International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 04 | Apr 2020 www.irjet.net p-ISSN: 2395-0072

Road Marking System: A case study of Akola city

Prof. S.S. Suratkar[1], Prof. A.S. Gangane[2]

[1,2] *Faculty, College of Engineering and Technology Akola, Maharashtra, India*

Abstract - *Road is defined as an open way generally public for travel or transportation and at the same time it is a way to achieve nation's progress. Importance of roads in the world of nation's infrastructure and socio-economic development is well known. Understanding the importance of roads, present study was carried out in Akola city of Maharashtra state in India. Study was aimed to canvas the condition of the two busiest roads in Akola city and develop solutions and feasible recommendations under the light of IRC 35 – 1997 and IRC 67-2010. Study found that quality and quantity of road markings is far from satisfaction and needs urgent improvement for efficient traffic management. It is found that lack of maintenance has worsened the traffic management system in the city.*

Key Words: infrastructure, Akola city, IRC 35 – 1997, IRC 67-2010, traffic management

1. INTRODUCTION

Akola city is a district place, an educational hub, market place and headquarters various public enterprises and offices. Akola is third largest growing city in Vidarbha region with area of 124 sq.km., population about 4, 25,817 in 2011. Akola is becoming educational hub and strong market place has enforced additional floating population of 60 to 70 thousand on daily basis. This clears that how large the traffic flow is and the need to have efficient traffic management this case study was carried in A.Y. 2018-2019.

As per IRC: 35- 1997, road markings are the lines, patterns, words, or other devices except signs, set into applied or attached to the carriageway or kerbs or to the objects within or adjacent to the carriageway for controlling, warning, guiding and informing the users. These markings are used to achieve efficient, safe and disciplined navigation of the road users. The markings are helpful for the road user and assist the work of traffic personnel and traffic signals. It is well known that these symbols have a long range and have respective meaning and use. The meaning, usability, technique to use and all the relevant parameters are fixed and stated in national code (IRC, s) the geographical area considered for study was based on the overall importance of the said area and the traffic volume it has to entertain.

1.1 Traffic problems & issues in the cities of Developing Nation

1. Congestion and parking:

This is the most common problem seen in; urban area giving the motorizing capacity welcomes the problem of congestion on rod and parking. At the same time lack of efficient building planning, city planning also lead to this problem.

2. Longer commuting- suburbanization is the key element for longer commuting done by the people. As the old/ core area of city is either occupied by ancestral residential or by offices, higher rates of land/ residential spaces comparative to the suburban area attract people to settle in such areas. This leads them to commute hours together from work/ market area to home and vice-versa

3. Public transport inadequacy-

The general flow of traffic in urban area is generally in same direction both in morning and evening. Thus the pressure on public is high and hardly distributed. Due to this it not only applies pressure on public transport but also may lead to inadequacy and dense flow of masses.

4. High maintenance costs-

Financial crises are generally seen in many local authorities when it comes for public transport. This is because of the high maintenance cost, poor returns, and inadequate planning. At the same time with such issues there is frequent pressure to upgrade the overall system.

5. Accidents and safety-

Considering the developing nations like India, there is huge risk of life on road. This risk is not because of disobeying of traffic rules by oneself but due to other road user too.

1.2 Road Marking System

Road Marking System is synonymous to smart and intelligent technology that integrates and combines organizational, institutional and management of transport systems and acts as catalyst in decision making and planning. Main utilities of Road Marking System in this domain to provide intelligent, trouble-free, seamless and coherent services are

i) Modern digital & intelligent infrastructure and management

- Traffic signal and its controlling
- Safe & secure mobility for Pedestrian
- Convenient and comfortable travelling

ii) Huge data base with real time information

- Public transport operations with mobility Cards
- Traffic management and optimization
- GPS based tracking
- congestion reduction

2. Aim and Objectives

1. The aim of this research was to study the present situation of traffic and the road marking in the busiest areas of Akola city i.e. Old RTO Office to Sarkari Bagicha and Ashok Vattika Garden to Railway station
2. To provide recommendations for improving the usability of pavement markings and traffic management

3. Research Methodology:-

The research methodology opted for this study is fundamental in nature and is stated below.

Fig -1: Research Methodology

4. Observations

The condition of the road markings in the Akola city especially Old RTO to Sarkari Bagicha and Ashok vattika (Garden) to Railway station Road is pretty good. Analyzing the term to the areas of most populated vehicular traffic accumulated to roads connecting from Old RTO to Sarkari Bagicha via. Ashok vattika has Hospital, R D G College of Girls, income tax office, district general hospital, government medical college and its hostel, collector office, S.P.'s office, Z.P. office, residential spaces etc.

