PRE-FEASIBILITY STUDY OF TRANSPORTATION IN INFRASTRUCTURE: A CASE STUDY OF CHHAPI RAILWAY CROSSING

[1]RONAK N. MODI, [2]MS. POOJA PODAR

[1]Student,M.E. Infrastructure Engineering, Dept. Of Civil Engineering, L.D.R.P. Institute Of Technology and Research, Gandhinagar-382015, Gujarat.
[2]Assistant Professor,Dept. Of Civil EngineeringL.D.R.P. Institute Of Technology and Research, Gandhinagar-382015, Gujarat.

Ronakmodi62@gmail.com

ABSTRACT: *The study focused on the town where the traffic congestion occur due to the railway crossing and other alternative to minimised problem. Chhapi is a main town surrounding area so the approach road which connect the SH 41 is only the way where railway crossing is there.so, the many people have problem occur due to crossing likewise traffic congestion, pollution, delay, fuel consumption etc. For this research will carry out the survey likewise Delay survey, traffic volume count, accident survey so that will be done for mitigate present scenario of the condition and to find other alternative to suggestion.*

In the town all types of vehicles like wise two-wheelers, three-wheelers, four-wheelers, loaded- unloaded vehicle, trucks, buses etc. are travelled in the day or night time so congestion of the traffic. People are used public and private vehicle also to connect with different areas of the town also the state highway.

Chhapi is the main business district centre of around all town so the all localities are coming to town for some work and the chhapi is connected only state highway 41 so the around area no connectivity of them and only connectivity and in that one big problem of railway crossing in the 24 hours railway crossing more than 50 times closed so that big problem of traffic congestion, delays, fuel consumption and also the bad pavement condition so that will be direct effect to the vehicle maintenance and operation cost.

To observed data and do time calculation In research work after taking all the observation and analysis I take Diversion is the preferred alternative to solve traffic problem.as per possible two diversion if provided people awareness and people used the both diversion so decrease the traffic congestion and other benefits to the people.

KEY-WORD- Chhapi, Railway Crossing, Passenger Car Unit (PCU), Traffic Volume Count (TVC), Delays, Diversion.

1.STUDY AREA:

Figure No.1.1.Chhapi Railway Crossing

The study area "Chhapi" town of Banaskantha is the main town in the district in terms of population density, in adequate population increase over the past decade has resulted in its transport services becoming no longer able to respond to the travel needs of its residents. Increasing demand has not been matched by sufficient investment in transport infrastructure facilities, services and management. Traffic and public transport conditions in Chhapi Railway crossing have seriously increasing day by day, characterized by daily traffic jams, traffic congestion, long delays and bad pavement condition.

In the town all Banking system, education centre, Hospital, Residential area etc. have good infrastructure facility provided but in the traffic issues is the major problem, bad pavement condition, the parking facility not good and not any infrastructure development for transportation planning and management.

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2.NEED FOR STUDY:

- The research is limited to town and near about more than 10 villages which connect to chhapi. The study will carried out from the point of view of provider (Grampanchayat or the private operator), Regulate and the user the public transport system).
- The research defined as the extent which the land-use transport system and land use pattern enables individuals or goods to reach activities or destination by means of transport model.
- To find out the origin of the trip generate to connect SH-41.
- Infrastructure based facilities measures like journey time, congestion and operating speed on the road network, plays an impairment role in transport polices related to accessibility.
- Utility and activity based facilities measures are used to analyse the benefits individual derive from the land use transport system and land use pattern. Its uses in economic activities.
- To suggest best alternatives likewise underpass, over bridge or diversion for the to decrease the traffic or other simultaneous parameters at chhapi railway crossing.

3.OBJECTIVES:

- To identify travel time, delays, congestion, different alternatives.
- To manage traffic congestion for future and their control.
- To assess the level of accessibility from different parts of localities or neighbourhoods for all the sections of society to reach their destination (work place, education and shopping).
- To evaluate the best practices of public/ private transport system in town.
- To find out the what are the mitigate measure for success and failure of the different transportation infrastructure facilities in town?
- To find out the distance people are willing travel based on the modes used to access.
- To suggest good facilities in transportation infrastructure (long term/ financially sustainable/ meet the needs of locals) in town.

4.Data Collection and Analysis:

4.1 Traffic Volume Count

- This survey carried out during 24*7 in four interval 6:00 to 12:00am, 12:00 to 6:00pm, 6:00 to 12:00pm and 12:00 to 6:00am and the date of 15/12/2014 to 21/12/2014 (7days) Full day, Half day and Holiday by employing enumerates at each of the location, covering both the direction i.e. inflow and outflow.
- Manual count with 15-minute interval is used to obtain the traffic volume data, show in the below table :

Date	Types of Vehicle	2W	3W	4W	OTHERS
15/12/2014	TVC	1587	874	729	519
	PCU/HOURS	794	1311	729	1557
16/12/2014	TVC	1592	897	731	529
	PCU/HOURS	796	1346	731	1587
17/12/2014	TVC	1591	883	783	539
	PCU/HOURS	796	1325	783	1617
18/12/2014	TVC	1614	919	822	543
	PCU/HOURS	807	1379	822	1629
19/12/2014	TVC	1645	928	802	530
	PCU/HOURS	823	1392	802	1590
20/12/2014	TVC	1648	921	794	542
	PCU/HOURS	824	1382	794	1626
21/12/2014	TVC	834	658	570	406
	PCU/HOURS	417	987	570	1218

4.2 Delay Survey

- Due to bad drainage condition and not proper maintenance are done so the pavement are not good so the that will be directly effect to vehicle and people convenience.
- Heavy loaded vehicle and bullock cart or camel cart are travelling very slow so the directly effect the Pavement.
- In the monsoon lake of drainage facility pavement is become rough and pavement condition bad.

