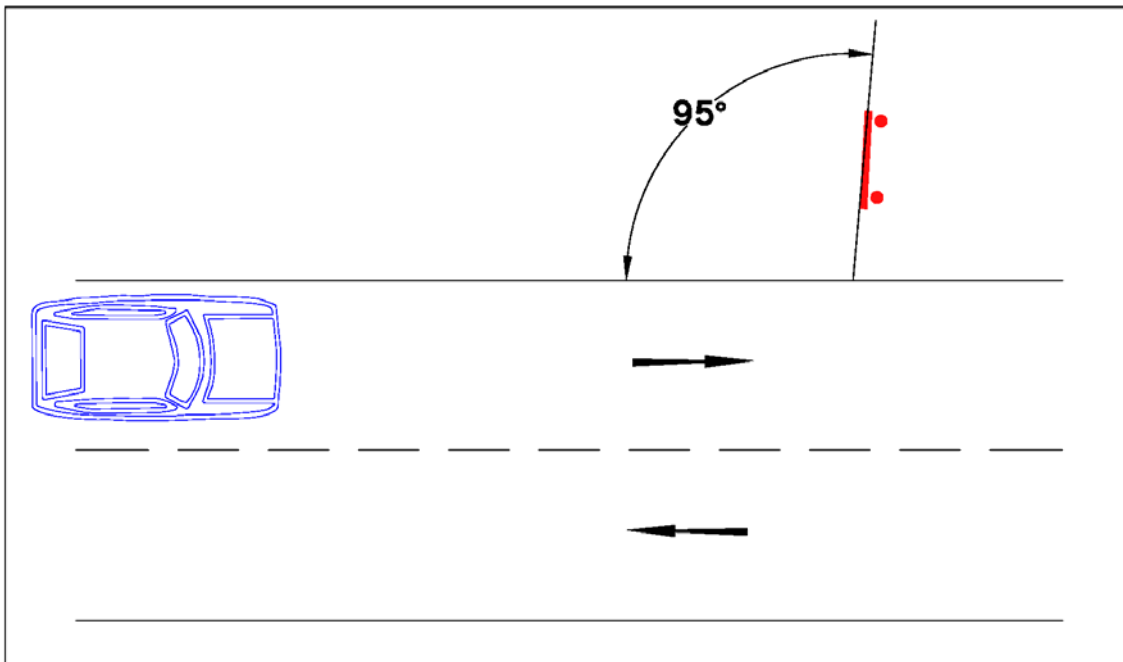
Siting of Signs with respect to Carriageway



	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	5900	
G	750		
H			5000



Orientation of Signs(to avoid glare)



Size and Siting Mandatory and Warning Signs

Mandatory / Regulatory Signs	Diameter of sign (mm)
Signs attached to traffic signal heads	300
Sites where space is limited (e.g. on narrow traffic islands)	450
Traffic speeds up to 50 km/h	600
Traffic speeds between 50 km/h and 65 km/h – STANDARD SIZE	750
Traffic speeds above 65 km/h	900
Sites where additional emphasis is required – because of a bad accident record	900

Cautionary/Warning Sign	Length of triangle side (mm)	Distance of sign from hazard (m)
Traffic speeds up to 50 km/h	700	45
Traffic speeds between 50 km/h and 65 km/h – STANDARD SIZE	900	90
Traffic speeds above 65 km/h	1000	120
Sites where additional emphasis is required – because of very high speeds and / or a bad accident record	1340	200

