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SIGNAL PROVISION AT TRIDENT JUNCTION BELOW ATAL BRIDGE IN VADODARA CITY

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Abstract - *India is a country with the second largest road network in the world. India is facing a lot of traffic congestion due to the increase in urbanization and based on the comfortability of the person number of vehicles is increasing day by day which is responsible for increasing traffic congestion day by day. As we all know the in Vadodara Smart City project is going on.*

Smart City Project Work. The major problem which is noticed during this survey is that people are not obeying the free left rule, parking is not proper, traffic signals are not provided below atal bridge at trident junction .The analysis of the present study junction is carried out from the collected data of the traffic volume survey.

Key Words: Traffic congestion, classified volume count ,Smart city project, traffic characteristics and analysis, traffic Survey.

1.INTRODUCTION

A good road transport system is one of the best indicators of the economic and industrial development of a country and its growth. The road network in India has grown from 400,000 km in 1951 to about 6.32 million km at present. Also, India has the second largest road network in the world, next to USA. In today's world, road and transport has become an integral part of every human being. Everybody is a road user in one shape or the other. The present transport system has minimized the distances but it has on the other hand increased the life risk. Every year road crashes result in loss of lakh of lives and serious injuries to crores of people. In India itself about 1.5 lakh people are killed in road crashes every year which is thirteen percent of the total fatality all over the world.

Many developing countries including India have a serious road accidents problems. Fatalities rates are quite high in comparison to developed countries. While in Europe and North America the situation is generally improving, many developing countries face a worsening situation Compared to cause of death more commonly associated with developing world deaths from road accidents are by no means insignificant. Nature of the problem in developing countries is in many ways different from that in industrialized world. The proportion of commercial and public service vehicles involved in road accidents are often much greater. Pedestrian and cyclists the most vulnerable. Lack of medical facilities in these countries is considered to be an important factor leading to high death rates.

Providing the safest travel environment is a challenge that the transportation profession continues to face. Over the years, the technology of transportation has changed from many perspectives. These include changes in vehicles, driver demographics and skills, types of other road users, improvements in safety

designs, and understanding of the complex interactions needed to provide a safer traveling environment. As the changes have occurred, it has become increasingly more difficult to determine effective techniques to identify and correct safety deficiencies along the millions of existing roadway miles.

1.1 Vadodara city: A brief idea

Now Vadodara City is coming under Smart City Project work. The major problem that smart city work is facing is traffic congestion. The main reasons for traffic congestions
are narrow roads, uneven parking of the vehicles, people are not following the traffic rules, etc.
This location which was selected for the traffic survey is at trident junction below Atal bridge in Vadodara. The present paper will discuss traffic volume surveys. Traffic Volume survey was done manually as well as with the help of videography.

1.2 *Objectives of the Study*

1. To solve traffic problems such as traffic congestion, head-to-head collision, side collision etc.
2. To eliminate accident proning by providing signal at trident junction
3. To justify the need of traffic signal.
4. To reduce the congestion by providing traffic signal.
5. To check feasibility

Fig 1 : Study area

For the traffic volume analysis the field study was done at trident junction below atal bridge. In this students are divided into four groups and according to that groups they have given different sides of the road for the survey. The roads which are taken for the traffic survey are sarabhai road to trident junction , ellora park to trident junction chakli circle to trident junction. The four days survey was done at this site and the data is maintained in the traffic analysis sheet.
After the collection of all the data regarding the traffic, volume is calculated as per the direction wise.

Fig -1: Name of the figure

- L4&L1: Major sheet:1:- sarabhai to trident
- L2 : Major sheet:2 :- trident to chakli circle
- L3 : Minor sheet :- Elora park to trident
- As shown in the image, The study area shown where the data collection will be taking place by manual method and videography about which in detail will be explained in the further slides with more information.
- The data collection is hyperlinked in excel format above.

CLASSIFIED VOLUME COUNTS

The magnitude of traffic volume, composition, and their variation has decisive effect on quality of traffic flow on all categories of the road the traffic counts comprises of the fast moving vehicles like car jeep taxis, LCV, MCV, 2 wheeler, 3 wheeler, BICYCLES, Rickshaw. The available traffic data analysed systematically to determine the temporal and vehicle vice traffic flow characteristics and directional distribution of traffic on stretch. Volume capacity ratio different stretch should be determined, based on classified volume counts and road inventory surveys analysed with available guideline.

