

Impact on lane width of road on passenger car unit capacity under heterogeneous traffic condition in Amravati city

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Abstract -The various modes of transport are air, water, and land transport, which incorporates railways, road and off-road transport. Among all modes highway plays a crucial role in transportation. Highway geometric design refers to the calculations and analysis made by transportation designers to suit the highway with the topography of the location while meeting the security, service and performance standards.it mainly concerns with the element of the highways that are visible to the drivers and users. Traffic on Indian roads (both city and inter-urban) includes a ramification of vehicles these vehicle have broadly exclusive static and dynamic characteristics. coach units are wont to symbolize the effect of varied combined vehicles types on traffic flow.

Key Words:Traffic,geometric design,dynamic Characteristics,drivers

1.INTRODUCTION

Traffic congestion may be a condition on transport that's characterised by slower speeds, longer trip times, and increased vehicular queuing Estimation of PCU price the usage of Satish Chandra method for traffic composition. Dedication of potential and free accompany the flow pace to require a glance at speed volume relationship. Vehicles which have issue manoeuvring motive friction to different vehicles inside the traffic circulate. The winning roadway and site visitors conditions on expressways in India are hugely distinct while compared with the other roads in India and similarly, there could also be no ideal lane-discipline. Although there's not always lots studies literature available precise to those classes of roads in India. The knowledge of roadway potential is an vital fundamental enter required for planning, design, evaluation, and operation of roadway structures.

2.METHODOLOGY

Selection of routes are based on congestion, Traffic volumes.

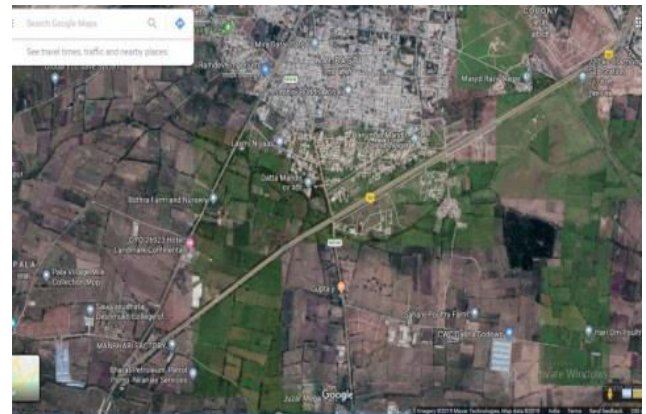


Fig -1Route showing National highway near badnera NH6

Speed of automobile is decided the usage of a relation

- With simple instruments like measuring tape and stopwatch. sections were marked on the street with spacing 50m .
- Velocity of motors had been calculated by way of recording the time required with the aid of automobile to go from one segment to some other.

3.MODELING AND ANALYSIS

PCU

- Amongst numerous techniques Satish Chandra method is followed to decide the PCU values for numerous categories of cars on this look at.
- Consistent with this technique PCU price of a automobile depends on velocity and place of automobile and well known vehicle

Table -1 shows the standard area of various categories of vehicles.

Vehicle Categories	Length in m	Breadth in m	Total Area in m ²
Bus	11.4	2.5	28.5
Truck	13.6	2.42	32.91
LCV	6	1.9	11.4
Car	3.5	1.5	5.5
2- Wheeler	1.8	0.6	1.2
3- Wheeler	3.2	1.4	4.4
Bicycle	1.9	0.45	0.85
MAV	13.7	2.5	34.25

$$\text{VELOCITY} = \frac{\text{Distance}}{\text{Time}}$$

Time

CHANDRA'S method

$$\text{PCU} = \frac{A_v \cdot V_c}{A_c \cdot V_v}$$

Where,

V_c : Velocity of standard vehicle.

A_v : Area of vehicle.

V_v : Velocity of vehicle.

A_c : Area of standard vehicle

Table -2 shows the PCU value at a section of road

RAJAPETH	←	↓	→		PCU
4W	500	413	350	1263	1263
3W	327	350	190	867	693.6
2W	625	797	557	1979	989.5
SUM	1452	1560	1097		
PCU	1074.1	1091.5	780.5	2946.1	
TOTAL	2946.1				2946.1

4. CONCLUSIONS

The narrow width of lanes does not provide an adequate margin for motor motion so therefore, speeds of individual vehicles drop.

REFERENCES

[1]S. Chandra, "Highway Capacity Research on Inter-urban Highways in India" DOI 10.1007/s40890-015-0003-4(Springer International Publishing AG 2015)

[2]P. M. Shah and N. Gupta, "Study of Traffic Flow Characteristics on National Highway (NH1) connecting Jalandhar-Phagwara". (IJLTET) Vol. 6 Issue 4 March 2016.

[3] E. Madhu and S. Velmurugan, "Estimation of Roadway Capacity of Eight-lane Divided Urban Expressways under Heterogeneous Traffic through Microscopic Simulation Models". (IJSTE). Research Vol. 1(6), November 2011.

[4] H. Faheem and I. H. Hashim, "Analysis of Traffic Characteristics at Multi-lane Divided Highways, Case Study from Cairo-Aswan Agriculture Highway". (IRJES). Volume 3, Issue 1 (January 2014).

[5]. Alzoka, Mohamed khamies. (1997). Geography of Transportation. Alexandria: Dar Almarefa. P94.

[1]

[6]. World Bank (2014). Egypt - Cairo Traffic Congestion Study: Final Report. Arab Republic of Egypt. Vol No 2.P1-2.

[7]. - Salem, Mahmoud Hassan. (1991). Traffic engineering. Beirut: Dar Alrateb Algameaya. P155.

[8]. Rahka, H & Trani, A & Ahn, K. (2004) Development of Passenger Car Equivalents for Basic Freeway Segments. (M.Sc In Civil Engineering). the Virginia Polytechnic Institute. Virginia State University. P1-2.

[9]. Parvathy R & Sreelatha T & Reebu Z Koshy (2013) Development of new pcu values and effect of length of passenger cars on Pcu. International Journal of Innovative Research in Science, Engineering and Technology. Vol 2. Special Issue 1. December 2013. P344-346.

[10]. Al-Obaedi, Jalal. (2016) Estimation of Passenger Car Equivalents for Basic Freeway Sections at Different Traffic Conditions. World Journal of Engineering and Technology. Vol 4. P155.

[11]. Matulin, ect. 2009. Different Approaches to The Modal Split Calculation in URBAN AREAS. University of Zagreb: Faculty of Transport and Traffic Sciences. Department of Intelligent Transportation Systems. P2.

[12]. Trani, A. (November 2011) Transportation Systems Analysis Modeling. the Virginia Polytechnic Institute. Virginia State University. P42.