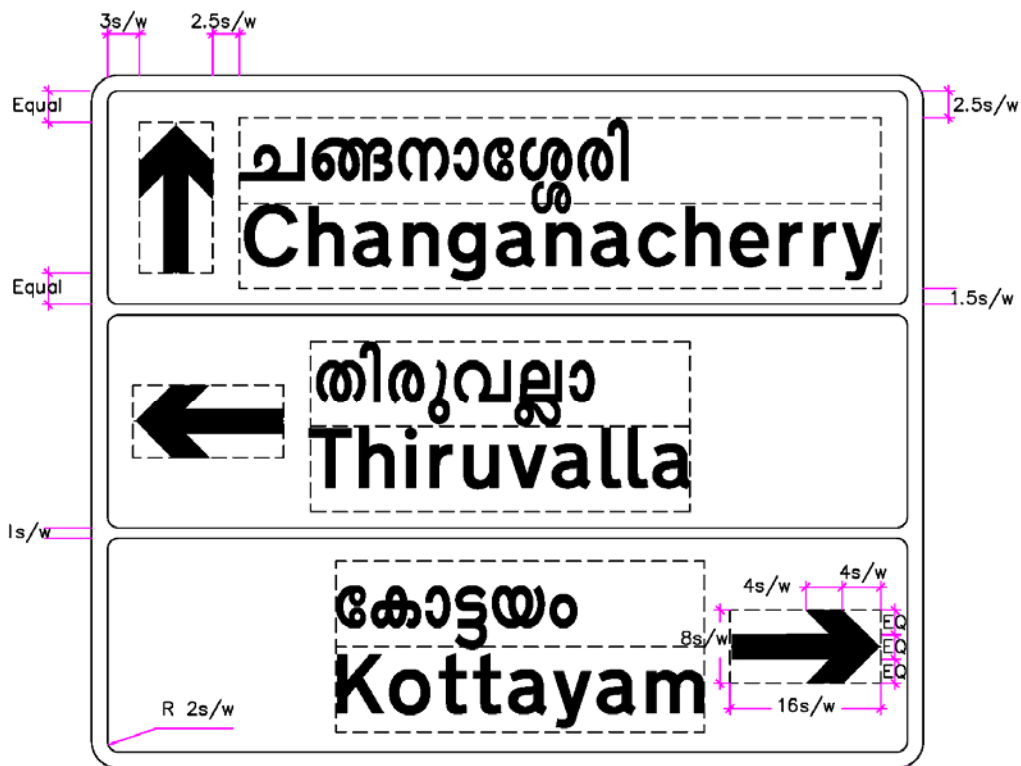


Size and Siting of Route Information Signs

Advance Direction Signs (ADS)					Direction Signs Reassurance Signs Place Identification Signs	
1	2	3	4	5	6	7
85th percentile approach speed of cars	“x” height (mm)	Minimum clear visibility to the sign (m)	ONE sign: distance from junction (m)	TWO signs: distance between 1st and 2nd sign (m)	“x” height (mm)	Minimum clear visibility to the sign (m)
Up to 50 km/h	75 (60)	45	45	-	60 (50)	35
50 - 65 km/h	100 (75)	60	90	50	75 (60)	45
65 - 80 km/h	125 (100)	80	90 - 150	70	100 (75)	60
80 - 90 km/h	150 (125)	90	150 - 225	100	125 (100)	75
Over 90 km/h	200 (150)	115	225 - 300	100	150 (125)	105

