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Feasibility study on require pedestrian foot over bridge on busy corridor Mehsana city

Parixit C. Goswami[1], Prof. Hetal Pandya[2], Prof. Mauni Modi[3]

[1] *PG Student, M.E. (Civil) Infrastructure Engineering, L.D.R.P. Institute of Technology & Research, Gandhinagar*
[2]*Faculty , Department of Civil Engineering, L.D.R.P. Institute of Technology & Research, Gandhinagar,*
[3]*Faculty, Department of Civil Engineering, L.D.R.P. Institute of Technology & Research, Gandhinagar,*

Abstract *— The article critically examines the suitability of building foot-over bridges and the need for a change in the pedestrians' mindset towards safety. Footbridges can also be built in the same ways as road or rail bridges. Particularly suspension bridges and beam bridges. Some former road bridges have had their traffic diverted to alternative crossings and have become pedestrian bridges. Transportation network has become nerve of any city. The paradox here is that though meant for human travel, these roads hardly provide any quality space for those who are without vehicles (well known as pedestrian). Due to the ambiguous position of non-motorized. There is a requirement of combining traffic issues with pedestrian in a comprehensive manner and will make it an important part of road design. Preservation of nature, opportunities for cultural interface, a resource conserving environment with workable public transit and more occasions for walking should be prime objectives of urban planners.*
I have to select Mehsana City for project. At two junction Modhera and Radhanpur cross road, There is an extremely Traffic volume.

Keywords- Pedestrians, Traffic Volume, Foot over bridge, Traffic survey, intersection, Mehsana city.

I. INTRODUCTION

A footbridge (also called a pedestrian bridge, pedestrian overpass, or pedestrian overcrossing) is a bridge designed for pedestrians and in some cases cyclists, animal traffic, and horse riders, instead of vehicular traffic. Footbridges complement the landscape and can be used decoratively to visually link two distinct areas or to signal a transaction. In many developed countries, footbridges are both functional and can be beautiful works of art and sculpture. For poor rural communities in the developing world, a footbridge may be a community's only access to medical clinics, schools and markets, which would otherwise be unreachable when rivers are too high to cross. Simple suspension bridge designs have been developed to be sustainable and easily constructible in such rural areas using only local materials and labor. Pedestrian characteristics: Pedestrian's characteristics can be divided into various groups such as it can be divided according to physical space required, walking ability, walking speed depends on age, gender, physical condition.

II. NEEDS OF PEDESTRAIN SAFETY

The transportation studies conducted in various cities like Delhi, Mumbai, Surat, Bangalore, Jamshedpur etc. have revealed that exclusive walk trips constitute30-40 percent of the total trips. Further, walk trips are considerable for journeys to education and shopping especially when the distance of the trip is less than 1 km. In urban areas, people should be able to walk with reasonable comfort and safety, as walking is an essential part of a wide variety of activities. The freedom with which a person can walk about and look around is a guide to the civilized quality of an urban area. It is distressing that the pedestrian traffic has not received adequate attention in providing the facilities such as walkways, sidewalks and pedestrian crossings. Due to the absence of appropriate facilities, pedestrian are left to find space for themselves on urban streets, and Delhi is no exception to this. The share of walk mode is decreasing over a period of time and to arrest this declining share is the need of the hour. presents the decrease in share of walk trip in some Indian cities.
Declining share of walk trips, increasing number of road accidents where about 50% involve pedestrians necessitate the demand to study pedestrian flow characteristics in a scientific manner and incorporate the results in planning, designing and upgrading the various pedestrian transport infrastructure/facilities.

III. STUDY AREA

Study area which is situated in the south west zone of the Mehsana city. And it is highly congested and facing lot of traffic problems in terms of vehicle conflicts. South West Zone, a well developed residential area has urban arterial road that i.e. SH-41 Road which links Ahmadabad– Palanpur highway road. In Mehsana city two major intersections namely Radhanpur cross road and Modhera cross road.the stretch of 1.5 km. It is of four lanes with divider. It the link provides access between residential area and commercial area between the cities.

