Traffic Audit Konanakunte Cross Junction on Kanakpur Road to Bannerghatta Road at Gottigere Via Jambusavari Dinne

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Abstract- ***The main objective of the present work is to study is to control the Traffic Congestion. Traffic study is usually undertaken by the jurisdiction responsible for the transportation system. In the present study, the Traffic police department took the responsibility to study the traffic congestion in association with the engineering colleges of the area and take up the measures on suggestion. They identified certain road stretches prone to traffic congestion and asked the college nearby to suggest I) Short term, II) Intermediary/ Medium term and III) Long term improvements to help commuters to travel smoothly and reduce their travel time. One such stretch was "KONANAKUNTE CROSS JUNCTION ON KANAKPUR ROAD TO BANNERGHATTA ROAD AT GOTTIGERE VIA JAMBUSAVARI DINNE". The study undertaken could not be successfully completed because of COVID-19. The future detailed study appears to be more promising with giving more hope as well as challenge for Engineers and Traffic department to help commuters to travel smoothly and reduce their travel time in the years to come.***

Indexed Terms- ***Traffic Congestion. Travel Time, Roadway Geometrics, Rotary Intersection of Roads, Culvert.***

I. INTRODUCTION

Traffic study is usually undertaken by the jurisdiction responsible for the transportation system. A study can be invoked by a request from public official, local resident, or jurisdictional staff member. Traffic studies should be prepared under the supervision of a qualified and experienced transportation professional who has specific Knowledge and training in traffic and transportation engineering and planning. Some jurisdictions require that traffic studies be signed and sealed by a registered professional engineer.

Traffic congestion is when vehicles travel slower because there is too much traffic on roads. This makes trip times longer, and increases queueing. This is also known as a traffic jam. Congestion may result from a decrease in capacity, for example accidents on the road or roads being closed. Bad road layouts can also restrict capacity. Increased traffic, for example by many cars leaving a sports stadium at the same time, can also cause congestion. Where congestion is common, for example because commuting big cities, several methods are used to relieve it. Cars may be banned in certain districts or certain times, or made to carry passengers or pay, or people may use public, such as rapid, which travel independently of car traffic and are not affected by traffic jams.

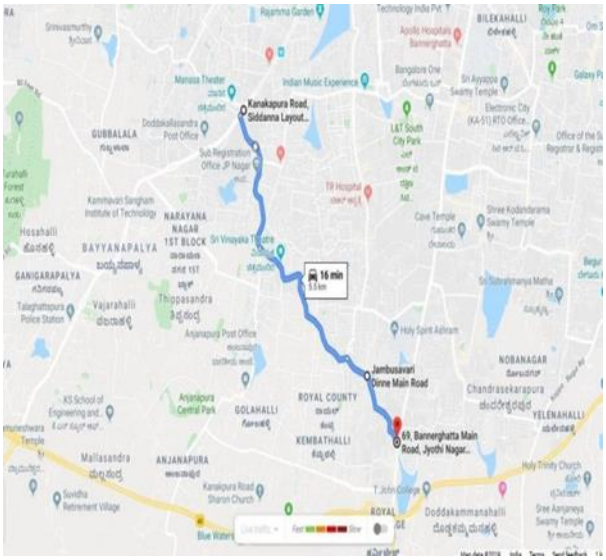
Arun S Bagietal. Road Safety Audit (IOSRJMCE) ISSN:2278-1684: This study had identified accident prone areas on the road from FIR, it studied the effect of roadway geometrics and traffic conditions on the road stretch. Relationship between accident rates and numerous factors causing accidents. The scope of the study was to reduce accidents on road network, reducing severity of accidents and the need for costly remedial work is reduced. The road selected for the study was Bannerghatta road (12 km). The accident analysis was done from four years data. The V. F. Babkov‟s analysis is done by collecting geometric features of the road. Pedestrian safety analysis was also done. Accident prone locations were identified by analysis. 8 hours volume count was conducted at 2 locations of the stretch on a weekday covering both peak and off - peak hours of a day.

Floating car method survey was conducted to find the speed at every kilometre of the stretch. The accident particulars pertaining to the study stretch was collected from the respective police stations. The accident data form as prescribed by IRC has been prepared to collect the necessary information such as date, time, location, whether the accident was fatal, vehicle damage and injured. The data regarding the road accidents in Bannerghatta road have been collected for a period of four years, i.e., 2008 to 2011 from the Traffic Police Station.

II. OBJECTIVE OF THE PRESENT STUDY

The objective of the study is to carry out survey work on the selected stretch **"**Konanakunte Cross Junction on Kanakpur Road to Bannerghatta Road at Gottigere via Jambusavari Dinne" and suggest measures on I) Short term, II) Intermediary/Medium term and III) Long term improvements to help commuters to travel smoothly and reduce their travel time.

