



Identification of Black Spot in Urban Area

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ABSTRACT

The growth of traffic in the road network of large cities in developing countries like India is a serious concern from the traffic engineer's point of view. Increase the population of vehicles and there by resulting in increasing number of traffic congestion and accidental casualties. An accident is an unplanned and uncontrolled event, which occurred on a road open to a public traffic resulting in personal injury, damages to the property and loss of life in which at least one moving vehicle was involved. Road accidents have grown up in the recent years. The location in a road where the traffic accidents often occur is called a Black Spot. The Black spots are identified based on the accidents recorded, Speed observed, Deficiency of the Geometry and Pedestrian volume. Study is carried out on the stretch of Sarkhej to Gandhinagar (S.G.) Highway. From the selected stretch, the approach from Thalje cross road to Umiya campus is considered as a study area

Keywords : Growth of traffic, Congestion, Accident, Black spot

INTRODUCTION

Roadways are the backbone of any country, acting as indicator for the economic development of the country. Such that, the transportation plays a very prominent role in developing countries like India. More the length of roadways, the prosperity is more of the nation. But these facilities of roadways is increasing the population of vehicles and there by resulting in increasing number of traffic congestion and accidental casualties. Every day as many as 140,000 people are injured on the world's roads. More than 3000 die and some 15,000 are disable for life. Each of those people has a network of family, friends, neighbors, colleagues or classmates who are also affected, emotionally the added expense of caring for disabled family members and families struggle with poverty when they lose a breadwinner or have added expense of caring for disabled family members.

OBJECTIVES

Following are the objective of study area:

1. To carry out study of existing condition.
2. To identify the black spots in the study area.

STUDY AREA

Growth of road transport in Ahmedabad city is very fast, Sarkhej-Gandhinagar road is one of them. There is heavy volume and many big problem of traffic on this road. The heavy vehicles and passengers are moving on the S.G. highway in the Morning and evening peak hours. The accidents rate of the study area is about 35 per year including all types

of accidents as per the record of police station. The Study is carried out on the stretch of Sarkhej to Gandhinagar (S.G.) Highway. From the selected stretch, the approach from Thalje cross road to Umiya campus is considered as a study area. The length of the study area is 5.2 km.

ANALYSIS OF ACCIDENT DATA

Accident data carried out from the Sola-high court police station last five year from the 2008 to 2012, There are 52 number of fatal accident, 69 number of major accident and 53 number of minor accident Show in Table 1. Maximum accident occur between 2 wheeler, 4 wheeler and Pedestrian

Table-1 Accident statistics of Study area from the year 2008 to 2012

Year	Fatal	Major	Minor	Total
2008	9	22	9	40
2009	12	12	11	35
2010	9	14	12	35
2011	10	12	9	31
2012	12	9	12	33
Total	52	69	53	164

INVENTORY SURVEY

Inventory survey is carried out between Thalje cross road to Gota cross road at five different location. These are BMW show room, Hebatpur circle, Sola bridge, Gujarat High court and Agrawal mall. The road width, footpath, Median and Service lane are measured at the five locations. The summary of Inventories of five locations on the study area described in the Table 2.

Table 2 Inventory detail

Sr. no.	Location	Direction	Lane width in m	Footpath in m	Service lane width in m	Divider width in m
1	BMW show room	Thalje to Hebatpur circle	9.14	N.A.	9	2.5
		Hebatpur circle to Thalje	9.5	N.A.	9	2.5

2	Hebatpur circle	Hebatpur circle to Sola bridge	12	1.75	10	2.5
		Sola bridge to Hebatpur circle	12.3	1.75	10	2.5
3	Sola bridge	Toward to kargil petrol pump	8.3	N.A.	N.A.	2
		Toward to Hebatpur circle	8.3	N.A.	N.A.	2
4	High court	High court to sola Bhagwat	12	1.5	4	3
		High court to kargil petrol pump	12	1.5	4	3
5	Agrawal mall	Sola bhagwat to Gota cross Road	12	1.5	4	3
		Gota cross road to sola Bhagwat	12	1.5	4	3

SPOT SPEED SURVEY

Spot speed survey is carried out between Thaltej cross road to Umiya Campus at Five location BMW Show room, Maruti nandan restaurant, Sola over Bridge, Sola bhagwat to Sola bridge road and Agrawal mall. Table 2 shows the spot speed data for the various location on the study area.