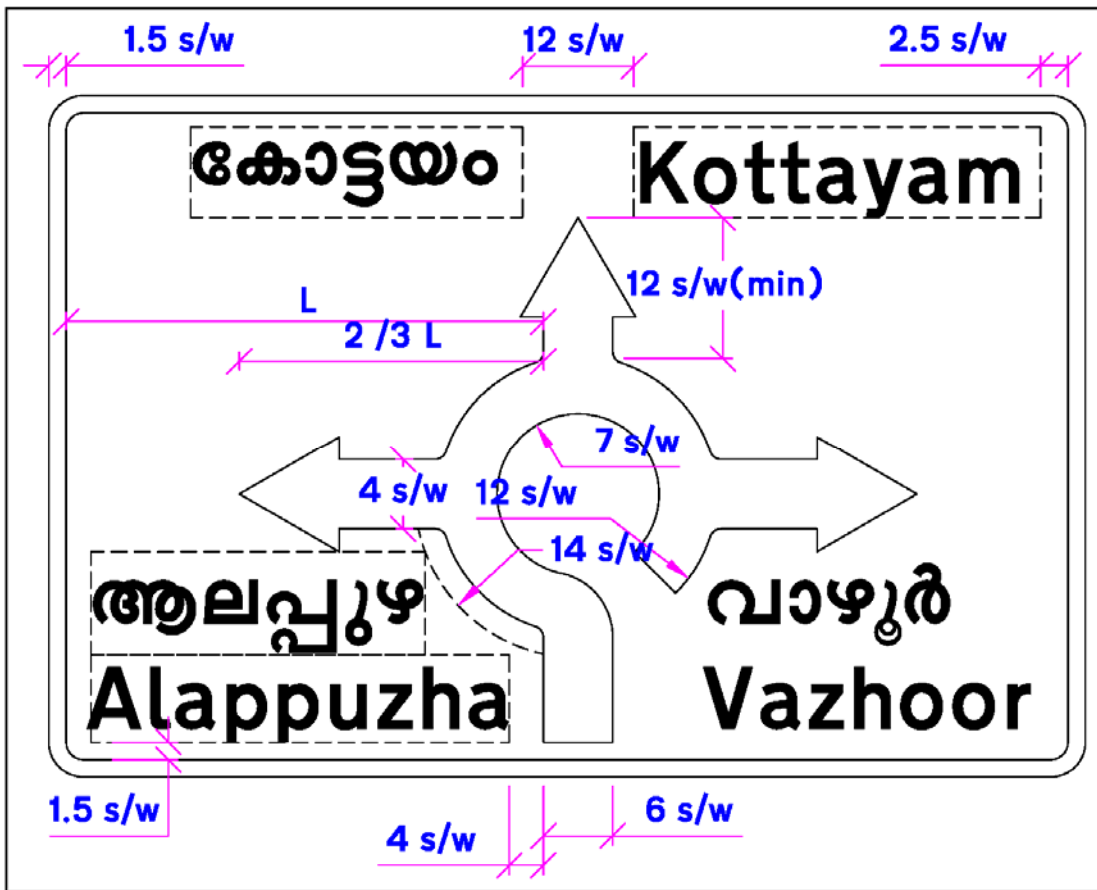


Typical Design of Stack Type ADS

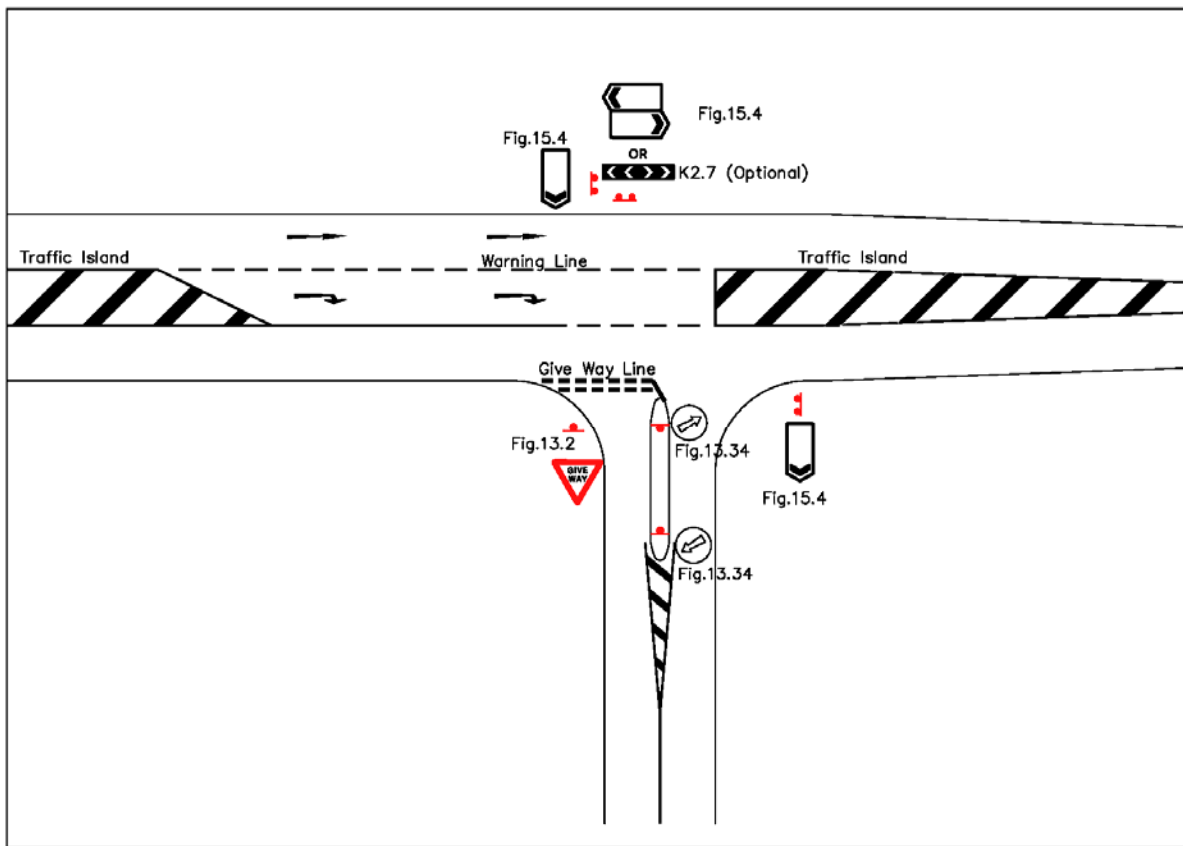


One Stroke width is One Quarter the X height
 Capital Letters (English) are 1.4 times the X Height

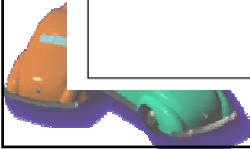
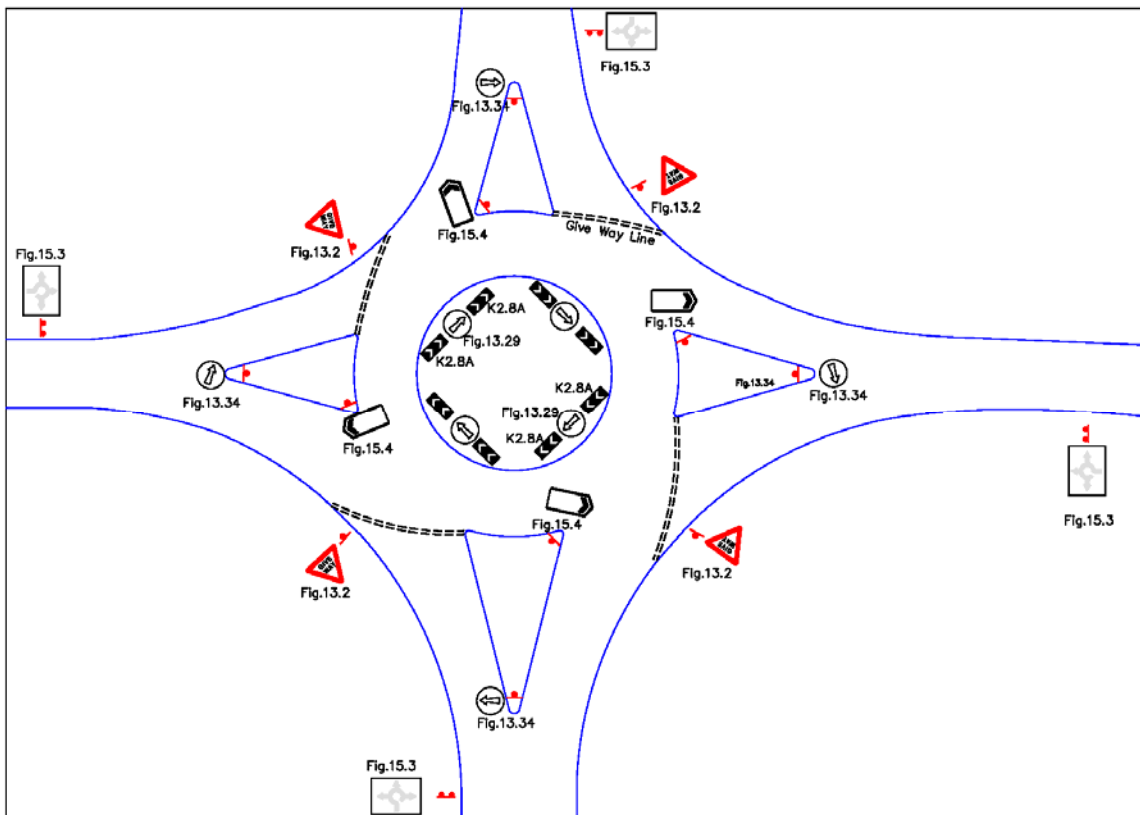
Typical Design of Map Type ADS



Priority Junction



Typical Junction Signing



Useful Signs: sharp bend chevron



Sign Maintenance and Repair



1. Damaged or rusting signs must be replaced or treated to prevent rust and repainted



2 Standard colours are:
Blue – IS colour 166: French Blue
Red - IS colour 537 : Signal Red
Grey – IS colour 630 : French Grey
Green –IS colour 284: India Green



