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CASE STUDY ON PROPOSED FLYOVER ON BRTS INDORE CORRIDOR FROM LIG SQUARE TO NAVLAKHA SQUARE

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Abstract - *Transportation is the backbone to the event of urban areas. Transportation infrastructure is also increases with the increments in traffic demands. Indore being the Centre for Information technologies (IT),modern industrial development, real estate, health, education, is witnessing rapid growth in the population which has resulted in quick development of 'floating population'.This has resulted in high traffic clog. This study focuse on the area of the indore city where the traffic congestion occurs at intersection/road and other alternative to reduce its problems. To counter the negative impacts of the congestion, the Government of India decided to build a flyover at the congested road/intersection With traffic decongestion at AB road Bottleneck segment (LIG square to Navlakha square) as flyover have been proposed. The locations for flyovers have been chosen dependent on present day operating conditions. at the junction wide range of vehicles likewise two-wheeler, three-wheeler, four-wheeler, loaded & unloaded vehicle, school/college buses etc. are travelling day & night time so there is congestion of the traffic. Peoples are used to private & public vehicles to connect with different areas of the cities. we calculate the traffic distribution at the LIG square and Navlakha square towards each other by conducting traffic studies by Origin destination survey.estimate the traffic movement directions at various intersections and produce a traffic graphs and flow map of the roads. With the help of obtained data we recommend certain diversions to the proposed flyover at specific intersections which have dynamic traffic movement.*

Keywords – *Flyover , intersection, trip distribution, OD survey*

I. INTRODUCTION

Entering the 21st century, the Indian transportation system has been rapidly expanding, still it has not been able to keep pace with the congestion in our cities which continues to grow at an alarming rate. This increased congestion is adversely impacting our quality of life and increasing the potential for accidents and long delays. To fight and mitigate congestion, transportation professionals in India are working towards increasing the productivity of existing transportation systems through the use of advanced technologies.

Indore, a historical city situated on the banks of rivers Khan and Saraswati, is the largest city of 'Indore Agro Industrial Region' of Madhya Pradesh. It is almost centrally located on the fertile Malwa Plateau at latitude 220 43' North and longitude 760 42' East and is the nerve centre of the economic activities of the state. Indore is the most populous city in Madhya Pradesh with population of about 1.6 million according to the 2011 census. It is likely to rise to 2.5 million and 3.6 million by 2011 and 2035 respectively. The average annual growth rate of population is around 40% as per the statistics of census 2001. It already is the commercial capital of central India. The rapid industrial and commercial development coupled with the rise in population in the recent past has contributed to a large scale increase in traffic on the city roads. This increasing intensity of traffic has resulted in the manifestation of a number of problems like congestion, delay, accidents, pollution etc. which pose a potential threat to the economic vitality and productive efficiency of the city. Consequently most urban areas are suffering from unmaintained externalities such as excessive travel times, air pollution, unnecessary energy consumption, and even serious economic loss due to the extraordinary traffic congestion. Traffic congestion problem has been considered as the critical problem in the mixed vehicle lane of brts indore mainly at bottleneck segment i.e. lig circle to navlakha square. To counter the negative effects of the congestion, the Government of india decided to build a flyover to reduce travel time due to unendurable delay in the intersection.The flyover segment has 6.50 kilometers length and 30.50 meters width. The objective of this construction is to save travel time and reduce vehicle operating cost, particularly during peak hour traffic. randomly distributed in surrounding corridors which is bottlenecks exist.

- **TRIP DISTRIBUTION**

Trip distribution is a model of the number of **trips** that occur between each origin zone and each destination zone. It uses the predicted number of **trips** originating in each origin zone (**trip** production model) and the predicted number of **trips** ending in each destination zone (**trip** attraction model

- **ROADSIDE FRICTION**

Interference to the smooth flow of traffic is known as **"side friction".** Urban roadway capacity is influenced by various factors like speed of vehicles on the road, width of road, structure of the road, construction work on roads.

- **ORIGIN AND DESTINATION SURVEY**

The O- D survey is household or road side interview based and as such focussed on the movement of people. we gathered information from public by conducting interview. We conducted interview to local auto drivers , students , bus drivers etc. desired routes can be obtained through interview survey

II. LITERATURE REVIEWS

Narabodee Salatoom1 et al. (2015) A Study of a Flyover-Bridge - Improved Intersection
In his study to reduce traffic congestion at an at-grade intersection near a big city, one method is construction a flyover bridge at the old junction in two directions on one of the main highways. With the flyover bridge in place, it was found that about 30-35% of all traffic volumes diverted to the bridges, and time delay reduced by 30% over the same period.