Table 2 Average spot speed

Sr. no	Location	2W	3W/Auto rickshaw	4W	Bus/Truck	LCV
1	BMW show room	42	38	52	41	37
2	Maruti nandan restaurant	41	37	49	32	38
3	Sola over Bridge	47	38	60	56	37
4	Sola bhagwat to Sola bridge	45	42	50	37	40
5	Agrawal mall	59	47	62	46	58

(All the speed in KMPH)

PEDESTRIAN SURVEY

The volume of pedestrians is more in the morning and evening peak hours at Thaltej Cross Road. Pedestrian survey carried out between Thaltej cross road to Umiya campus evening peak hour at Five location Thaltej circle, Hebatpur circle, Kargil cross road and Sola Bhagwat cross road. Among these, Thaltej circle is having highest number of Pedestrian Volume 1325 / hour. Table-3 shows the Pedestrian volume at the various location of the study area

Table 3 Pedestrian volume in evening peak hour

Sr. no.	Location	No of pedestrian
1	Thaltej circle	1325
2	Hebatpur circle	336
3	Kargil petrol pump	376
4	Gujarat High court	414
5	Sola Bhagwat	397

CLASSIFIED VOLUME COUNT

Classified volume count survey carried out between Thaltej cross road to Umiya campus in morning and evening peak hour, at four location Bmw Show room, Hebatpur circle, Gujarat high court and Agrawal mall in Table 4.

IDENTIFICATION OF BLACK SPOT

The Black spots are identified based on the accidents recorded, Speed observed, Deficiency of the Geometry and Pedestrian volume. The black spots are Thaltej circle, Jalsa party plot, Hebatpur circle, Sola over bridge, Kargil petrol pump, Gujarat high court, Bhagwat cross road and Umiya campus.

Sr. no.	location	Time	Direction	Total PCU/ hour/lane
1	Bmw show room	Morning	Thaltej to Hebatpur circle	1203
			Hebatpur circle to Thaltej	1187
		Evening	Thaltej to Hebatpur circle	1050
2	Hebatpur circle	Morning	Hebatpur circle to Sola bridge	1945
			Sola bridge to hebatpur circle	1077
		Evening	Hebatpur circle to Sola bridge	1017
			Sola bridge to hebatpur circle	919
3	High court	Morning	High court to sola Bhagwat	1263
			High court to kargil pump	1082
		Evening	High court to sola Bhagwat	861
			High court to kargil pump	1012
4	Agrawal mall	Morning	Sola bhagwat to Gota cross Road	1150
			Gota cross road to sola Bhagwat	1118
		Evening	Sola bhagwat to Gota cross Road	950
			Gota cross road to sola Bhagwat	1017

CONCLUSION

1. The black spots are identified based on police record, deficiencies of geometric like Non availability of footpath, Non Availability of speed breaker, Advertisement board at intersection, improper zebra crossing or not availability of zebra crossing, other parameter like absence of traffic police, not working traffic signal, unauthorized parking at intersection etc.
2. Thaltej cross road pedestrian volume is too high and there are no facility for pedestrian to crossing the road, so it's create the black spot.
3. Based on the accident data majority of accident occurred between Two wheeler - Four wheeler and Pedestrian – Four wheeler because over speeding of by four wheeler and no facility for pedestrian to crossing the road.
4. There are absence of foot-path at Sola over bridge and BMW show room increase the Pedestrian accident.

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