At the same time, Ashok vattika to Railway Station via Bus Stand, has 3 number of Churches, Garden (Gandhi Jawahar bagh) Akola Bus Stand, a Government officers bungalow (Collectors house), densely populated vehicular traffic area (Bus Stand including vegetable market), School and Junior College (Mount Carmel High School and Z.P. School), district level cricket clubs ground, football ground also district sports ground, judges and officers quarters, district court, hotels lastly Railway Station. Thereby conducting case study on these two roads is worth important. Briefly it can be stated as below.

1. Improper lane distribution was seen in between sections of road.
2. Partial marking in few parts of roads were provided with Centre line and none with boundary line marking.
3. Visibility of existing markings was very poor, either it was detoriated or was hardly used
4. Signals found were out of order, found to be off, dented with cars/ trucks
5. Speed Breaker the study area being a part of state highway speed breaker were inadequately planned and placed.
6. Zebra Crossing wasn't seen on any of the major or minor intersection

Table -1: The basic observation of road and road markings:

Sr. No	Parameter	Road	
1.	Content	Old RTO to Sarkari Bagicha	Ashok Vattika to Railway station
2.	Road type	Highway	Urban road/highway
3.	Lane of road	Two way	One way
4.	Markings on road	Yes, up to Ashok vattika	Yes
5.	Visibility/condition of markings	Not good	Not good
6.	Pot holes on road	Not	Not
7.	No of pot holes	Numerous	Numerous
8.	Signals on road	Only at the Ashok vatika	At all intersection
9.	Condition of signals	Not good, off	Not good, off
10.	No. of	4	5

	Intersection		
11.	Signals at every intersection	No	No
12.	Speed breakers and Zebra crossing on road	Inappropriate	Inappropriate
13.	Locality	Urban	Urban

Preparation of Manuscript			
Margins : Top	0.5”	Bottom	0.5”
Left	0.5”	Right	0.5”
Margin : Narrow	Font	Cambria / 10 pt	
Title of paper : 16 Point	Heading	13 Point	
Sub Heading :12 Point	Spacing	Single line spacing	

5. Measurement of road boundary and checking as per IRC code:

The dimensions of the roadway when measured from Old RTO road to Sarkari Bagicha which have 4 number of intersection and the length of the road is to be 2.5 km the signals and the markings of the road is not in good condition. Therefore, the providing the road markings on the Old RTO road to Sarkari Bagicha is must.

The dimensions of roadway when measured from taken railway station to Ashok vattika which has 5 No intersections and the length of road is to be 2.7 km. The signals and marking of the road is not in appropriate conditions and therefore the provision of road markings for the railway station to Ashok vattika road is mandatory.

Table -1: Road measurements

Sr. No.	Content	Old RTO to Sarkari Bagicha	Railway station to Ashok vattika
1.	Length of road	2.5 km	2.7km
2.	Width of carriageway	10m (1st route) 14m (2nd route)	14m (entire route)
3.	Width of roadway	17m (1st route) 21m (2nd route)	21m (entire route)
4.	Island	01	02
5.	Side drains	Yes	Yes
6.	Footpath	3.5m	3.5m
7.	Cycle track	No	No
8.	Divider width	0.6m	1m
9.	Shoulder	0.5m	0.5m

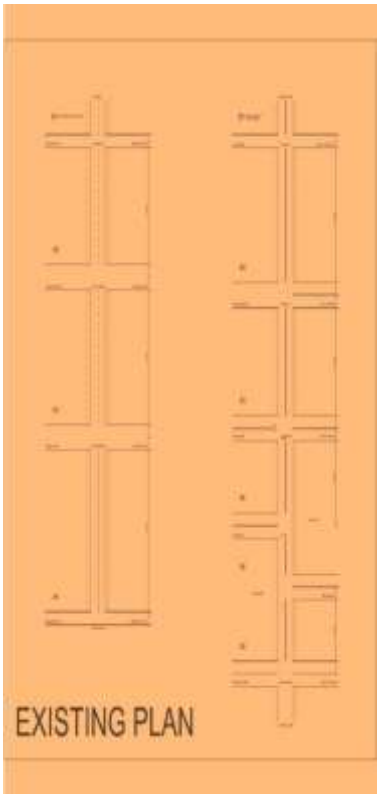


Fig -1: Existing Road Plans

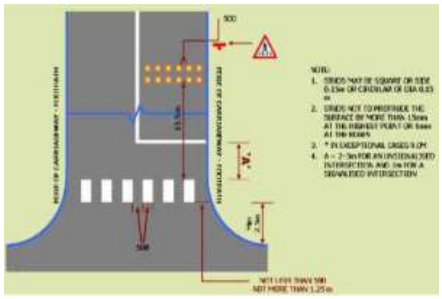
6. Recommendations

Considering the road condition recommendation are briefed according to IRC 35 -1997 and IRC 67- 2010 are as follows:

1.For Square:

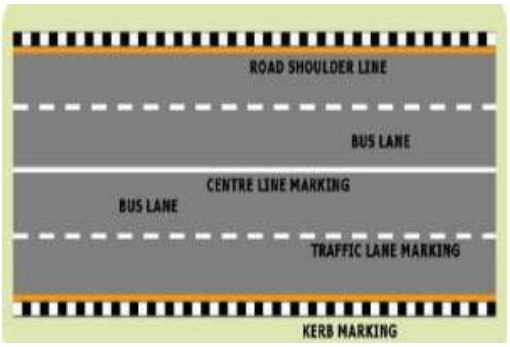
A. Main route: At both side speed breaker must be placed. Speed breaker must be well indicated by appropriate Road marking. The dimension as well as schedule to the said has been collectively collaborated in the given picture.

B. Diverging route: The continuous thick boundary line of the major route must be discontinuous and of broken nature in the direction of Diverging route.



2.For Divergence:

At such places proper balance between continuous thick boundary line and broken line must be brought into used for smooth and safer moment of vehicles.



3.For School/ College Buildings:

Marking boards indicating limited speed, no parking and no use of horn must be provided. As-usual speed breaker should be placed on the both sides with proper indication of road marking.

4.For Hospital Buildings:

Marking boards indicating Hospital ahead, indicating limited speed, no use of horn must be utilized. Road marking strips of zebra crossing (diagonal strips) must be provided on the both side of the entrance of the hospital.

5.Hazardous location

Depending upon the directional flow of the vehicular traffic, different type of road marking is brought into use. Such as for diversion way the continuous thick boundary line is changed from the continuous thick to broken lines. To the diverging route appropriate zebra crossing marking followed by speed breakers must be provided.

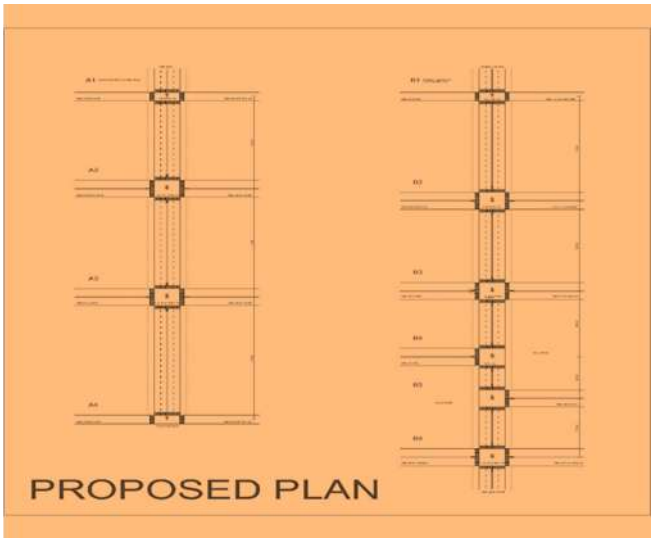


Fig -2: Proposed Road Plans

Conclusion:

Akola is a developing city with its own issues, challenges and problems regarding traffic management. But all this can be mitigated to a great extend by implementing above discussed budget friendly signs, marking system. Traffic management for any city is not a one way process; it is a collaborative work from local governing bodies and road users. Local governing bodies should upkeep the traffic signs, markings, effectively conduct the road safety weeks, educate people in this regards with the help of hoardings, radio, newspaper and also imposing fines as needed. People should obey the prescribed rules and follow the signs etc., also NGO or literate people can come forward with innovative techniques for better and efficient traffic management.

REFERENCES

[1] IRC 35- 1997

[2] IRC 67-2010

[3] https://highwaypolice.maharashtra.gov.in/en/

[4] http://www.ctp.gov.in/RoadSignsInformatory.htm

BIOGRAPHIES

Prof. S.S. Suratkar pursed his P.G. in Construction Management. He is Faculty Member of Civil Engineering Department at C.O.E.T. Akola. His areas of interest are traffic engineering, surveying and project management.

Prof. A.S. Gangane pursed his P.G. in Construction Engineering & Management and PG Diploma in Urban Planning and Development. He is Faculty Member of Civil Engineering Department at C.O.E.T. Akola. His areas of interest are building planning, urban studies, and project management.