Traffic Volume Count Study at Kalol Railway Crossing, Gandhinagar

Gaurang.K.Waghela[1], Prof. Pooja.A.Podar[2], Prof. Parth.D.Patel[3]
[1]*M.E. (Civil) Infrastructure Engineering, L.D.R.P. Institute of Technology & Research, Gandhinagar*
[2]*Faculty, Civil Department, L.D.R.P. Institute of Technology & Research, Gandhinagar*
[3]*Faculty, Civil Department, L.D.R.P. Institute of Technology & Research, Gandhinagar*

***Abstract*- Railway crossing are made for the efficient movement of man and vehicles with safety as a main consideration. Kalol city in gandhinagar district of gujarat has only one existing manned railway crossing. This railway crossing has single working railway line and a levelled intersection connecting arsodiya village and kalol (east) to the rest of kalol and state highway 41. This rail road crossing is located in the highly populated area of kalol which is next to the kalol railway station on one side and sintex industry (plastic industry) on other side. This conjusted area leads to traffic problems at railway crossing. Study aims to select the best alternative among the other alternative to avoid the congestion on railroad intersection.**

Index Terms- Railway Crossing, Passenger Car Unit (PCU), Traffic Volume Count (TVC), Delay Survey, Responder Survey.

I. INTRODUCTION

Transportation has helped movement of mankind and its requirement to set a civilization from the ancient times. Roads or highway are one form of the means of transporting men and material from one place to another place. It observed that from past few decade due to increasing in income and due to insufficient public transportation system more people are shifting to personal vehicle in most city, which result in increase in growth of personal vehicle in the city and result in traffic congestion problem in the city. It show that every year number of vehicle increasing with high rate. In the city it is not possible to stop traffic and it is very difficult to provide extra land as per traffic demand. At rail crossing traffic congestion problem may causes more delay time and fuel consumption is more due to frequently stoppage of vehicle. Thus alternative must be provide to reduce traffic congestion at intersection and rail crossing. To overcome this problem, signal design or over-bridge or under-pass is possible alternative. Over-bridge and Under-pass are costly structure as compare to signal design. Thus Over-bridge or Under-pass type of structure should be provide at any particular location after study on its present situation.

II. STUDY AREA

Kalol city is a taluka in gandhinagar district of Gujarat state. Kalol city is having population of about 1,33,737 (2011),it has density of 5300/sq.km. Kalol city is largest in terms of area as compared to other taluka of gandhinagar. Kalol city is well connected by national and state highways, broad-gauge railways and bus station. The city transportation is mainly dependent on roadway system. Vehicle growth has been rapid. The network is expressing heavy traffic congestion, noise pollution and air pollution. Kalol is divided into four major areas: Kalol East, Kalol center, Kalol West, New Panchvati. Kalol east and rest of kalol is separated by railway line of national importance running between middle of the city. In East side there are industries like Sintex (Plastic Industry) Bharat Vijay Mill (Textile Industry) among others and also includes residential area. This railway line has a railway crossing which is experiencing traffic problems in the city. Arrow shows the study area of kalol railway crossing on the map below.

Figure 1. Railway crossing on map of kalol city

Figure 2. Watter logging at kalol railway crossing.

III. TRAFFIC VOLUME COUNT SURVEY

Traffic volume count for peak hours (three hours) in morning and evening for both the side of railway crossing was collected manually. Traffic volume count for each 15 Minutes interval from 7 AM to 10 AM in morning and 5 PM to 8 PM in evening was collected for three days, which is 10/09/2018 (Monday), 11/09/2018 (Tuesday) and 12/09/2018 (Wednesday).

Table 1. TVC

TRAFFIC VOLUME COUNT (TVC)	
DAY	PCU Observed
MONDAY (DAY 1)	14415
TUESDAY (DAY 2)	13549
WEDNESSDAY(DAY3)	12951

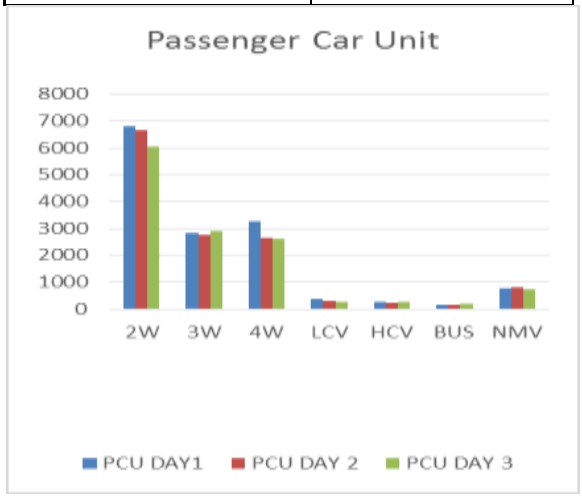

Figure 3. PCU

IV. RESPONDER SURVEY

Responder survey was conducted by the means of google form. Google form is an online survey platform for collecting data. Google form was distributed to the road users at railway crossing, 100 feedbacks were observed on the various asked question. Below charts shows the public opinion collected.

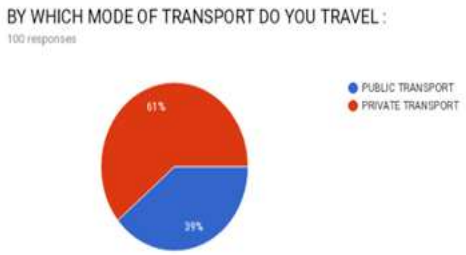

Figure 4. Survey question 1

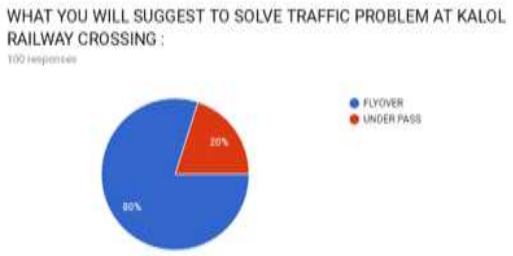

Figure 5. Survey question 2

V. DELAY SURVEY

It was found that 11 trains passed from railway crossing in morning and evening peak hour on 10/09/2018. Which resulted in 1 hr 28 min. of waiting time due to gate closer in peak hours of a day.

Table 2. Delay due to train arrival at crossing.

TIME	DELAY IN MINUTES
7:15	11
7:41	8
8:50	7
9:14	8
9:38	20
17:12	9
18:23	11
19:18	16
19:49	8
TOTAL	88 MINUTES

VI. CONCLUSION

In order to solve traffic problems at kalol railway crossing based on the traffic volume count study and delay due to gate closer, it is necessary to construct flyover to divert the traffic towards flyover which

will reduce traffic congestion at kalol railway crossing. Thus flyover is a viable option.

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