



To Proposed Bicycle Lane Planning & Designing in Gandhinagar Smart City

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Abstract –

This topic covers all aspects of bicycle lane planning and designing. It provide basic information on various planning and design concepts and offers extensive reference to help & implement them. It describe general non –motorized planning practice. And to measure & predict nonmotorized travel. Also to evaluate and to implete various programs that support non-motorized transportation. It covers planning for paths, sidewalks, bicycle lanes & street improvements Also include road and path maintance, road safety, personal security, non – motorized traffic rules & regulations, education and encouragement programs and integration with a community's strategic plans and various other programs. There are also provide more detailed information on planning , design and evalutation of bicycle lane. The importance of providing opportunities for proposed separated bicycle lane projects because a strong public involvement program will ensure that social, economic, and environmental issues are fully considered.

I. INTRODUCTION

Bicycling is increasingly important means of transportation for Gandhinagar city residents and are integral components to the regional transportation system. The Bicycle Plans will help satisfy the growing demand for travel, commuting, and recreational oriented bicycle infrastructure. People use bicycle for a variety of reasons. People may use bicycle because of the health benefits associated with recreation and being active. Other people may choose alternative modes of transportation because of the economic and environmental benefits. These Plans are designed to serve as the making improvements to the Gandhinagar city bicycle network. These planning processes utilized a regional approach that focuses on the implementation of bicycle lane and pedestrian accommodations that are continuous and consistent throughout the cities.

1.1 Objective of Study

- Improve bicycle and pedestrian infrastructure.
- Reduce dependency on private motor vehicle usage.
- Reduce road congestion.
- Increase capacity for local public transport networks.
- Reduce health costs, travel times, noise and vehicle operating costs.

1.2 Scope of Work

- Increases bicyclist comfort and confidence on busy streets.
- Creates separation between bicyclists and automobiles.
- Increases total capacities of streets carrying mixed bicycle and motor vehicle traffic.
- Increases predictability of bicyclist and motorist positioning and interaction.
- On streets with high transit vehicle volume.

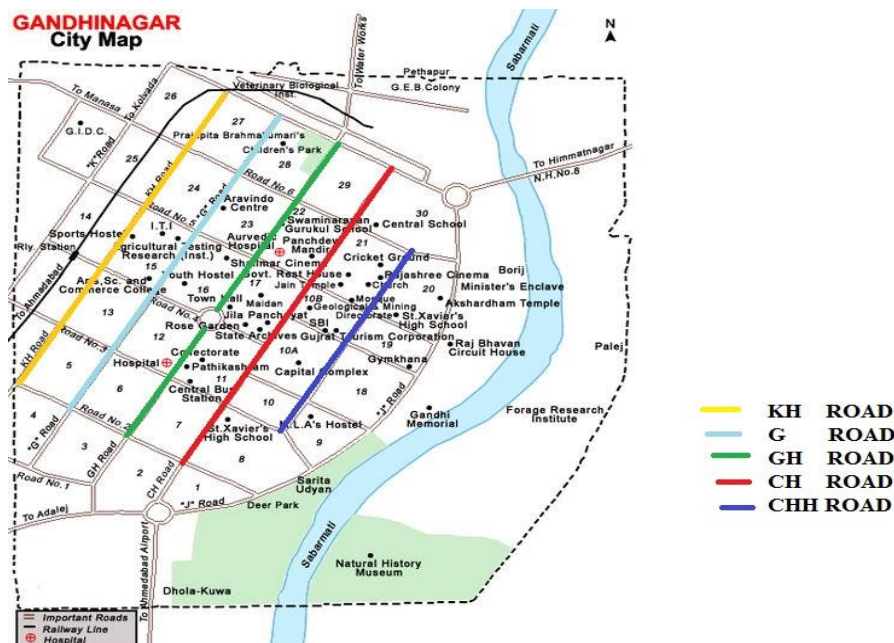
II. BACKGROUND AND LITERATURE REVIEW

Large number of studies has been reported on focusing to identifying the design of bicycle lane. Many research have been examined for the improvement of bicycle lane facility of the research by John S. Allen. How to prepare bike lane is research by Michael Veysey. Pedestrian and bicycle planning: a guide to best practices by Todd Litman. Many measures must be taken in order to improve cyclist safety. Collection of Cycle Concepts is part of the Danish Ministry of Transport's overall plan for promoting more and safer bicycle traffic. **Collection of cycle concept** research taken by Søren Underlien Jensen.