Average time to reach the SH-41 is **12min** (720sec).

Delay time due to train frequency is **12.15min** (735sec).

- So, **Total Time** to reach **SH-41** is **24.15min** (1455sec).

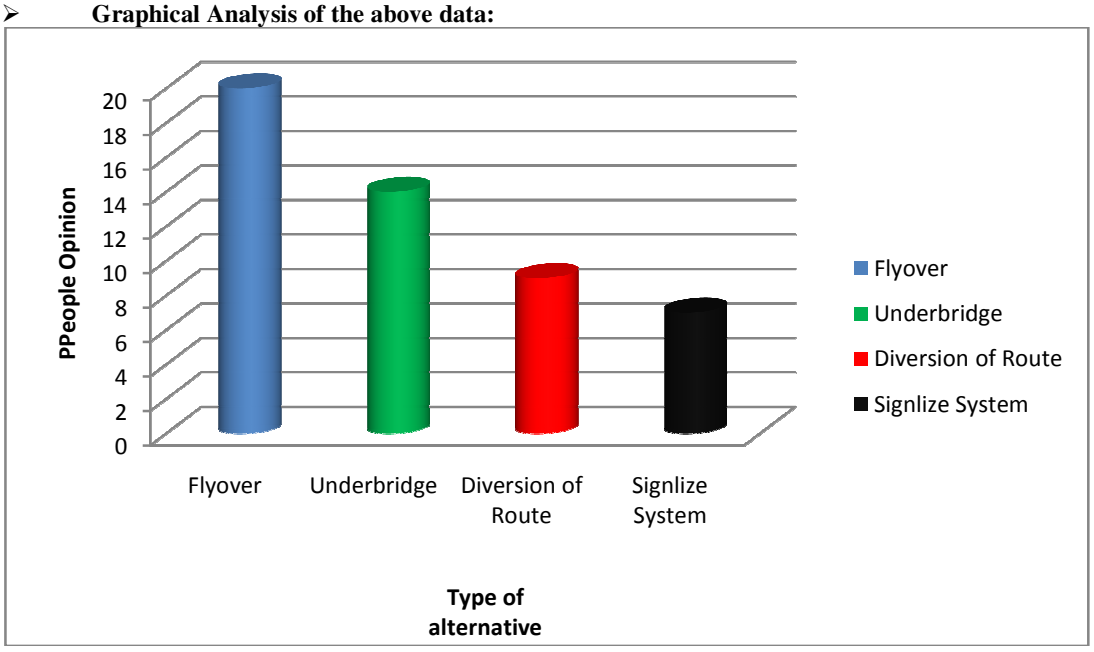
4.3 FEEDBACK SURVEY:

- In the study of transportation problems of towns, big or small, it is usually necessary to define external cordon lines, which are imaginary lines at the boundary of the study area. In big towns, it may also be necessary to select some internal cordon lines, which may be concentric ring. For checking the accuracy of survey data, it may be necessary to have screen-lines, which are imaginary lines dividing the area into parts.
- I take the 50(Fifty) people feedback survey to know the people review for the solve the traffic problem at crossing.
- For the my thesis work I take the feedback survey of the different people which they are Employment, Businessmen, Workers, Students or the public vehicle drivers.
- For the feedback survey I take home interview or the origin of the Bus station and Auto station.
- In this survey I also carried out Origin- Destination Data of the people, Occupation of the people, Which type of mode, Which type of vehicle they used for travelling and In a week how much time they used this route.
- I suggest in the Survey four option which are benefit to solve the traffic problem at crossing. Flyover, Under bridge, Diversion of the traffic & Signalizing System. In this four they give me suggestion of the best alternative to solve the traffic problem at crossing as per them knowledge.
- After carried out Feedback survey I analyse the which is the best alternative to solve the traffic problem at crossing as per the people opinion that show the data in the below table.