2. *Data collection*

TABLE - 1

LOCATION 1

TIME	DATE	DAY	TWO WHEELER	THREE WHEELER	FOUR WHEELER	ICV	HCV	TOTAL VEHICLE
6 TO 7 PM	12-Mar	SUNDAY	1045	251	455	12	7	1770
7 TO 8 PM	14-Mar	TUESDAY	2113	340	617	32	18	3120
8:30 TO 9:30 PM	15-Mar	WEDNESDAY	1405	447	564	52	23	2491
10:30 TO 11:30 PM	19-Mar	SUNDAY	902	303	546	21	13	1785
		TOTAL	5465	1341	2182	117	61	9166

TABLE-2

LOCATION 2

TIME	DATE	DAY	TWO WHEELER	THREE WHEELER	FOUR WHEELER	ICV	HCV	TOTAL VEHICLE
6 TO 7 PM	12-Mar	SUNDAY	481	157	256	7	4	905
7 TO 8 PM	14-Mar	TUESDAY	1365	120	232	13	8	1738
8:30 TO 9:30 PM	15-Mar	WEDNESDAY	903	123	272	3	7	1308
10:30 TO 11:30 PM	19-Mar	SUNDAY	756	156	236	9	6	1163
		TOTAL	3505	556	996	32	25	5114

TABLE - 3

LOCATION 3

TIME	DATE	DAY	TWO WHEELER	THREE WHEELER	FOUR WHEELER	ICV	HCV	TOTAL VEHICLE
6 TO 7 PM	12-Mar	SUNDAY	367	102	221	18	7	715
7 TO 8 PM	14-Mar	TUESDAY	302	135	235	12	6	690
8:30 TO 9:30 PM	15-Mar	WEDNESDAY	681	183	280	15	8	1167
10:30 TO 11:30 PM	19-Mar	SUNDAY	258	108	186	13	6	571
		TOTAL	1608	528	922	58	27	3143

TABLE – 4

LOCATION 4

TIME	DATE	DAY	TWO WHEELER	THREE WHEELER	FOUR WHEELER	ICV	HCV	TOTAL VEHICLE
6 TO 7 PM	12-Mar	SUNDAY	380	117	327	12	9	845
7 TO 8 PM	14-Mar	TUESDAY	815	253	476	23	12	1579
8:30 TO 9:30 PM	15-Mar	WEDNESDAY	395	163	217	16	8	799
10:30 TO 11:30 PM	19-Mar	SUNDAY	219	121	196	11	6	553
		TOTAL	1809	654	1216	62	35	3776