Patel Tarun et al. (2015) Feasibility Study and Rapid Construction of Flyover at Sahakari Zin Intersection on NH-8, Himmatnagar.In his study the number of accident occur due to high speed of vehicle, traffic delay, risk of pedestrian life ,lack of proper facility.At Sahakari zin Intersection National Highway-8 and state Highway145 are crossed. On the NH-8 vehicle design speed is 80 km/h. At this intersection Traffic Flow about 30,000 PCU/day. For this research he carried out the survey likewise. Population Growth, Accident Data,Traffic Volume , the construction of flyover is accelerated by the prefabricated bridge element. By analysis of collection of data they suggested flyover bridge will also carry the future traffic safely 30year. And In Himmatnagar number of ceramics so we can ceramicwaste use in construction(embarkment) to minimize the pollution. And for the construction of flyover he suggested pre-cast method.

Sofyan M. Saleh . et al. (2017) A study on the Traffic Impact Due to Flyover Construction at Surabaya Intersection, Banda Aceh of Indonesia to counter the negative effects of the congestion, the Government decided to build a flyover at the congested intersection. However, during the construction period, traffic congestion is severe along this corridor.The corridors are Teuku Muhammad Hasan Rd., Tgk. Imum Lueng Bata Rd. The findings from the analysis revealed that the traffic loading has increased accounting up to 34% and 37% for Teuku Muhammad Hasan Rd. and Prof. Ali Hasyimi Rd., respectively. Furthermore, the results of the level of service (LOS) analyses show that dropped in LOS. By comparing the observation data in Surabaya intersection's flyover mid-construction and pre-construction period, it is found that the traffic loading has increased accounting up to 34% and 37% for Teuku Muhammad HasanRd. and Prof. Ali Hasyimi Rd., respectively.

Manjunath K. R et al. (2013) "Origin-Destination Studies of Junction Improvements In Bangalore City. The effort of this research is to develop a linear programming methodology for estimating O-D trip tables based on observed link volumes they has been selected HAVANUR CIRCLE, Bangalore.The two traffic studies were conducted were 1.Traffic volume count - Methods of volume counting a. Manual method, b. Mechanical method. O-D study he used various methods like road side interview method and prepare Survey Questionnaire. Alter the timings of the HAVANUR junction traffic signals and review the traffic and pedestrian phases to ease congestion at certain times of the day. Underpass should be provided from Westoff chord road to Basaveshvaranagar 4th block, Channelization of junction like providing free left on both sides of the junction, Extra widening of carriage width by reducing the footpath width of KHB of Vijayanagar to Shankara mutt.

III. OBJECTIVES

1. The main objective of the study is to identify desired lines of traffic flow.
2. To determine Suitable diversions which are needed for the flyover at various junctions.
3. To make suggestions to improve the performance of proposed flyover-bridge and at underneath intersections

IV. METHODOLOGY

Traffic engineering uses engineering methods and techniques to achieve the safe and time efficient movement of people and goods on roadways.

-Field method: traffic survey

- **Origin and destination study -**

we gathered information from public by conducting interview. We conducted interview to local auto drivers , students , bus drivers etc. desired routes can be obtained through interview survey.some locations must have an auditor for recording and inspection of these information more than four people such as at LIG circle case study location and next day same as at navlakha square. we need help with video record for checking traffic movement of each direction on the ground level.

- **Traffic Data Collection**

Under the proposed flyover; the traffic movement is counted at each leg/direction that vehicles entering to the bottleneck segment. The traffic volume is converted to equivalent passenger car unit (PCU). The study was conducted from 1st march to 30th 2019, alternate days from both (lig , navlakha) the sides.