People Opinion

Type of Alternative	**Flyover**	**Under bridge**	**Diversion**	**Signalize System**
People opinion	20	14	09	07

- **Graphical Analysis of the above data:**



4.4 Inventory Data:

COMPONENT OF THE INVENTORY	CHHAPI RAILWAY CROSSING TO MARKET	CHHAPI RAILWAY CROSSING TO MARKET (VIA TEMPLE ROAD)	CHHAPI TO SH-41 (VIA MAJADAR CROSSING)	CHHAPI TO SH-41 (VIA PASWADAL CROSSING)
CARRIAGE WAY WIDTH(m)	3.2	2.9	3.5	3.2
MEDIAN WIDTH(m)	NO	NO	NO	NO
SHOULDER(m)	NO	NO	0.7	0.7
STREET LIGHT	YES	YES	YES	YES
BUS STAND	NO	NO	YES	YES
POLICE STATION	YES	YES	NO	NO
ROAD SIGN	NO	NO	YES	YES
TYPE OF ROAD	R.C.C. AND METAL	R.C.C. AND METAL	BITUMINOUS AND R.C.C.	BITUMINOUS AND R.C.C. ROAD

5. DIVERSION OF THE ROUTE

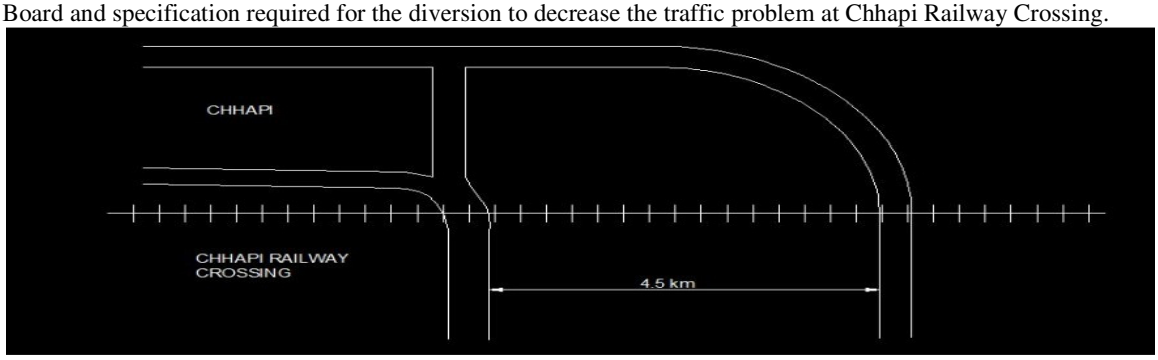
Diversion:

After considering all parameter I go though the best alternative solution to solve traffic problem is the Diversion of the route. That is benefit of the cost and economic point of view that is suitable of the people.

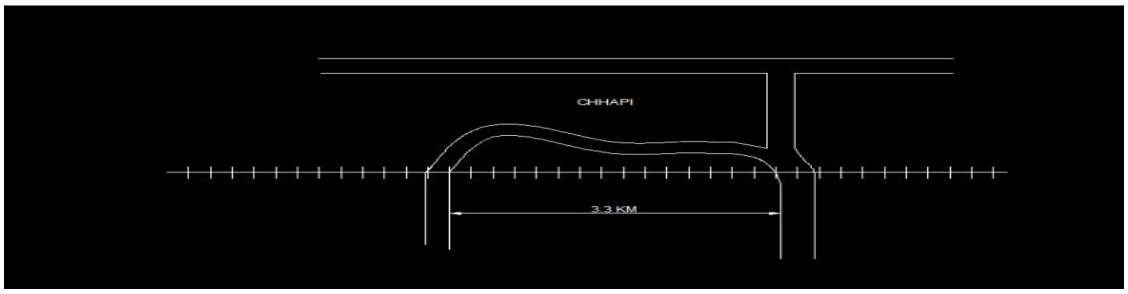
To solve Traffic problem I have two alternative solution available which are:

- Chhapi- Majadar Crossing- SH-41 (6.3km)
- Chhapi- Pasvadal Crossing- SH-41 (5.0km).

If as per my suggestion this two route are used so much beneficial to the Banaskantha District and it is helpful for the growth of the area. Also the increase the communication facility of the SH-41.If the implement of Sign Board and specification required for the diversion to decrease the traffic problem at Chhapi Railway Crossing.



Layout Planof Pasvadal Diversion



Layout PlanOf Majadar Diversion

This Table show the Distance variance and time of alternate route.

Trip Travel Time

TRIP	DISTANCE	TIME (min)
CHHAPI-SH-41	2.0km	12
Chhapi-Majadar-SH-41	5.0km	19
Chhapi-Pasvadal-SH-41	6.3km	22

6.CONCLUSION:

In this research I conclude that after studying the all the data and taking about all the required survey of the necessary to the my study area. To solve the traffic problem at the Chhapi Railway Crossing Under-Bridge and Flyover are the not more beneficial to the people which suggest me. But technical point of view and Economic aspect through the cost of the construction under-bridge and flyover so high and the construction time is more so as per study area situation that is not possible sue to the near by police station and residential area etc.

So, I take the another alternative is Diversion of the route that is all ready available but the lack of the people awareness and not proper maintain route not used as required. If, people used that route so there is much solve Traffic Problem At Chhapi Railway Crossing. And after Analysis of the data difference between to reach the SH-41 not more. Surrounding area of this two villages are used this two rote they have decrease the road user cost and vehicle operating cost. After the analysis of the data time difference is 8-10min and kilometre difference is the 3-4km. For the providing people awareness and provide proper diversion sign to used this rote. So, if people utilize the diversion of the route that is the beneficial to the people like wise Infrastructure Development and Economic point of view is the most helpful.

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