Traffic Flow Charteristics from B2 Bypass to Sanganer Police Station

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Abstract— **Vehicle speed is an important transportation consideration because it relates to safety, time, comfort, convenience, and economics .The Travel time per unit length is the amount of time required to cross a specific distance between two specific points .The travel time per unit length of road is inversely proportional to the speed. Average density also find out which gives us information about number of vehicles in a unit length of roadway network.(1) The data gathered in average density studies are used to determine vehicle average speed, which are useful in making many speed-related decisions. The intent of average density studies are to record speed characteristics under prevailing traffic conditions at a explicit place along a roadway. Because traffic engineering involves the set and examination of large amounts of data for performing all types of traffic studies, it follow that average density Study is also an important element in traffic engineering. running traffic within our community is a growing task for traffic engineers.**

Keywords—Component; average volume of vehicles, density of vehicles, space mean speed.

I. INTRODUCTION

Speed is an important measure of the quality of level and safety of road network. Speed by definition is the rate of movement of vehicle in distance per unit time. A typical need of average volume passing through a specified length in a specified time interval give us the information about thr average number of vehicles passing with a specific space mean speed through the given length available , and by study these information we good information about the accident number and average speed between points[1].

II. STUDY AREA

A. Specification of site

The total length of NH12 is 890 km and is located between Jabalpur (Madhya Pradesh) to Jaipur (Rajasthan), its join various major cities and towns between it. This is a National Highway which joins many state highway roads also many major district roads, state highway and other district road.

B. Maintaining the Integrity of the Specifications

The manufacture period of the national highway of NH12 is January 2009 to present. The NH is provide to go from one place to another and we take the place of B2 bypass to Sanganer Thana and make a data of vehicles.

III. LITERATURE REVIEW

A vehicles speed study is made by measuring the individual speeds of a sample of the vehicles passing a given point on a street or highway. These various speeds are used to estimate the speed distribution of the entire traffic stream at that location under the condition that has been given in the circumstances. Average density is the average rate of flow in vehicles sub stream and average speed is the average rate at which a distance is covered by the specific vehicle.

A. Use of vehicle speed data and average density

Traffic flow is the study of interaction between vehicles drivers, pedestrian, cyclist, other travelers and infrastructure with the plan of understanding and developing an most favorable road network with efficient movement of traffic and nominal traffic congestion problems. Traffic flow is the study of movement of individual drivers as well as vehicle among two points and interaction they make with each other. It relates running speed and bulk of traffic flow.

Establishing speed trends at the local, state, and national level to evaluate the usefulness of national plan on speed limits and enforcement. It is the method to controlling the number of accidents.

IV. DATA REQUIREMENT

For this project the most important traffic characteristics to be collected from the "B 2 Bypass to Sanganer Thana" vehicle speed and vehicle density. The key point of measurement is the vehicle volume count. Data was collected manually on 5and 6th 2016 during non-peak hour with short interval of 1 hours and for each type of vehicles like cars, two wheelers, buses, utilities, trucks, cycle. This study are used to determine the level of service for streets, documents congestion and quantify the need of street improvements and also for a variety of purposes and differ in the level of detail and data collected.

The studies conducted under low-volume conditions of vehicles, it is not easy to obtain a radar measurement for every vehicle [2]. For traffic flow analysis at different periods, speeds are measured during the different time interval . For assessing general speed trends or for setting speed limits, and also to control number of accident and the ease use of traffic light at different diversions measurements are more accurate. The selection of the required vehicle that represents the vehicle population under study is also important. A good question to ask is, "What type or types of

vehicles are of concern—cars ,motorcycle ,pickup, cycle etc ?" Typically cars, station wagons, pickup and el trucks, and motorcycles are classified as passenger cars. Other trucks and buses are classified as trucks. Buses and truck equipment may be recorded separately. When the target vehicle is defined, the choosing strategy is developed to provide a random sample. A random sample will reduce the tendency to select the vehicles that stand out .The data is taken out for working and non working day at different time interval and the study of the data of past give us information of number and causes of accident .

V.   DATA SHEET

Table I: Data sheet of Saturday day time (1:30 -2:30)

S.NO	TYPE OF VEHICLE	NUMBER OF VEHICLE	
		B2 BYPASS TO SANGANER THANA	SANGANER THANA TO B2 BYPASS
1	CARS	762	968
2	Bus and truck	113	198
3	Auto rickshaw	126	230
4	Motorcycle	1466	1533
5	Pickup	30	61
6	Pedal cycle	5	3
	TOTAL	2502	2993

This data is taken between the B2bypass to Sanganer Thana in the day time on the working day and by analyzing data we got information of vehicle density and vehicle average speed.

Table 2:   Datasheet of Saturday day time (7:00 to 8:00)

S.NO.	TYPE OF VEHICLE	NUMBER OF VEHICLE	
		B2 BYPASS TO SANGANER THANA	SANGANER THANA TO B2 BYPASS
1	CARS	1093	1013
2	BUS AND TRUCK	230	212
3	AUTORIKSHAW	244	312
4	TWO WHELLER	1972	2112
5	PICKUP	97	113
6	PEDAL CYCLE	27	23
	TOTAL	3663	3785

This is the data of same specific location in the evening time on working day at that time maximum peoples from offices are go to homes so it give the data of average speed and vehicle density on evening time on working day.