It is necessary to collect the details of factors responsible for accidents on this particular stretch such as road geometry, pavement width, traffic condition, number of intersections etc.



III. METHODOLOGY

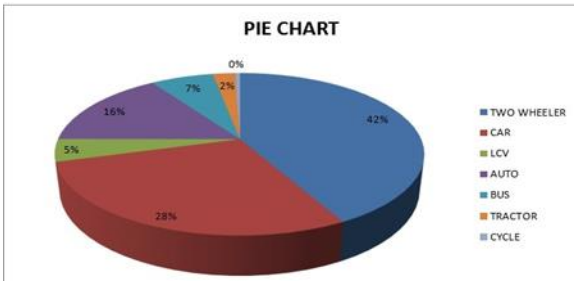
3.1 Data collection

The accident data of the stretch over the last few years were collected at the Konanakunte cross junction traffic police station and Bannerghatta road police station. The table below shows the Accident Data for the Years 2013- 2020.

IPC SECTION	Explanation
304 A	Causing death by negligence.
338	Causing grievous hurt by act endangering life or personal safety of others.
337	Causing hurt by endangering life or personal safety of others
279	Rash driving or riding on a public way.

sl no	year	304 A case	Dead M	Dead F	338 case	Injured M	Injured F	337 Case	Injured M	Injured F	279 case	Total
1	2013	8	10	6	24	20	8	10	12	10	8	50
2	2014	13	18	19	27	26	12	16	23	13	15	71
3	2015	20	31	18	34	32	26	12	18	22	11	77
4	2016	26	22	16	32	17	11	18	12	16	19	95
5	2017	24	15	28	28	22	14	16	20	13	12	80
6	2018	18	16	8	12	20	18	14	16	7	6	50
7	2019	23	23	17	20	26	13	10	13	9	10	65
8	2020	29	25	19	25	20	19	18	15	10	13	72
TOTAL		161	160	131	202	183	121	114	129	100	94	560

3.2 Traffic survey: Traffic Volume Count at Konanakunte cross junction at morning



Similar survey Traffic Volume Count were conducted at Bannerghatta Road at different timings i.e., morning, evening, peak hours. Method of volume study can be done in two ways, Automatically and. Manually. Here survey was conducted manually.

Data were presented both in tabular column and Pie chart.

3.3 Road condition survey:

The road condition is studied for every km of the stretch. The number of cracks and potholes were counted. It is most difficult to determine the exact

number if cracks and potholes on the existing road. This survey was done by walking along the stretch and identified the cracks and potholes.

While doing this we took some photos of existing cracks and potholes. The condition of this stretch form Konanakunte cross junction via Jambusavari dinne to Bannerghatta road is in worst condition.

This survey was also used to find out the location of Bus stops, medians, parking space, hotels by the side of road, encroachment of road, insufficient road width.

It was also noticed that the road was crossing a drainage. This drain has been blocked by the road. The water from sloping roads on both sides accumulate at the bottom and create pool of water during rainy season.

The traffic congestion at entry point to Bannerghatta road from Jambusavari dinne is too much. The commuters are experiencing traffic jams during peak hours, added to this, there is a bus stop at this point.

IV. SUGGESTION

It is very much necessary to fix the road width based on IRC specifications. The existing road stretch is not as per IRC specifications. The existing road has double lane for some part of the stretch. At certain points, road is not having required width. At certain portion of the stretch, the road has been made as double road with a separator. The entire stretch has to be constructed like a double road with a separator for provision of street light and provision for parking of vehicles. The heavy vehicles are using this stretch and causing traffic congestion. Restricted Time for heavy vehicle usage can be thought of as a measure. Then this may require parking space for the heavy vehicles at the entry and at exit needs to be provided. Now heavy vehicles are not allowed into the city during day time, which needs to be maintained strictly.

The suggestions were made on the considerations of the Traffic Police. They are divided as

4.1 Short term improvements:

Junction Markings, Signage, Pot hole filling, Provision of Foot path / Kerb throughout the stretch, raising centre medians throughout the stretch, shifting transformers / electric poles, shifting of bus stops, No parking notifications are some of the short term measurements.

The pot hole filling has to be done immediately. Certain holes are too big, accidents are prone because of these holes. Some bus stops are provided where the road width is small and a median is provided. If a bus is stopped, there will be no place for any four-wheeler to pass the bus. The vehicles will be stopped behind the bus. It is observed that sometimes, ten to twelve vehicles will be standing. The traffic congestion will be worse, if any one the vehicle's engine goes off. These bus stops might have been provided before the placing of medians. Care should have been taken to relocate bus stop at the time of placing medians or the medians should have been avoided or bus bay provision should be made.

