Traffic Volume Measurement of Pune University Road to Paud Phata: Case Study

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Abstract— Vehicular traffic is a very sensitive concern in cities. Growing population, industrialization and urbanization, standards of living has led to vehicles on road and less use of public transport system. This results in an increase in road traffic, Pollution; accidents etc. are direct effect of increase in road traffic. There is need of Intelligent Transportation Systems (ITS) which provides safe and comfortable traffic service for drivers. There is need for smart traffic management system, which is suitable for Indian traffic situation. For this, we are going to maintain speed range and from this make green signal timing in coordinated manner. So one can pass each intersection without stoppage and also one should follow the speed range which is going to be provided on that route.

In this era of artificial intelligence, an intelligent traffic signal is necessary. This can be achieved if signals can predict the traffic flow, since traffic flow can be dependent on a number of factors such as seasons, day of week, time of day, occasions, accidents, direction of flow, type of road, weather conditions etc. In this paper, an attempt has been made to use video recording data as one of the important parameters to predict the traffic flow at an intersection.

Keywords: Intelligent Transportation Systems (ITS), Traffic flow, optimum green signaling, intersection, Actuated method.

1. INTRODUCTION

1.1General:

Transportation is carrying civilization to a brighter future. Nowadays transportation is one of the most burning issues in every territory of the world. Every country is approaching differently according to their needs and solving their transportations problems within their capabilities. In designing buildings we need to determine loads coming to the structure to calculate reinforcement to be provided for safe functioning of the structure. Here in transportation volume serves the same purpose. For planning, designing and operation of transportation system the first and foremost requirement is volume. Volume is simply the number of vehicles passing a section of a roadway. Expressing traffic volume as number of vehicles passing a given section of road or traffic lane per unit time will be inappropriate when several types of vehicles with widely varying static and dynamic characteristics are comprised in the traffic.

The problem of measuring volume of such heterogeneous traffic has been addressed by converting the different types of vehicles into equivalent passenger cars and expressing the volume in terms of Passenger Car Unit (PCU) per hour. The interaction between moving vehicles under such heterogeneous traffic condition is highly complex. Again volume is not constant. It increases with time. So a continuous method of calculating volume is a matter of great importance for smooth functioning of transportation system. If volume data is not found on a continuous basis then the transportation system may fail and the economy of the country may face a great difficulty.

Traffic congestion is a global problem. It is a growing matter of concern as it leads to a number of environmental problems. In many developed and developing countries like America, China, India traffic during peak hours is very congested. People lose valuable working hours and costly fuel each and every day. The worst affected are the developing countries like India wherein the sudden rise in use of low budget vehicles in addition to easy installments for purchase of vehicles has increased the number of buyers which has resulted the highway construction. The traffic situation in cities like Delhi, Mumbai, Hyderabad, Bangalore & Pune are getting worst.

In India the vehicles like Maruti, Nissan, Renault, Toyota and Ford are mostly used. This rise in vehicles but no planning of roads has made traffic jams. The planning of roads using advanced system like sensors, detectors should use in Indian traffic condition. The nature of traffic flow is depend on a number of characteristics which includes density, speed and traffic volume and natural factors such as time of day, weekday, weekend, weather conditions. The unpredictable nature of traffic flow makes it difficult to predict the traffic flow. Historical data is crucial in predicting traffic flow. The historical data helps to understand the traffic flow within the city, which is a different at every intersection.

There is no single, broadly accepted definition of traffic congestion. One of the principal reasons for this lack of consensus is that congestion is both: A physical phenomenon relating to the manner in which vehicles impede each others' progression as demand for limited

road space approaches full capacity. Congestion involves queuing, slower speeds and increased travel times, which impose costs on the economy and generate multiple impacts on urban regions and their inhabitants. Congestion also has a range of indirect impacts including the marginal environmental and resource impacts of congestion, impacts on quality of life, stress, and safety as well as impacts on non-vehicular road space users such as the users of sidewalks and road frontage properties. Traffic police in Pune University is inadequate in numbers compared to other mega cities in Maharashtra. All the cross roads need at least four t0raffic police at a time whereas in Pune University Junction it is seen that the number of traffic police are always short and due to the lacking of proper instruction the vehicles are getting trapped in traffic. Only two traffic police are working in the city which is inadequate.

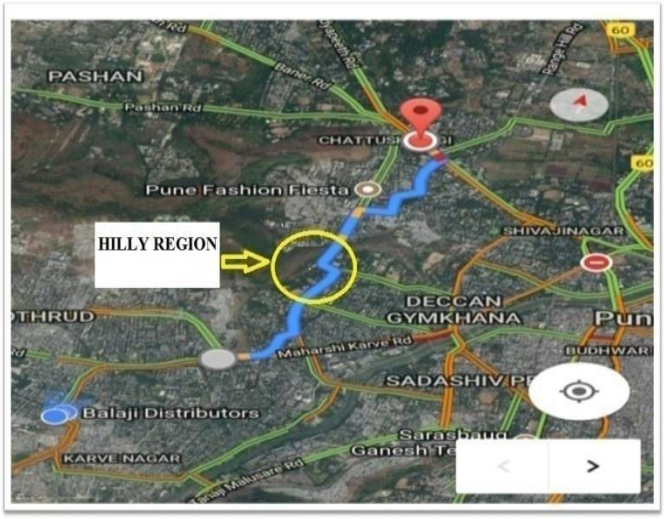

Fig. 1: Route Map

1.2 Objectives:

1. To study different traffic studies related to traffic engineering.
2. Traffic congestion problem from Pune university road to paud phata is aimed to be identified.
3. To measure hourly traffic volumes in terms of passenger car unit and note other related traffic characteristics.
4. To compare the results with standard design service volumes and identify remedies.
5. The attempt shall be made to provide the solution.

2. PROBLEM STATEMENT

Now a days, illegal possession on the roads is highly increasing due to which the roads are getting narrow and becoming a reason behind traffic jam. There are some other factors other than the above mentioned factor viz., illegal parking on pedestrian way, movement of heavy weight vehicles on roads etc. Pedestrians use main road for walking as the pedestrian way is occupying illegal parking. Heavy weight vehicles such as trucks, travels, buses are travelling along with two and four wheeler vehicles on same route, which increases traffic volume. City buses also travel on the same route, have to stop on each bus stop to pick up and drop the passengers, which leads to traffic congestion. It affects on the travel time and hence there is a need to find the solution for the above mentioned problems.

3. METHODOLOGY

1. Brainstorming
2. Project Selection
3. Route Selection
4. Problem Statement
5. Traffic Survey And Data Collection
6. Calculations And Data Comparing
7. Attempt to Provide Solution
8. Results
9. Conclusions

DIR:

TIME	CAR/VAN/JEEP	TWO WHEELER	AUTO RICKSHA	BUS	MINI BUS	LCV	TRUCK	BICYCLE	PEDESTRIANS	TOTAL
5:30-5:45										
5:45-6:00										
6:00-6:15										
6:15-6:30										
6:30-6:45										
6:45-7:00										
7:00-7:15										
7:15-7:30										

Fig. 2: Traffic Count Survey Format

4. CONCLUSION

By studying the various traffic volume study at selected route, it will help to know the real problem of traffic congestion which will lead us to design the route in better way to overcome the traffic congestion.

5. FUTURE SCOPE

These variations are needed to establish expansion factors for future use. Data which collected during project will be submitted to PMC or to the respective department which can be used for future road development programme. If we succeed to find out the proper solution on traffic congestion, it may be applied to similar traffic congestion problem on different route.

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