



Necessity of a rail over bridge at Vastrapur Railway Crossing

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Abstract— Developing country like India, an adequate and efficient transportation system is necessary for economic growth. Success of a city mainly depends on effective delivery of urban services of which efficient transportation system can identify as the key elements. Traffic congestion is major problem for smooth flow of vehicles in city transportation network. With increasing in number of vehicles due to increasing of population in the city it may increasing delay time and create traffic jam problem at intersection of road and rail cross. Road traffic has been growing with very rapid rate i.e. 8% per annum (as per IRC), hence the traffic intensity and volume on the road is high.

Ahmedabad is a 7th largest metropolitan city in India. There are a number of places in Ahmedabad which suffering from the heavy traffic congestion. Vehicle users have to suffer from heavy traffic congestion mainly on level crossing. Level Crossings provide a means for vehicles, pedestrians and animals to cross over railway lines or roads. Vastrapur Rail crossing is one of them, where heavy traffic occurs due to traffic hold up in mainly on peak hours. It require to improvement weather to provide over pass (rail over bridge) or under pass. This paper consist only upto methodology. Traffic Survey will be conducted in future and consideration of alterative solutions will be made. Economic Evaluation has to be done for Vastrapur Railway Crossing for selected alternatives and at last, we will come to the best alternative among them.

Keywords-component: transportation system, traffic congestion, rail over bridge, methodology

I. INTRODUCTION

An efficient transportation network is necessary for healthy economy of the country. Good transportation is a fundamental requirement for society to achieve a better quality of life. To meet the demand of 21st century, transportation links need to be efficient, fast, people friendly and sensitive to the environment.

Transportation is the critical underpinning upon which the industrial and technological complex of the nation is based. Transportation is the life-line of any country. Because of all walks of life without transportation the progress or development of any country is impossible. Transportation plays a very important role in economical and social development of the country. Fixed facilities are the physical components of the system that are fixed in space and constitute the network link (e.g., roadway, segment, railway track, and pipes) and nodes (e.g., intersections, interchange, transit terminal, harbour, and airport) of transportation system.

It observed that from past few decades due to increasing in income and due to insufficient public transportation system more people are shifting to personal vehicle in most cities, which result in increasing 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.

Level Crossings are provided for vehicles, pedestrians and animals to cross over railway lines. They exist in countries all over the world and in many different types. Level crossings are definitely impediment to free flow of traffic on approach roads. Due to traffic hold up and road accidents, level crossings are still identified as being a weak point in transportation infrastructure. This constitutes a difficult problem to be solved by Rail Authorities and Department. Indeed, Railways cannot control the actions of road vehicle drivers and pedestrians at level crossings. To minimize the risk of train striking the road users at crossings, some of the level crossing is manned while others are unmanned.

At intersection and rail crossing traffic jam problem may causes more delay time and fuel consumption due to frequently stoppage of vehicle. Thus alternative must be providing 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 provide at particular location after proper prior studies.

II. TRAFFIC SCENARIO IN AHMEDABAD

Ahmedabad is having population of about 56 lakhs (2011), highest in Gujarat and decade's growth is 20%. Ahmedabad city is well connected by an expressway, several national and state highways, the broad-gauge and meter-gauge railways and international airport. The city transportation is mainly dependent on roadway system. Vehicle growth has been rapid. The network is expressing heavy congestion. Consequently air pollution has become severe. Traffic chaos is the most obvious side effect of Ahmedabad.

To solve the traffic woes, the Ahmedabad Municipal Corporation (AMC) roped in Central Road Research Institute (CRRI) to carry out a survey of traffic situation in the city and suggest measures to ease out congestion. CRRI surveyed a total of

34 junctions in different zones of the city and have concluded that the civic body needs to build flyovers at all 34 traffic junctions in phase-wise manner.



Figure 1. Flyovers at Ahmedabad

III. STUDY AREA

Vejalpur is a neighbourhood in the New West Zone of the metropolitan city of Ahmedabad in the Indian state of Gujarat.

Vejalpur (Gujarat) is geographically located at latitude (23.006145 degrees) 23°00'22.1" North of the Equator and longitude (72.516488 degrees) 72°30'59.4" East of the Prime Meridian on the Map of the world.

As of 2001 India census, Vejalpur had a population of 113,304. Males constitute 52% of the population and females 48%. Vejalpur has an average literacy rate of 80%, higher than the national average of 59.5%: male literacy is 84%, and female literacy is 77%. In Vejalpur, 11% of the population is under 6 years of age.

Vejalpur is declared as independent assembly constituency. Vejalpur, Jodhpur and Sarkhej are the three ward of vejalpur assembly.



Figure 2. Location of Vastrapur Railway crossing

IV. NEED OF THE STUDY

At satellite-Butbhavani road (vejalpur) and vastrapur railway intersection the provided level crossing is closed by gate on road whenever train is passing as per schedule. Due to heavy traffic the long queue formed at both side of road. At an intersection no. of time in day, especially during peak hour in morning and evening as accumulated traffic is heavy on both side of road which causes delay Due to this-

- Increase in fuel consumption
- Increase in travel time,
- Increase in air and
- Noise pollution.
- Congestion affects mental power and efficiency of users.



