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A PATH FOR HORIZING YOUR INNOVATIVE WORK

SPOT SPEED STUDY AT KADI SARVA VIDHYALAYA SANKUL, GANDHINAGAR

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Abstract: In this study involves the speed of vehicles near a school zone. This helps in research to recommend changes to the accessible system. This recommendation may involve organization of precautionary signs like school zone, speed limit etc. It concluded the instantaneous speed of vehicles at a specified spot or location and maintains the speed by a vehicle over our spot while the vehicle is in motion. Now days, due to rapid increase in volume of traffic the designed speed on high ways could not be maintain consequential the design speed in reaching target point. Study involves the traffic volume and checks the time to reach the target in off-peak and peak timings on a high way enlarge and to find the overall travel speed, journey speed and running speed.

Keywords: Spot speed, time, traffic flow, Traffic Volume, Peak Hour

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INTRODUCTION

Speed may be defined in traffic engineering as distance covered per unit time. Speed is the most important character of traffic and its measurement is a frequently necessary in traffic engineering studies. Speed is expressed in metric units in kilometers per hour (K.P.H.). The basic purpose of this study to achieve capable free and flow of traffic with less number of traffic accidents. This study of traffic operations provides the organization for developing methods for development in general and for solving specific problems.

This study help in deciding the arithmetic and geometric design features and traffic control for safe and capable traffic moments at our school zone. Speed is an important transportation consideration because it relates to safety, time, ease, convenience and economics. The definite speed of vehicles over a particular stretch may vary generally depending on some factors like geometric features, traffic situation, time, place, environment and driver for safe and rapid traffic conditions. While to know about exact meaning of speed first we have to know the different types of speed in traffic engineering. There are mostly two types of speed includes running speed and journey speed.

Running speed may be defined as the average speed maintain by the vehicle over our stretch of spot while the vehicles are in motion. Journey speed may be defined as the effective speed of a vehicle between two points of a stretch at specified spot or location, including all delays incur on the journey. For geometric design of roads, it is necessary to maintain and design the speeds at which vehicles travel and also to design the geometric elements such as super-elevation, horizontal curvature, vertical profile, sight distances can be determined. Spot speed study may also involves the regulation and control of traffic situations, it may enable to established the safe speed limits at our spot and speed zoning is determined. Speed study also involves the location and size of traffic signs and requires traffic signal design. it may analyzing the causes of accidents.

PROBLEM DEFINITION

In present situation the existing roads are not maintain the design speed due to the heavy traffic volume. In congested roads public faces traffic jams, accidents, bad traffic management at peak hours. Study area of the road management should be effective and there are no caution signs provided exactly at the sections. Spot area near a school zone so first consider is in point of safety of the students and to recommend provided zebra crossing on the roadway.

METHODOLOGY

Stop watch method (manually method):

The stop watch method is a manual method for speed time survey, in this method first marking as per stretch distance on roads must be done and then first reference point is a starting point and last reference point is a stop point. Now the first observer standing at a starting point with stop watch and second observer is note down the time and third observer are standing at a stop reference point. The first and third observer are standing with walkie talkie or mobile phone to stop vehicle passed on the stop point and we are estimated the time of vehicle passed in stretch area and by analyzing we find out the speed of the vehicle at our spot school zone.

The advantage of this method no set-up time is essential after the original system and markings on roads are easily improved.



Fig.1 Image of study area on Google earth map and during survey work at study area

In this images the stop watch method used at spot area kadi sarva vidhyalaya sankul, near gh-6, Gandhinagar. Time was estimated by the first observer and recorded by the second observer and first and third observer are using the mobile phone for starting and stopping the stop watch and to record the exact travel time noted by this manually method. Now the basic idea of study area and geometric design features of our study area are simultaneous as follow to the next topic.