3 Straighten



4. Paint support posts with 250mm wide black and white stripes. Black nearest ground

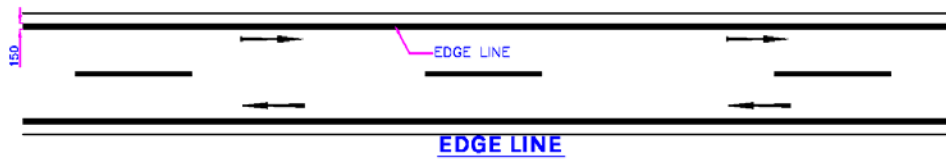
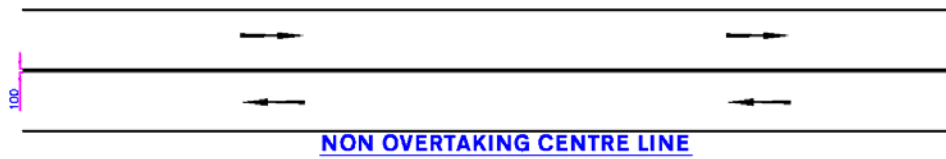
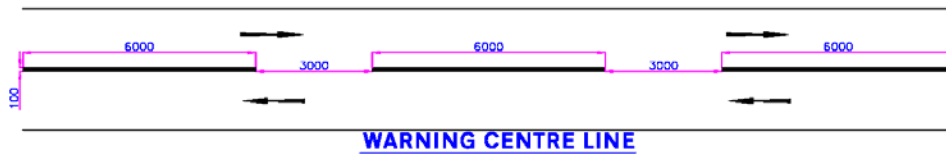
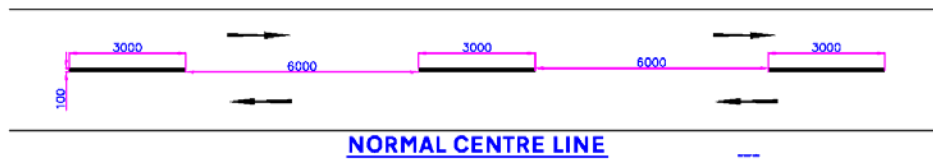


5. Replace incorrect or damaged signs with standard signs



6. Do not use non-standard signs

Markings- Line Markings-IRC-35-1997



Road markings and its Maintenance

ROAD MARKINGS

Across the road

- Stop line at STOP sign or traffic signals
- Give way to traffic on major road or roundabout
- Pedestrian crossing: Drivers must give way to pedestrians on the crossing
- Road hump

Along the road

- Give way to traffic at the junction ahead
- Lane line: Do not cross
- Barrier line: Do not cross
- Hazard warning line

Along the edge of the road

- Traffic island: Do not enter parked area except in emergency

Or when worn

1.



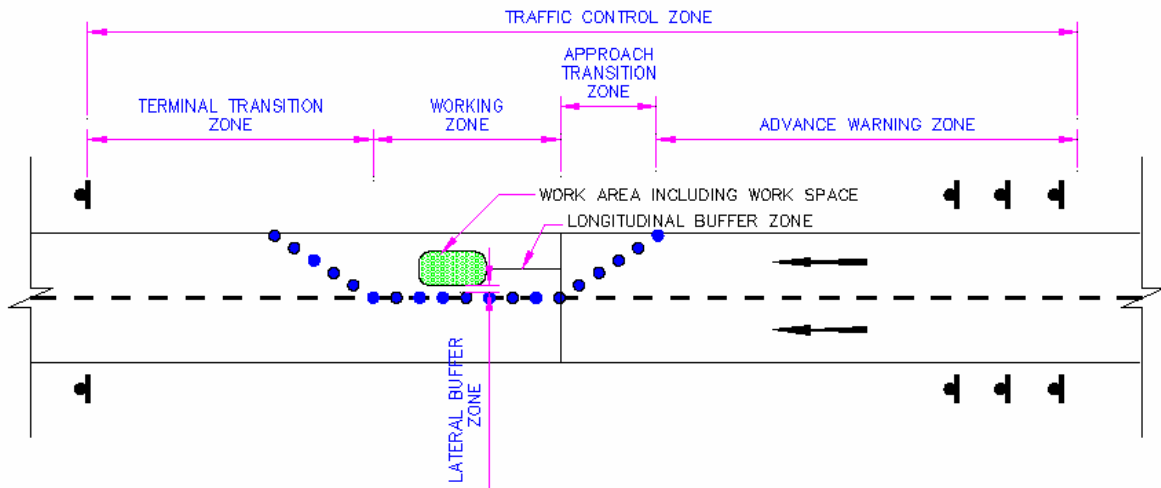
5



6.