- It has relatively dense residential, commercial and shopping land uses.
- There are numbers of minor and major intersections, and there are no existing traffic signal controls
- After the selection of road stretch two major intersections are selected from visual traffic observation.

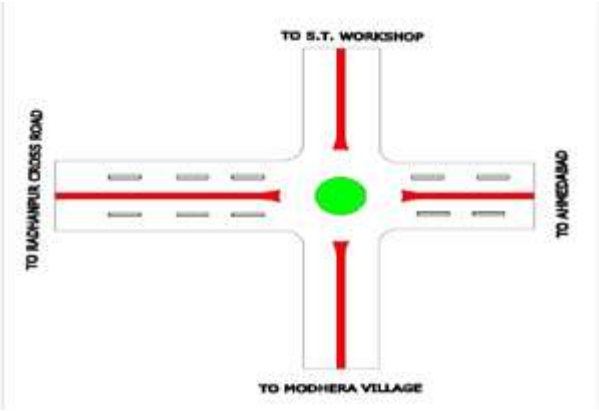

Figure 3.1: Layout of Modhera cross road

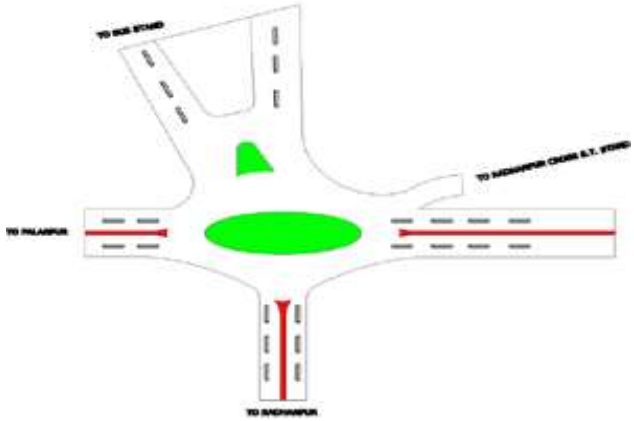

Figure 3.2: Layout of Radhanpur cross road

IV. DATA ANLAYSIS

Traffic Volume Survey Analysis is done by Traffic Volume Composition, Traffic Volume Mode wise, Turning Movement Composition Daily Variation of Traffic Volume Mode wise is been analyzed and presented.

Table: - 4.1 PCU Factors for various type of vehicles

Sr. no	Vehicle class	Equivalency factors
1	Passenger car, tempo, auto rickshaw	1.0
2	Bus, truck, tractor-tailor	3.0
3	Motor cycle, scooter, Bike	0.5
4	Horse drawn vehicles	4.0
5	Large bullock cart	8.0

- **Modhera Cross Road:**

Traffic regulatory and control systems are designed on the basis of accurate vehicle flow data. The design of signals and road junctions are possible only if, among other things, the vehicle flow data are available so this study will be helpful in future for such a design of intersection. For evaluating the financial viability of privately financed toll roads, the important consideration is the volume of traffic both present and future. Volume count data are, therefore, collected very carefully for this project. The proposal alternatives for the Modhera intersection are conceptual but it can helpful in future, if the design calculation will do accurately by one. The traffic volume survey is been done by direction wise and mode wise also the counted and analyzed carefully which will helpful to formulate suitable proposal for junction improvement in future.

