

Intelligent Transport System: A Sustainable Future Prospect



Engineering

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ABSTRACT

The towns and villages near Metro cities are facing a lot of traffic problems in commuting to cities hence it becomes mandatory to reduce these problems. Therefore we intend to study about the various problems causing traffic congestion on SH60 which is most developing highway connecting Pune. Especially at Wagholi town on SH60, the traffic intensity is on an increasing rate which needs to be solved before getting worse. So we did traffic intensity survey, road profile survey of it and then studied and analyzed the source for these problems. Then on the basis of the collected data we suggested appropriate and economic solutions. Also on the basis of past experience by the experts will make estimation for the proposed solutions. By this project we aim to reduce the traffic problems at SH60 for the next 10-15 yrs.' by proper arrangement of the roads and infrastructure we have.

INTRODUCTION

Infrastructure is an important tool for the development of a country and transportation consist of 80% of the total infrastructure. India is having comparatively poor infrastructure as compared to other developed countries. Some of the major issues which create the traffic problems are no proper planning, violation of the rules & regulation, bad construction and improper management.

Major traffic issues are noticed on the roads connecting outskirt areas to the Metro cities. Out of which the major concern is traffic congestion that happens due to non-recurring highway incidents, such as a crash or road works, which may reduce the road's capacity below normal levels.

Due to the increasing population in metro cities people started moving towards the outskirts for having a better and peaceful life. This situation has compelled us to think about increasing the living standards and providing better infrastructure in these areas.

Amongst the metropolitan cities in India, Pune is one of the fastest developing metro- politan city. Its outskirt areas are also developing at a very fast pace. SH60 is one of the major state highways which connect Pune to Shikrapur, Ahemednagar, Shirdi and the development around it is increasing with every passing day which increases the traffic intensity which ultimately leads to the traffic congestion and other traffic related problems. Thus, it is necessary to look on this area of Pune city where development is at its peak. The changes that we want to make should be planned in this initial stage of its development as later on it would be difficult to make a new start. Some of the basic facilities like Ring roads, walking path, stops etc. should be provided along with the major constructions for reducing issues.

Pune is known for its education and the hub of industries due to which the population has increased rapidly in past few years. The number of two wheelers used by people here is more than any other city in the country.

The need of hour is to increase the use of public transport by people so that private vehicles can be reduced from the roads. This will lead to the reduction in traffic intensity and thus congestion will be less. For doing this government should implement the BRTS in all the possible routes so that frequency of public transportation will increase and people can use better and frequent public transport.

The weak transportation system has various drawbacks which directly impact the economy of the country along with its social, mental and environmental impacts. Congestion is one of the factor which happens due to poor transportation system. Due to increased idling, acceleration and braking in traffic jams the wastage of fuel increases which ultimately leads to air pollution and carbon dioxide emission.

Blocked traffic may interfere with the passage of emergency vehicles going to their destinations where they are urgently needed and the worst cases can be seen with ambulances.

Thus, before starting a new infrastructure for roads and providing new facilities it is necessary to do proper planning as huge investments are involved in it. As we know that population and the intensity of traffic has increased considerably in the past 10 years it is our prime concern to do planning on the basis of sustainable future prospect for next 15-20 years.

Name of City	PUNE
Geographical Area (Sq.kms)	743
Population	55 lacs
Vehicle Population	31+lacs
Road length (Kms)	3283 (PMC-1850, PCMC-1297, PCB-48, KCB-88)

Table 1: General Details
Source: Pune RTO

CASE STUDY

In the present study traffic problems faced by people commuting from nearby towns and villages to metro politan cities was surveyed and the suitable solutions for the same is suggested.

Pune is in its developing stage and the state highway 60 which connects it to the nearby areas is the most developing highway due to the increasing number of educational institutes, companies, townships, industries etc. and because of this rapid growth traffic intensity has been increased which causes traffic issues such as congestion.

From the detailed survey of traffic intensity and road profile of SH60 the exact idea and the reasons behind these issues are acknowledged. The sudden decrease and variation in the road width is one of the basic reasons apart from improper traffic

management and lack of effective transportation system.