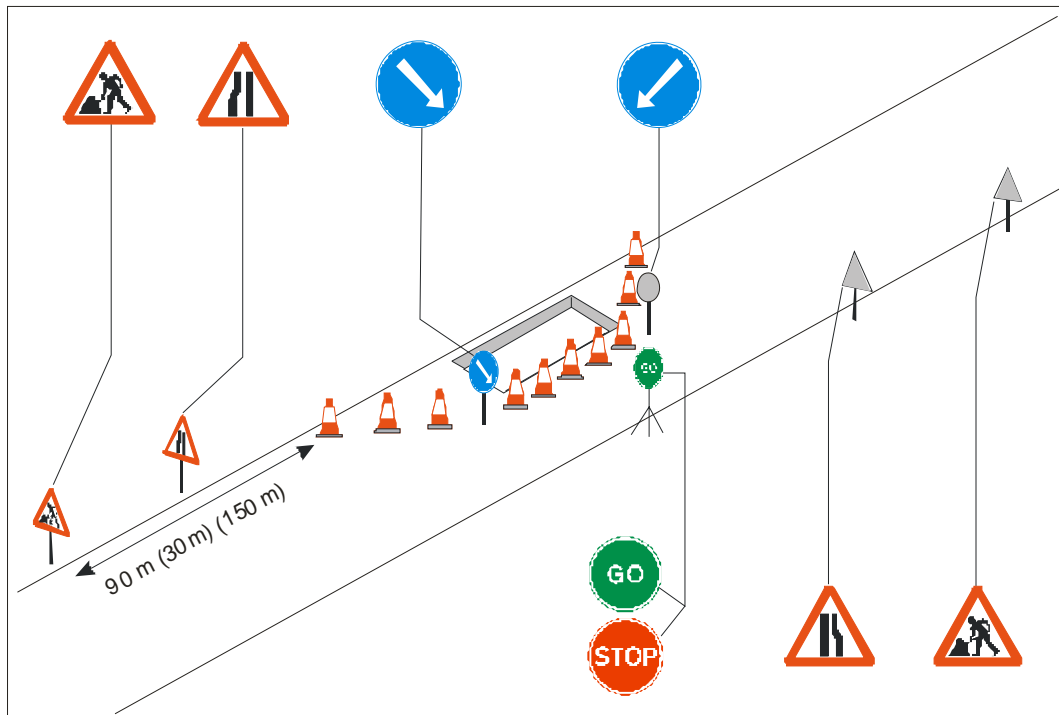
Safety at Work site- IRC-SP-55-2001

ELEMENTS OF TRAFFIC CONTROL ZONE



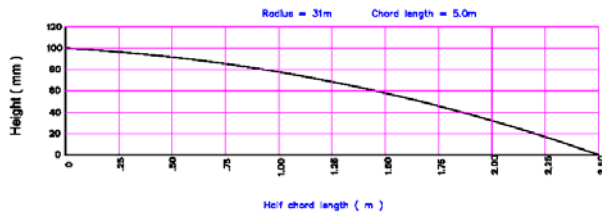
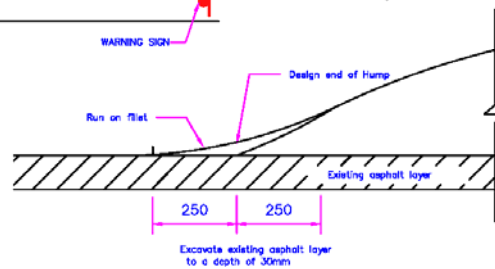
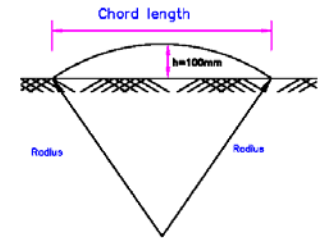
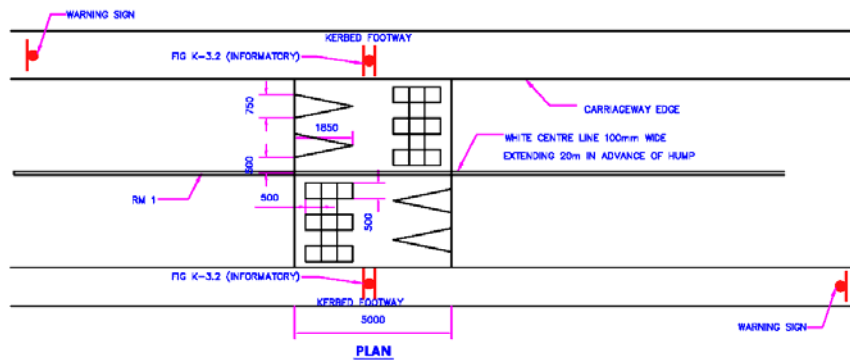
Average Approach Speed	Length of Advance Warning Zone	Length of Approach Transition Zone	Length of Working Zone	Minimum Longitudinal Buffer Zone	Minimum Lateral Buffer Zone
50	100	50	Varies	5.0	0.5
51-80	100-300	50-100	Varies	15	0.5
81-100	300-500	100-200	Varies	30	1.2
Above 100	500-1000	200-300	Varies	100	1.2