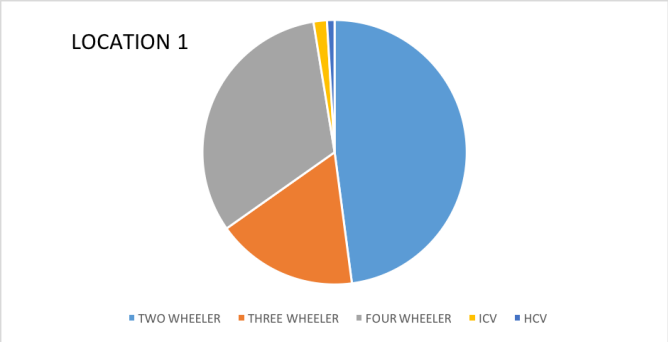


Chart 1

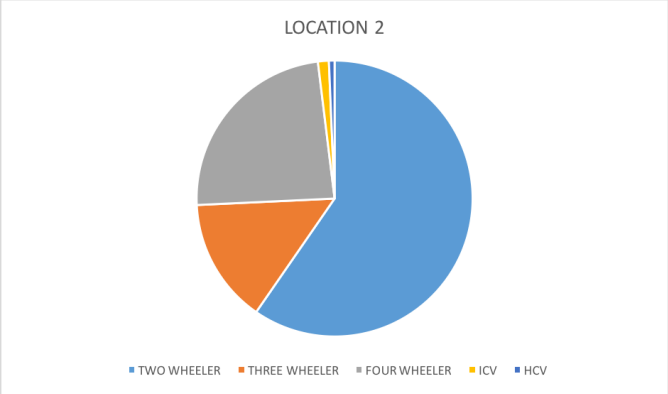


Chart 2

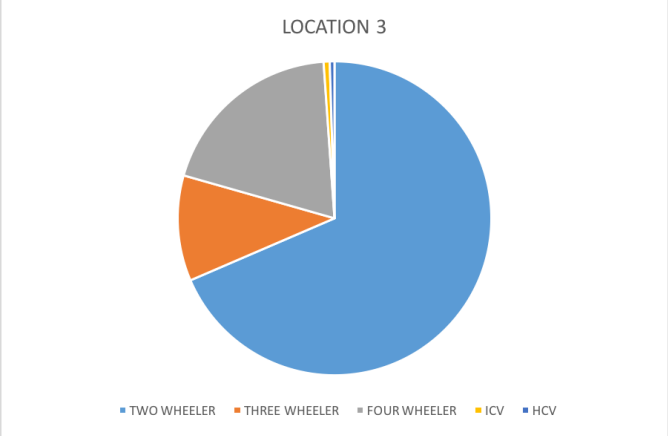


Chart 3

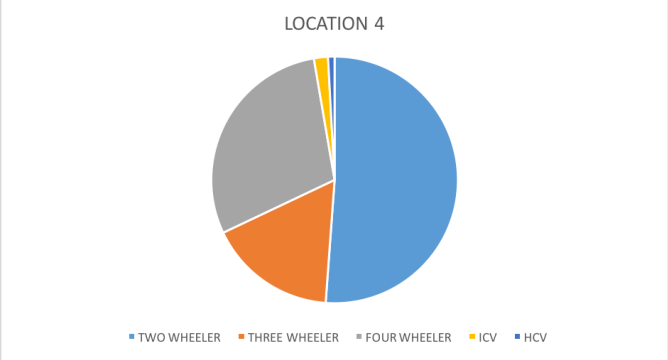


TABLE 5 (IRC 93:1985 PAGE NO. 25) MINIMUM TRAFFIC FLOWS FOR SIGNALS INSTALLATION

TYPES OF AREA	AVERAGE HOURLY FLOW IN V.P.H. TO EXCEED	
	TOTAL ENTERING INTERSECTION	CONTRIBUTION FROM SIDE ROADS
LARGE URBAN AREA	500	150
SUBURBAN AND SMALL URBAN AREAS	**400**	**125**
ELSEWHERE	300	100

As explained in the table no 1,2,3,4 the criteria's for signal provision are being satisfied with the cvc data. So as per the IRC 93:1985 ,for large urban area is 500 for total vehicles entering the intersection in which we got justifying results. And same will be applicable for contribution from side roads.

TABLE 6 (IRC 93:1985 PAGE NO. 25) MINIMUM VEHICULAR VOLUME WARRANT

As explained in the table no 1,2,3,4 the criteria's for minimum vehicular volume for signal provision are being satisfied with the cvc data. So as per the IRC 93:1985 ,for major streets from both the approaches is 800 for total vehicles entering from both sides in which we got justifying results. And same will be applicable for contribution from minor streets.

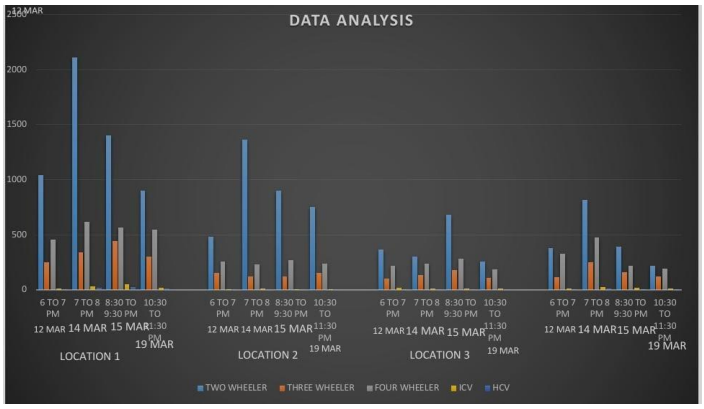
NO OF LANES ON EACH APPROACH		VEH. PER HOUR ON MAJOR STREET (BOTH APPROACHES)	VEH. PER HOUR ON MINOR STREET (ONE DIRECTION ONLY)
MAJOR STREET	MINOR STREET		
1	1	650	200
2 OR MORE	1	800	200
2 OR MORE	2 OR MORE	800	250
1	2 OR MORE	650	250

Remedial Measures

After the traffic analysis following remedial measures are suggested:

How to manage traffic congestion?

- In this, we suggested that for the control of traffic at trident junction we should provided traffic signal.
- We will provide traffic signal hanging on bridge, because if we will provide



3. CONCLUSIONS

Trident junction below atal bridge of Vadodara city is facing major traffic problems presently. The remedial measures which are mentioned above are implemented by the traffic police of the
Vadodara city and it was observed that there is an improvement in the traffic congestion.

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