Table: 4.2 classified volume count survey at Modhera cross road

Direction	**Modhera to Randhapur cross road**		**Radhanpur to Modhera cross road**	
	(In vehicle)	**(In PCU)**	**(In vehicle)**	**(In PCU)**
2- Wheelers	2658	1329	2426	1213
3- Wheelers	1450	1450	1020	1020
4- wheelers	2590	2590	2422	2422
commercials	569	1707	441	1323
Total	**7267**	**7076**	**6309**	**5978**

- **Radhanpur cross road Intersection**

It is a typical intersection situated on SH-41 Road of the Mehsana city. There are tremendous development activities going on right from the study junction in terms of number of commercial centres, hotels. It is four legs intersections. Here way to bus stand approach is 2 lanes undivided while remain3 approach is 4 lane divided road. Figure shows the detail of The Radhanpur cross road intersection.

Table: 4.3 classified volume count survey at Radhanpur cross road

Direction	**Modhera to Randhapur cross road**		**Radhanpur to Modhera cross road**	
	(In vehicle)	**(In PCU)**	**(In vehicle)**	**(In PCU)**
2- Wheelers	2447	1228	2575	1289
3- Wheelers	1095	1095	1316	1316
4- wheelers	2433	2433	2549	2549
commercials	469	1407	622	1886
Total	**6444**	**6163**	**7062**	**7040**

- **CLASSIFIED HOURLY PEDESTRIAN FLOW AT MODHERA AND RADHANPURCROSS ROAD**

Table: 4.4 Hourly pedestrian flows at Modhera and Radhanpur Cross road

No	Time		Modhera cross road pedestrian volume	Radhanpur cross road pedestrian volume
	From	To		
1	6.00	6.30	72	60
2	6.30	7.00	63	82
3	7.00	7.30	95	74
4	7.30	8.00	122	99
5	10.00	10.30	174	138
6	10.30	11.00	196	152
7	11.00	11.30	182	177
8	11.30	12.00	175	186
9	2.00	2.30	168	172
10	2.30	3.00	180	196
11	3.00	3.30	192	181
12	3.30	4.00	173	198
13	6.00	6.30	136	175
14	6.30	7.00	102	162
15	7.00	7.30	189	144
16	7.30	8.00	78	102
Total			2207	2298

- **ACCIDENT RATE OF PAST DECADE OF MODHERA AND RADHANPURCROSS ROAD**

Table: 4.5 Accident rate of past decade of Modhera and Radhanpur Cross road

No	Accident at work	Accident data of past five years of Modhera and Radhanpur cross road				
		2011	2012	2013	2014	2015
1	Fatal	10	9	13	13	14
2	Serious	28	20	21	19	30
3	Minor	51	56	26	21	17
4	Others	5	3	43	21	71
Total		94	88	103	74	132

V. CONCLUSION

This study takes into account the time savings to the pedestrian and has successfully demonstrated that the projects for pedestrian are also economically viable. Besides tangible benefits there are other non tangible benefits also, like comfort safety and security which also has to be considered while providing any facility for pedestrian. The provision of pedestrian foot over bridge facilities in congested areas will provide a safe and comfortable journey to the pedestrian. In this study only the benefits accrued to pedestrians in terms of time savings has been taken into account. Due to encroachment on sidewalks and heavy bidirectional movements of pedestrians, the pedestrians tend to share the carriageway and cause delays to vehicles as well as its a safety hazard to them. By providing a pedestrian foot over bridge facility the vehicular delays will be reduced and the pedestrians will be able to move safely. If the benefits in terms of, fuel savings, time savings to vehicles. The transport planning should be aimed at moving people and not vehicles.

As per the above discussions we can say that pedestrian must be considered as one of the most important and an inevitable part of urban planning element. It will not only be useful to some percentage of overall population but rather would be helpful to everyone in need and who would not want to take the risk of accidents including all and each single possibility. Pedestrian facility with properly design directly encouraging community towards safer direction view point for happy life. Pedestrian facility which is less or not available to enough people that increases damage of lives. "Nothing is precious than life" sentence is suitable to this type of situation. Pedestrian facility will definitely be used when provided due to tremendous requirement. Pedestrian facility provision with a proper management will give unbelievable positive growth of community. Unacceptably high accident rates gives warning to all and that same discourage smooth vehicular traffic movement.

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