Table 3: Datasheet of Sunday morning time (6:00 -7:00)

S.NO.	TYPE OF VEHICLE	NUMBER OF VEHICLE	
		B2 TO S	S TO B2
1	CARS	562	492
2	BUS AND TRUCK	228	241
3	AUTO RICKSHAW	362	212
4	MOTORCYCLE	827	943
5	PICKUP	92	82
6	PEDAL CYCLE	82	87
	TOTAL	2153	2057

This data show the number of vehicles and the average speed of vehicles on the path on Sunday working on which maximum number of offices and institutes are closed so, it is found that traffic density is low that time.

Table 4: Datasheet of Sunday day time (1:00 -2:00)

S.NO	TYPE OF VEHICLE	NO. OF VEHICLE	
		B2 TO S	S TO B2
1	CARS	932	827
2	BUS&TRUCK	109	113
3	AUTORICKSHAW	197	182
4	MOTORCYCLE	1632	1773
5	PICKUP	32	29
6	PEDAL CYCLE	11	7
	TOTAL	2913	2931

This is data from same site at Sunday day time this is seen from table that the traffic flow density is increases at that time because the peoples are going for shopping for picnic etc in day time on Sunday.

Table 5: Datasheet of Sunday evening time (7:00 -8:00)

S.NO	TYPE OF VEHICLES	NO. OF VEHICLES	
		B2 TO S	S TO B2
1	CARS	1048	1178
2	BUS & TRUCK	207	242
3	AUTORICKSHAW	17	149
4	TWO WHELLER	2013	2138
5	PICKUP	23	19
6	PEDALCYCLE	21	17
	TOTAL	3329	3743

This is the time on which there is maximum traffic density and traffic rush because the people which got outside are going to homes and they are driving fast so data show that the accident are occur more in this time period.

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Table 6: Data of accident of pervious 5 years

S.NO	YEAR	NO. OF ACCIDENT	NO. OF DEATHS
1	2011	186	75
2	2012	213	107
3	2013	294	147
4	2014	138	62
5	2015	164	98
	TOTAL	995	489

Figure 1: Map (1) of the site

The road network show in the map is a part of NH12 and the straight part of the road show the point of our case study. The total length of our site is 3.6 km and various point and places near our road show the area located there.

Figure 2: Map (2) of the Site (showing various diversion in the point)

In this map we show the data of the road network plan of B2 bypass to the Sanganer thana and it show the nuber of divider and the points of chances of accident point , also we study the pervious year data of accident and the pervious year study show the number of accident and the time at which the accident occur and study about them and try to control them providing the proper arrangeent to stop these accident . This specific data from tables (1 to 6) show the no. of accident occur per year also from the number of accident the number of death per year occur from the accident . The number of accident is decreasing by using various safety factor like a new rule emended in jaipur from RTO in MARCH, 2011 that pillion person on two wheeler should wear a helmet also not total nuber of accident get controlled by it.

In our paper we study about the reason of the accident that occur on the Tonk road, we decide to study the path between the B2 bypass to Sanganer Thana and we find that the divider provide at various points like the divider on taro ki kunt , ram Mandir and Chandra Toyoto and the 27% of total accident occur on the Tonk road is occur on this path . The study of the data show that the traffic density in mid day time on working day is 15% more of total traffic of morning and the traffic density of evening is 30% more of the traffic in the morning and also the traffic density of non working day data show that traffic density in day time is 30% more of morning traffic and the traffic density in the evening time is 50% more than the traffic density in morning.

(A). Relation between the average density of vehicle with average traffic volume and average speed of vehicles:-

As we know the relation ,

$$Q = KV$$

Q= the average volume of vehicles passing a point during a specified period of time (vehicle/hour)
K= Average density of vehicles occupying a unit length of road way at a given instant (vehicle/km),
V= space mean speed of vehicle in a unit roadway length (Kmph)

As we know the length of path between (B2 bypass & Sanaganer pulia), it about 3.6 km as we know the distance between points we easily find out the average velocity of the vehicles,

Table 7: The average speed of the vehicles

S.NO	TIME	AVERAGE SPPED OF VEHICLE
1	SATURDAY DAY TIME	43.2kmph
2	SATURDAY EVENING	30.8kmph
3	SUNDAY MORNING	72kmph
4	SUNDAY DAY TIME	48kmph
5	SUNDAY EVENING	32.4kmph

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From the data of vehicle average speed and the average volume of vehicles passing through a point in dspecific time interval.

Table 8: Data of average density and no of accident at that density

S.No	Time	Average vehicle density (vehicle/km)		Number of accident in that time in past 5 year
		B to S	**S to B**	
1	SATURDAY DAY TIME	57.91	69.28	39
2	SATURDAY EVENING	118.92	122.88	42
3	SUNDAY MORNING	29.90	28.56	6
4	SUNDAY DAY TIME	60.68	61.06	27
5	SUNDAY EVENING	102.74	115.52	34

V.   CONCLUSION

The study of paper show us that the number of accidents are generally occur in the evening time and due to the increase in the vehicle density at that time also due to the unexpected diversion made at the path the vehicles are cross in a unusual manner and because of not having traffic lights at the cuts on taro ki kunt , taruchaya , ram mandir and Chandra toyoto the vehicles get diverted unexpected and the vehicles in the evening time are mostly the trucks so the truck man doesn't know the unexpected diversion so the accident take place and also due to these unexpected diversion the traffic density increases and also the problem of jamming will take place.

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