III. METHODOLOGY

3.1 Selection of Study Area

In its revised development plan for 2014, the Gandhinagar Urban Development Authority (GUDA) plans to give the state capital a green street network and a bicycle sharing facility besides normal public transport. But proper separated bicycle lane are not provided in Gandhinagar city. The bicycle sharing project will be implemented in three phases over 338 sq km area of Gandhinagar, including 57 km of roads within Gandhinagar Municipal Corporation limits. The cycle sharing project will link 62 km of roads in the city in three phases. For the first phase of the project, GUDA has chosen 'Kh', 'G', 'Gh', 'Ch' and 'Chh' roads which touch the city's important places such as Pathikashram, Akshardham.



3.2 Problem Solution

In Gandhinagar City currently bicycle and bicycle parking facility are provided. But proper individual bicycle lane are not provided. So I planning and designing of proper bicycle lane.

3.3 Data collection and Analysis

Taking survey for bicycle user opinion

Bicycle User Survey

The intent of this survey is to learn more about people's preferences for bicycle riding in Gandhinagar. Please take a few minutes to complete the following questions:

Bicycle Questions:

1. Where do you like to ride your bicycle?
2. How often do you ride a bicycle?

3. Why do you ride a bicycle?
4. How far do you ride your bicycle on average? (km / hrs.)
5. Which is origin and destination of your trip?
6. You have face any problems for bicycling at these locations?
7. Do you like any seperate bicycle lane on this road?
8. After cycling do you use any 2 – wheeler or 4 – wheeler?
9. What experience about bicycling?
10. What financial benefit from the bicycleeing ?
11. Do you fill health benefit from the bicycleeing ?

3.4 Ridership scenarios

➤ Some initial estimates of the number of potential subscribers and daily users were prepared using the following demographic data:

- Population density in Gandhinagar: 7,939 persons per sq km
- Study area size: 21.8 sq km
- Trip generation rate: 0.92 motorised trips per day

➤ Table indicates the subscriber base as a fraction of the population residing in the study area (21.8 sq km study area * 7,939 persons / sq km = 173,000 persons). It also estimates the number of trips per day assuming that each subscriber makes 0.92 trips on the cycle sharing system. These trips include users of personal motor vehicles who switch to cycle sharing as well as public transport customers who begin using cycle sharing as a feeder mode.

3.5 Subscription and ridership scenarios

Uptake rate (% of population residing in the coverage area)	Number of subscribers	Number of trips	Number of trips per cycle per day
2% of 173,100	3,500	3,200	2.2
4% of 173,100	6,900	6,400	4.5
6% of 173,100	13,800	12,700	8.9

IV. Result and Discussion

After analysis of bicycle user survey the seperate bicycle lane are design . The design cost for 2m wide & for 6 km road is Rs. (2,36,37,861 crore) . And Earnings Rs. (2,60,97,500 crore) from Annual subscriptionsper year & also from Advertising.

So from the Benefit / Cost Ratios method

$$\text{B/C Ratio} = \frac{\text{Annual benefits from bicycle user and advertising}}{\text{Annual bicycle lane capital costs}}$$

$$\text{So, B/C} = \frac{2,60,97,500}{2,36,37,861} > 1.0$$

Than the project is justified, since $B/C > 1.0$

V. CONCLUSION

In this research paper study was taken into account for planning and designing of bicycle lane. After analysis of result the project is justified and making separate bicycle lane is advantageous for future. There is also improvement of bicycle lane planning & designing is providing in Gandhinagar City.

VI. REFERENCES

1. www.cleanairpartnership.org
2. www.nctr.usf.edu/wp-content/uploads/2012/4177937
3. www.vtpi.org/nmtguide.doc
4. www.nyc.gov/html/dot/download/oads/pdf/rr.ite-08-qthave.pdf
5. Gandhinagar cycle sharing system
6. American association of state highway and transportation officials
7. Ninth avenue bicycle path and complete street
8. DRAFT AASHTO Guide For The Planning, Design, And Operation Of Bicycle Facilities