The traffic intensity survey was carried out by manual counting method for calculating the traffic volume passes from SH60 in a day. It was done at three different locations kharadi bypass, wagholi and alandiphata during the peak hours the time at which traffic intensity is maximum. By comparing the collected data with the data of 5 years before we can easily say that the traffic intensity has increased by 40% from the past 5 years.

The purpose of road profile survey is to provide data from which a vertical section of

The ground surface along a survey line can be plotted. It gives the elevations at selected intervals and thus the formation level can be found out for the surveyed profile. In case of SH60 the survey from kharadi bypass to bakoriphata for a distance of 7.2 kms was carried out and from the data we get to know that the reduced level varies from 91 to 132 and this is the prime reason for the varying road surface and large undulations. Due to the excess of variations heavy vehicles cannot move with the same pace which disturbs the ongoing traffic. It also increases the travelling distance and time. The main effect is on the fuel consumption as well as it increases the fuel and cost of travelling.

Distance (in Km)	RL's	Formation level
0	100.915	98
0.5	91.25	99.96
1	104.055	101.80
1.5	108.915	103.65
2	116.33	105.61
2.5	113.00	107.58
3	109.37	109.53
3.5	103.92	111.38
4	109.25	113.42
4.5	120.389	115.39
5	120.969	117.30
5.5	122.649	119.23
6	124.344	121.19
6.5	130.534	123.62
7.2	132.450	124.20

Table 2: Reduced level of SH60 by actual survey

These statistics about SH60 emphasize on the need of proper solutions which are cost effective and successful in reducing these traffic problems. Instead of constructing a flyover which covers the complete highway it is better and economic that intelligent transport systems like BRTS, skywalks, under pass, flyover, parking spaces, traffic signals and pedestrian walks should be installed.

BRTS can be provided on SH60 till Shikrapur to increase the use of public transport. As the majority of people passing this highway either go to colleges, schools or offices so instead of using private vehicles public transportation will be a better option for them. It will reduce the traffic intensity and also congestion.

The road width of SH60 should be consistent with a dimension

of 32m in which 8 m is for BRTS and rest 24 m is for 12m wide road on both sides for to and fro movement of vehicles.

Due to the large number of warehouses, housing societies and logistics the area near ChowkiDhani turning is one of the places of major concern. After the road widening an underpass of 6m can be constructed which will cover the BRTS lane and the adjoining 8m lane from both sides leaving 4 m lane for the traffic which will use the underpass for taking u turn or going towards the ChowkiDhani road?

Wagholi is a town in the outskirts of Pune city from where SH60 passes. The infrastructure of Wagholi locality has progressively become inadequate to fasten the flow of traffic. The major traffic issues are due to the lack of parking facility for six seaters, weekly market, poor signaling system and low road capacity as compared to the traffic intensity. To reduce the congestion a flyover of approx. 1.2 km should be provided starting from Wagheshwar temple to Indian oil petrol pump which will provide an easy and fast movement to the vehicles who want to go ahead.



Fig. 1 Traffic Intensity at Wagholi(Actual photo)

BakoriPhata is also one of the major area where maximum congestion is noticed because of the nearby educational institution like JSPM, Raisoni, BJS, Lexicon etc. and existing and upcoming residential projects. To reduce this problem an under pass of 6 m can be constructed for diverting the traffic towards BJS road without interfering the traffic going ahead.

Some basic solutions like proper implementation of traffic signaling, proper management of traffic by traffic police, skywalks for crossing the road and parking space for private vehicles will reduce the problem of congestion up to large extent.

CONCLUSION:

As per the detailed study and the analysis of the statistics the development of a metropolitan city largely depends on the growth of adjoining areas in its outskirts.

Transportation plays a vital role in the smooth development of a city for which the road infrastructure has to be constructed considering the future growth prospect. The department of urban and infrastructure planning should start the planning for metro cities by keeping their outskirts in mind considering the growth and development after 15-20 years.

For the development of highways connecting the outskirts to the metro cities the main focus should be on providing the solution for the areas of major concern rather than giving an overall solution which will make the project cost effective.

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