STUDY AREA

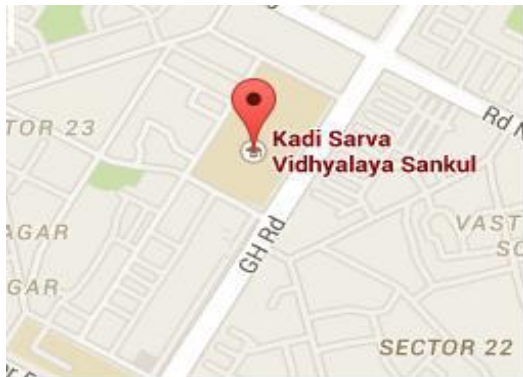


Fig. 2 Image of study area on Google map



Fig. 3 Image of Actual Study Area

Study area is kadi sarva vidhyalaya sankul near Gh-6 circle Gandhinagar. The main road is divided into two roads: road-1(In North direction) and road-2(In South direction).

The geometric design features of spot of roadway:

- Six lane roadway
- One lane road width=3.8m
- Carriage width = 11.40m
- Stretch distance=30m
- Pedestrian provided
- Pedestrian width=3.55m
- Median width=0.90m

Data collection

As this part of the research deals with establishing speed limit near a school zone and first estimation of time of various vehicle samples and then to find out the speed of various vehicle samples and then recommend speed limit if required. Data collection of travel time on stretch recorded as under:

Table -1. Record of travel time of vehicle over a stretch area for road-1(In North direction):

Travel time recorded sheet									
Location: Kadi sarva vidhyalay sankul, Near gh-6, Gandhinagar									
Direction: Gh-5 circle					to	Gh-6 circle			
Time: 10:00 Am to 10:30 Am									
Vehicle No:	Sample Type				Vehicle No:	Sample Type			
	Travel time of vehicle over a stretch (sec.)					Travel time of vehicle over a stretch (sec.)			
	2W	3W	4W	BUS		2W	3W	4W	BUS
1	5	4	5	4	11	6	5	4	4
2	5	3	4	5	12	5	6	3	5
3	6	5	4	5	13	4	4	4	4
4	4	5	3	5	14	6	5	4	5
5	4	4	4	4	15	4	5	5	5
6	4	4	5	4	16	4	4	5	5
7	5	4	5	5	17	5	6	5	4
8	5	5	4	4	18	5	5	4	4
9	4	4	3	4	19	4	4	4	3
10	3	4	4	3	20	3	4	5	4

Table -2. Record of travel time of vehicle over a stretch area for road-2(In South direction):

Travel time recorded sheet									
Location: Kadi sarva vidhyalay sankul, Near gh-6, Gandhinagar									
Direction: Gh-6 circle					to	Gh-5 circle			
Time: 10:30 Am to 11:00 Am									
Vehicle No:	Sample Type				Vehicle No:	Sample Type			
	Travel time of vehicle over a stretch (sec.)					Travel time of vehicle over a stretch (sec.)			
	2W	3W	4W	BUS		2W	3W	4W	BUS
1	4	5	5	4	11	4	5	4	4
2	3	4	4	4	12	4	4	4	4
3	4	4	4	5	13	5	4	5	3
4	3	3	4	3	14	4	4	5	5
5	3	4	3	3	15	3	3	4	4
6	4	4	3	3	16	3	4	3	3
7	5	4	3	4	17	3	4	3	3
8	5	5	2	4	18	4	3	4	4
9	3	3	3	5	19	3	2	5	5

10 4 4 4 4 20 5 4 3 4

ANALYSIS

Establishment of speed depends on various factors such as type of road, purpose of road, accessible average spot speed, etc. As we are designing speed limit for a school zone, the following speed analysis of a data collected or recorded travel time should be consistent to the various sample type of speed are measured.

Speed can be measured by the following equations:

Speed = Total stretch distance of study area / travel time of vehicle over a stretch

Now the analysis of our data collection as estimation of speed is as under follows:

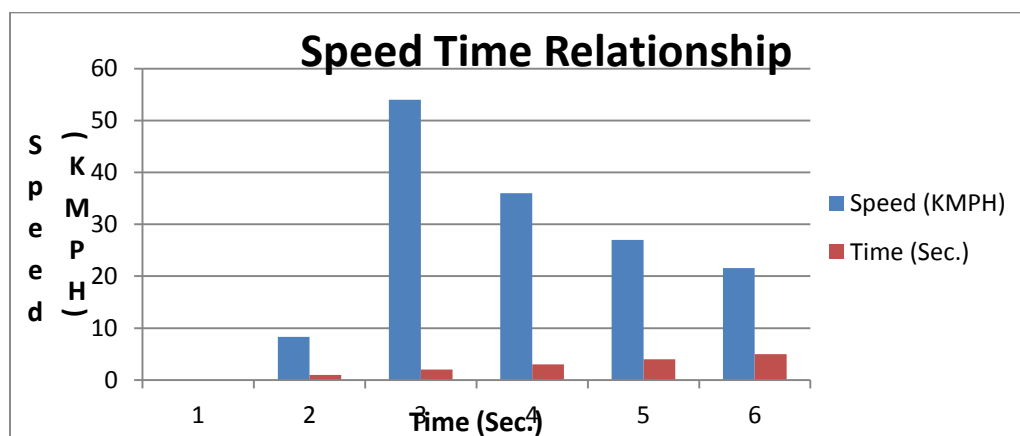
Table -3. Estimation of spot speed study of vehicle over a stretch area for road-1(In North Direction):

Estimation of Speed Study									
Location: Kadi sarva vidhyalay sankul, Near gh-6, Gandhinagar									
Direction: Gh-5					circle to Gh-6 circle				
Time: 10:00 Am to 10:30 Am									
Vehicle No:	Sample Type				Vehicle No:	Sample Type			
	Speed of vehicles over a stretch (KMPH)					Speed of vehicles over a stretch (KMPH)			
	2W	3W	4W	BUS		2W	3W	4W	BUS
1	21.6	27	21.6	27	11	18	21.6	27	27
2	21.6	36	27	21.6	12	21.6	18	36	21.6
3	18	21.6	27	21.6	13	27	27	27	27
4	27	21.6	36	21.6	14	18	21.6	27	21.6
5	27	27	27	27	15	27	21.6	21.6	21.6
6	27	27	21.6	27	16	27	27	21.6	21.6
7	21.6	27	21.6	21.6	17	21.6	18	21.6	27
8	21.6	21.6	27	27	18	21.6	21.6	27	27
9	27	27	36	27	19	27	27	27	36
10	36	27	27	36	20	36	27	21.6	27

Table -4. Estimation of spot speed study of vehicle over a stretch area for road-2(In South direction):

Estimation of Speed Study									
Location: Kadi sarva vidhyalay sankul, Near gh-6, Gandhinagar									
Direction: Gh-6 circle to Gh-5 circle									
Time: 10:30 Am to 11:00 Am									
Vehicle No:	Sample Type				Vehicle No:	Sample Type			
	Speed of vehicles over a stretch (KMPH)					Speed of vehicles over a stretch (KMPH)			
	2W	3W	4W	BUS		2W	3W	4W	BUS
1	27	21.6	21.6	27	11	27	21.6	27	27
2	36	27	27	27	12	27	27	27	27
3	27	27	27	21.6	13	21.6	27	21.6	36
4	36	36	27	36	14	27	27	21.6	21.6
5	36	27	36	36	15	36	36	27	27
6	27	27	36	36	16	36	27	36	36
7	21.6	27	36	27	17	36	27	36	36
8	21.6	21.6	54	27	18	27	36	27	27
9	36	36	36	21.6	19	36	54	21.6	21.6
10	27	27	27	27	20	21.6	27	36	27

Now we are conclude the relationship of spot speed and travel time by graphical representation over a stretch distance of our study area. By analytically cross checking the data collected and analytical value could be established by this relationship. So the speed and time relationship over a stretch distance of an our study area as under follows:



RECOMMENDATIONS

- ❖ Safety measure sign like “School Zone” should be recognized.
- ❖ Speed limit board of 35 KMPH should be recognized beside with school timings.
- ❖ Providing Zebra crossing for the school students.
- ❖ School zone board should be ascertaining before 50m from the school.

CONCLUSION

This research gives additional information at stopping intersections, roundabout and for parked vehicles, etc. For determining spot of congestion and in arriving vehicles during a peak and off-peak timings. To establish the speed limit and also provide zebra crossing, speed breakers near a school zone at kadi sarva vidhyalaya sankul, Gandhinagar.

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