ISSN - 2250-1991

Engineering



Study on Urban Transportation System for Surat City

* Bhavesh N Patel ** Jigar K Sathawara *** Prof. M. R. Bhatt

* M.E.Transpotation Engineering, L.D.College of Engineering, Ahmedabad.

** M.E.Transpotation Engineering, L.D.College of Engineering, Ahmedabad.

*** Retd. Prof. L.D.College og Engineering, Ahmedabad.

ABSTRACT

The uncontrolled growth in urbanization and motorization generally contributes to an urban land use and transportation system that is socially, economically and environmentally unsustainable. This paper uses Surat city as a case study, which is second largest urban city in Gujarat. In Surat city the growth rate of population is more so the people travel from one place to another places for their different purpose like job, education, business etc.

Keywords : Mass Transportation, Growth of urbanization, Average Daily Traffic, Vehicle Growth pattern

1.INTRODUCTION

Surat is a city located on the western part of India in the state of Gujarat. It is one of the most dynamic city of India with one of the fastest growth rate due to immigration from various part of the Gujarat ant other state of India. Population of city is reported as 4.5 million as per census 2011 with almost 60% decadal population growth rate. NH-8 passes within 16 km of the SMC boundary and is one of the busiest interstate trunk routes in the country and is located midway on the Ahmedabad-Mumbai roadway.

Surat is well known as the hub for Diamond Business, not only in India but also in entire World. Surat has specialty in polishing and shaping rough diamond. From entire world lots of diamond comes to Surat for cutting, polishing and shaping. Surat city is equally popular for its textile industry. Thousands of textile industries processing various stages of textile material are located in and around Surat. Many other industries are grown in the nearby areas of Surat. Hazira and nearby industrial areas are developing very rapidly. The development and expansion of Surat is due to this rapid growth of industry and Trade.

1.1 OBJECTIVES

- To carry out study of existing transportation facility
- To carry out feasibility study for mass transportation users.
- > To evaluate the different modal share for urban transportation

2. STUDY AREA

The study area includes Surat Urban Development Authority which covers an area of 722.0 sq.km. The study area also includes area within Surat Municipal Corporation and peripheral villages.

Fig. 1.1: Map of Surat City



2.1 Growth Trends

During 2001 to 2011, the city experienced an exceptionally high decadal population growth rate of 76.02 percent. Below table shows the growth rate of Surat city.

Table 2.1: Surat Population and Area Growth

Year	1951	1961	1971	1981	1991	2001	2011
Area(sq. km)	8.18	8.18	33.85	55.56	111.16	112.27	326.51
Decadal Growth Rate(%)	-	29.05	63.75	64.65	93.00	62.38	76.02
Sex Ratio	916	915	887	857	839	774	758

Source: www.censusindia.com

2.2 Road Network

Surat city has good network of ring road and radial type. The roads which are in old city have lesser width so they are more congested. The mid-block peak hour traffic is more than 10000 PCU/hour. The important major road are Bathena Anjana Road, Lambe Hanuman Road, Aswanikumar Road, Ved Road, Katargam Road, Althan Road, Headgover Road, Dindoli Road, Ghoddod Road, Adajan Hazira Road, Athwa Dumas Road, Udhna Navsari Road, Udhna Magdalla Road, Bardoli Road, Varachha Road, Katargam Amroli Road, Rander Road.

2.3 Registered Motor Vehicles

The table 2.2 shows the registered vehicles in surat RTO area during 2009 to 2012, which shows the increasing number of vehicles in area.

Table 2.2 Vehicles Registered in Surat RTO

Cr. No.	Turne of Vehicle	Number of Vehicles in Surat			
51. 140	Type of vehicle	2009-10	2010-11	2011-12	
1	Motorcycle	70744	964843	1062949	
2	Auto Rickshaw	4677	58041	65385	
3	Motorcar	16029	108334	121862	
4	School Bus	1315	1596	1966	
5	LGV	680	702	720	
6	MGV	9004	9186	9427	
7	HGV	13866	14713	1689	
	TOTAL	116315	1157415	1263998	
Source: Surat RTO					

138 ★ PARIPEX - INDIAN JOURNAL OF RESEARCH



Fig. 2.1 Percentage of Vehicle registered at Surat RTO

2.4 Passenger Car Units

In the present study PCU factors recommended for urban areas would be applicable as per Table 2.3.

2.4 Passenger Car Units

In the present study PCU factors recommended for urban areas would be applicable as per Table 2.3.

Vehicle Type	PCU Factor
Bicycle	0.50
Two Wheeler	0.50
Auto Rickshaw	0.75
Car/Jeep/ Van	1.00
Tempo/ LCV	1.50
Mini Bus	2.00
Bus/2 Axle & 3 Axle Trucks	3.00
Multi Axle Vehicles	4.50
Animal/Hand Drawn	4.50

2.5 Average Daily Traffic

An assessment of average daily traffic provides the intensity of traffic on various corridors in the study area and Temporal and Spatial characteristics of traffic movement in the city, which is useful for planning point of view.

ISSN - 2250-1991

Table 2.4	Traffic at	different	roads
-----------	------------	-----------	-------

Sr. No.	Road Name	PCUs	Share in Total(%)
1	Udhna Navsari Road	42280	13.42
2	Magdalla Road	18890	5.99
3	Athwa Dumas Road	32098	10.19
4	Dindoli Main Road	15678	4.97
5	Amroli Road	41932	13.31
6	Varachha Road	51345	16.30
7	Variyav Road	9855	3.12
8	Rander Olpad Road	11342	3.60
9	Palanpur Road	13564	4.30
10	Adajan Hazira Road	16587	5.27
11	Bardoli Road	61385	19.49

2.5.1 Travel Pattern of Passenger Vehicles

Travel pattern varies with different locations. It can be observed that traffic is more predominant at Varachha road, Udhna navsari road, Amroli Road and Bardoli road. The desired line diagrams for public transport and private vehicles are presented. Data collected from Origin-Destination survey in study area.

On analyzing of the percentage of traffic the following interference are made: The regional road has more truck traffic. Maximum traffic observed on Hazira Road and minimum on kamrej crossing..

Conclusion

From the study following improvement should be proposed

- Only GSRTC bus system and private bus system is in operation but other modes of public transport like BRTS, LRT should be proposed.
- (2) Bus mass transit routes proposed by SMC.
- (3) Bus Mass Transit routes proposed with BRTS/LRTS along North-South and East-West corridors.