Figure 3. Traffic Congestion on Vastrapur Rail Crossing

V. METHODOLOGY

It is required to frame the methodology to be followed before starting the actual research work. For the justification of flyover study, data works as raw material for analysis, planner and design maker. Without qualitative and detail data, scientific analysis becomes difficult.

To achieve the objectives a methodology is framed. Complete flowchart of each activity showing various stages involved is shown in fig. For this work study area is to identified for collecting data. Main stretches of the study area identify the problems, such as delay in travel time, loss of fuel consumption, air pollution, noise pollution. Traffic data are collected from location and is used for analysis purpose. Economic evaluation is carried out for the traffic data to find travel time saving and fuel saving.

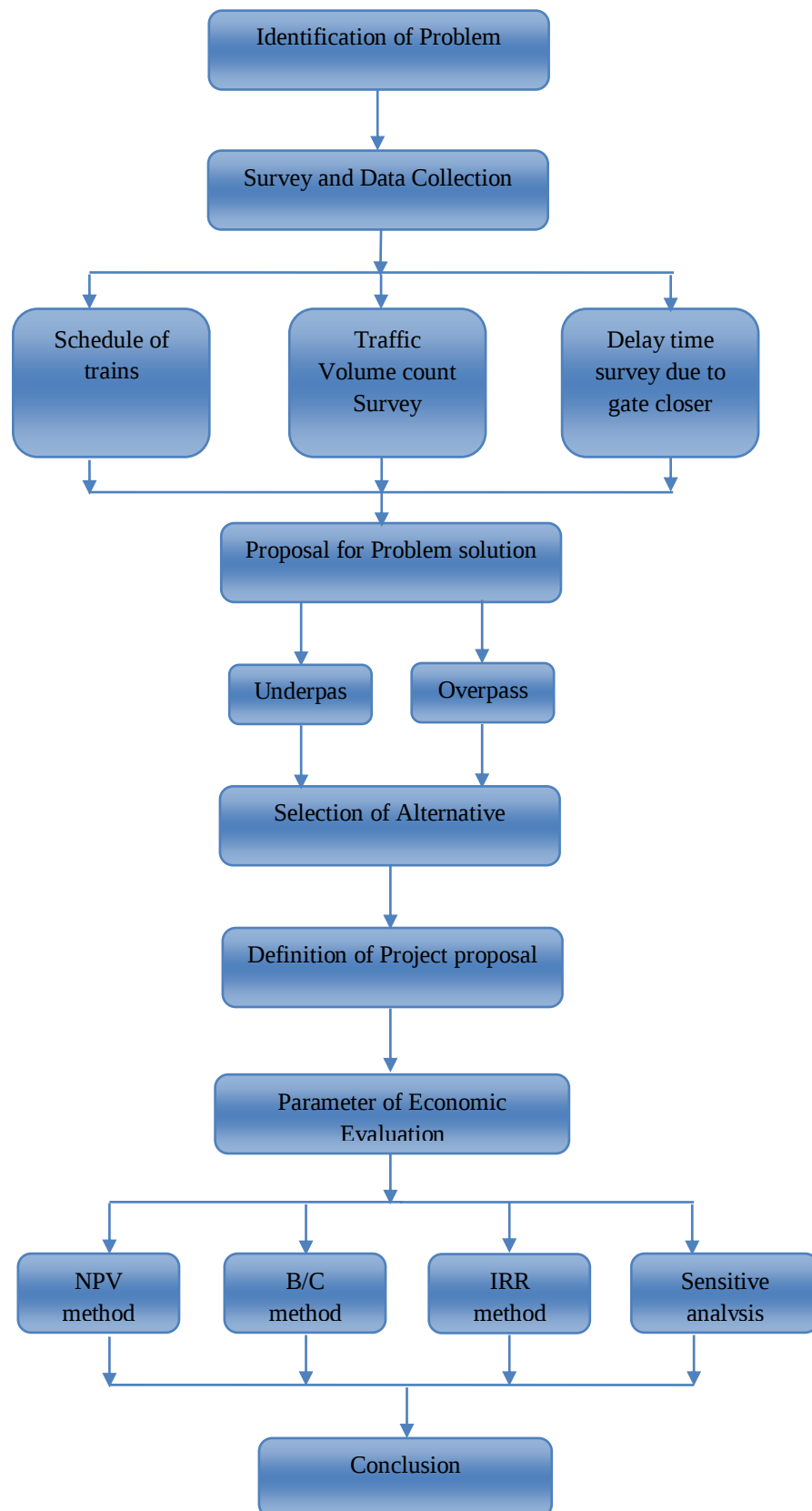


Figure 4. Methodology Flow Chart

VI. CONCLUSION

Following conclusion are made from the above study-

1. The performance of level crossing is very poor because of heavy traffic congestion at vastrapur railway crossing.
2. Due to traffic congestion many losses occurs like- more fuel consumption, time taking, noise pollution etc.
3. It is advisable to propose rail over bridge or under pass on vastrapur railway crossing to minimise the traffic hold up and for the free flow of vehicles.
4. Traffic survey should be held on the junction and then using the result the proper economic evaluation should be made to make a proper choice to propose which will be beneficial as well as well as economical cost.

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