Roadworks signing basics



Traffic Calming Measures-Hump

ROAD HUMP

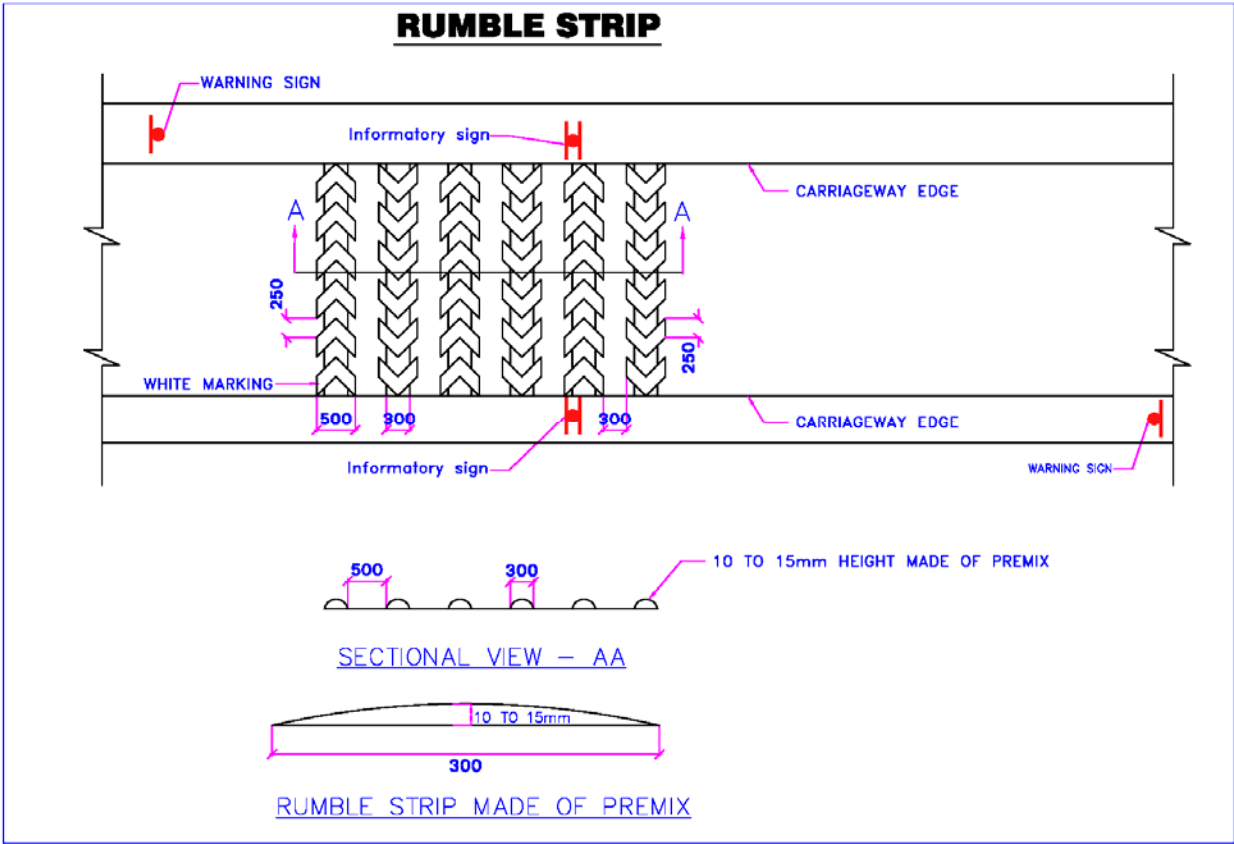


GEOMETRIC DESIGN

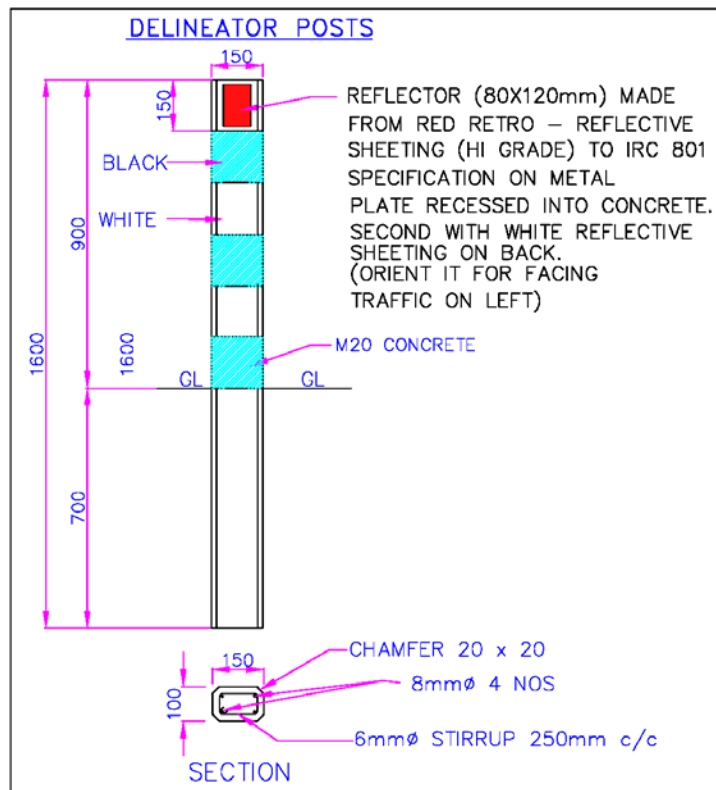
DETAILS OF TRANSITION

Desired Speed	Radius	Chord Length	Bus speed during passage
20km/h	11.0m	3.0m	05km/h
25km/h	15.0m	3.5m	10km/h
30km/h	20.0m	4.0m	15km/h
35km/h	31.0m	5.0m	20km/h
40km/h	53.0m	6.5m	25km/h
45km/h	80.0m	8.0m	30km/h
50km/h	113.0m	9.5m	35km/h

Traffic Calming Measures-Rumble Strip



Delineator Post



Tree and Shrub Clearing



3.



6



New Strategy in Safety Engineering for PWD

- Make existing road safe by simple safety engineering measures instead of building new roads and thereby reduce loss due to accident.

Simple Safety Engineering Measures to be adopted

1. Center line and edge line markings
2. Retro reflective warning, regulatory , direction signs
3. Scientific Traffic Calming measures
4. Parking and Bus stop pattern
5. Provide footpaths.
6. Provide Zebra crossings with signs & markings

New Strategy in Safety Engineering for PWD (Contd..)

7. Discourage unsafe overtaking by providing RRPMS(Raised Reflective Pavement Markers) or dividers.
8. Provide channelisation in junctions
9. Provide good delineations.
10. Convert cross roads to roundabouts or signals
11. Provide extra widening on substandard curves with advisory speed limit.
12. Remove, shield or sign on road and roadside hazards
13. Blackspot Improvement program to be continued.
14. Carry out safety assessment of existing roads.

THANK YOU