It is found that too many pot hole and cracks which are not covered through asphalting, suggesting to provide flexible pavement in a properly designed manner.

The three types of signs, i.e., regulatory signs, mandatory signs and warning signs needs to be provided according to the need at the locations.

The over-speed driving was observed in the stretch. It is necessary to provide speed breakers i.e., Humps as per engineer design which reduce the accidents.

It was observed that debris and garbage were laid on the road which is congest for vehicle to travel and spoils the aesthetic look of the stretch and this should be taken care. The restaurants which are existing by the side of the road are causing traffic congestion. The restaurants should make provision for valet parking. The stretch should be made a double lane with median and street lights need to be provided in the median. The provision for parking vehicles should be made.

4.2 Intermediary/ medium term improvements:

Widening the road to the required double road width throughout the stretch, Acquiring land for the construction of Rotary at junctions. This road is crossing a drain at 3.5 km from Konanakutte cross. This drain is collecting water from a catchment area of Avalahalli lake. The road is crossing drain at the valley. Even for light rainfall, water gets accumulated

at the drain, the road top easily gets removed for light showers and many pot holes will soon come into existence. The commuters, mainly two-wheeler suffer many problems, they need to go slow as they are not aware of spot of pot holes. This in turn will make the traffic to move slow, there are instances of falling of two-wheeler. After slowing down again because of drain, they have to climb the upward gradient. If a heavy vehicle is moving ahead, then traffic will be further slowdown. Even four-wheeler, especially heavy vehicles have faced the drain problem in a different way. During rainy days, they need to slow down in the down ward gradient, they have to be very cautious as the vehicle going ahead may apply brake or reduce speed or take deviation to avoid pot holes, they heavy vehicles should also take care to avoid pot holes, if pot hole is small, water spills on the adjacent vehicles or if the pot hole is big, the vehicle tyre, spring gets damaged.

There is no way for pedestrians neither at the drain nor the approach roads. This particular spot has to be taken care. The pot hole filling has to be done properly, so that they should not get washed away easily as a short-term measure. Another short-term measure is to make way for pedestrians.

The intermediary/ medium term improvement is to make provision for small culvert with horizontal approach roads on both sides. The provision of culvert needs data on drainage / stream flow, drain dimensions, rain fall data etc. In the absence of data, a provision of Box Culvert (Precast) Shuttering/ a pipe culvert Box Culvert (Precast) Shuttering offered can be made available in both standard as well as customized finish specifications in size options like 900 x 600 and others as per the specific demands of the road stretch. These box culverts find use for cross drainage in highways as well as in storm water drains. Some of its features include box culverts production in standard and customized specifications, provide high flow capacity in areas with low head room, highly durable in usage, allows for easy on-site installation among others. Existing culvert is blocked and is not serving any purpose. This culvert has become useless. A culvert consists of three parts: the intake (also called inlet or fan), the barrel (or throat) and the diffuser (also called outlet or expansion fan). The cross-sectional shape of the barrel may be circular (i.e., pipe), rectangular (i.e., box culvert) or multi-cell (e.g., multi-cell box culvert). The bottom of the barrel is called the invert while the barrel roof is called the soffit or obvert. The training walls of the inlet and outlet are called wing walls. The sides of the existing road are covered by bushes and in some places the road has been encroached by foot path vendors. Some have gone for temporary shed and resting.

Provide adequate space for pedestrians for walking in footpath as per IRC 1.2m width needs to be provided throughout the stretch.

4.3 Long term improvements:

Sky wall construction, Underpass construction, construction of dormitory for vehicles. The junctions need to be controlled properly, a short-term measure is to provide traffic signals and a long-term measure is to make provision for rotary junction or underpass as the provision of rotary junction or underpass needs more area at the junction. The necessary land has to be acquired and suitable soil tests and design has to be made.

CONCLUSION

Based on the data collected, Traffic survey and Road condition survey and the suggestions listed above it is recommended to take up the short terms immediately. The short-term measures suggested does not necessarily require engineer design whereas Intermediary/ Medium term improvements and Long-term improvements requires data collection, engineering design, approvals and also provision for relocating the road to some other road during construction.

With the knowledge of the existing road, and problems faced, a limited study during COVID-19 period, a few measures have been suggested. The detailed study is very much essential to ease out the traffic congestion on the suggested stretch. The work conducted had so many restrictions, but needs a lot of attention, an engineering approach with participation of police, government and public will really give a solution. Hence, an attempt has been made to bring it to the attention of all concerned. This is a common problem in most of the stretches in the city limits. An

engineering approach is very much essential to solve the traffic congestion in city limits.

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