Fig. OD survey at Lig circle and Navlakha square

CAUSES OF ROAD SIDE FRICTION

Parking on road side

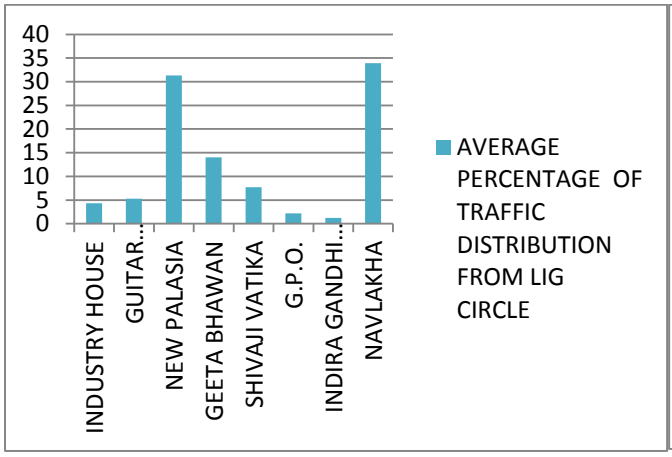
Wrong side Movement

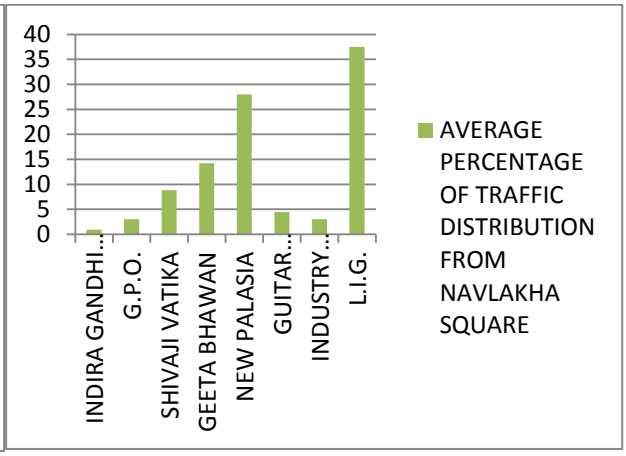
Public vehicle (van/magic)
Stopped on road

Damage vehicle on road

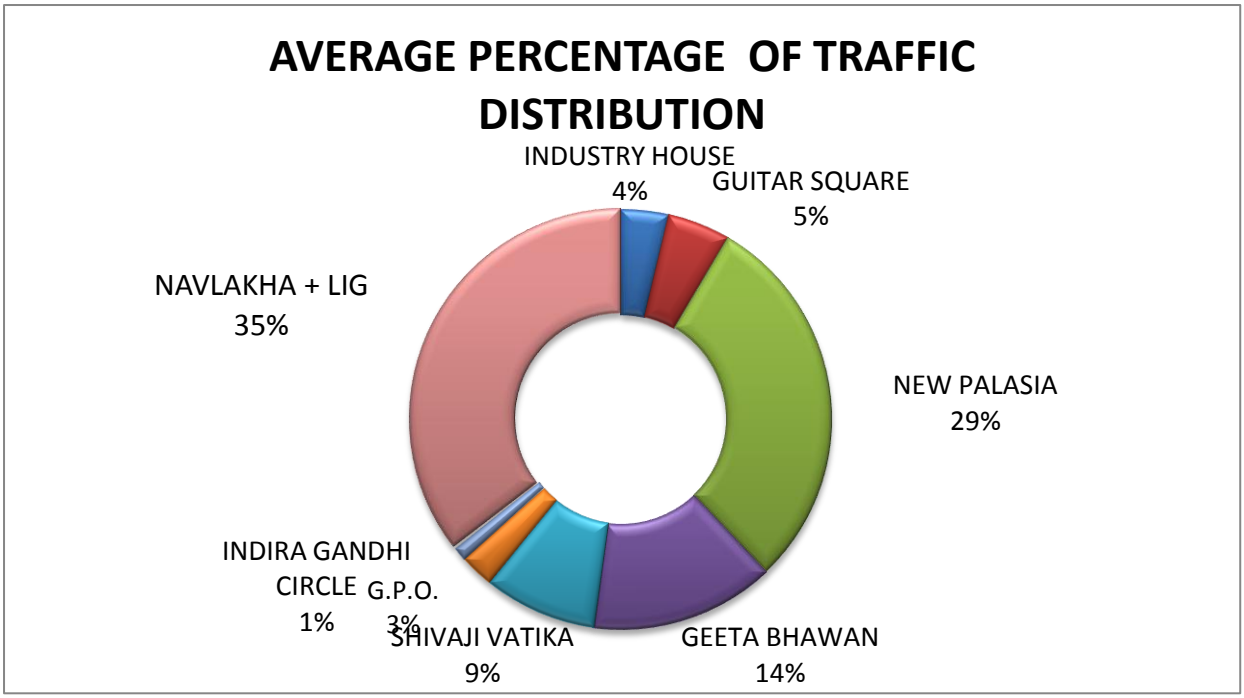
V. DATA ANALYSIS AND RESULT

After collecting the data, the next phase was to process the information. For each vehicle, the database was queried to draw a graph. After analysis found from Lig circle 31% of traffic diverted to palasia and 34% to Navlakha. And from Navlakha square 28% of total traffic diverted to aplasia and 38% towards Lig circle.





From the collected data we observed that most of the traffic are taking diversions at aplasia square. So providing a landing from the flyover at this junctions can help in utilizing the flyover upto maximum extent and also reduces the traffic below the flyover.



CONCLUSION

1. As all the commercial buildings and main bus station (Aictsl and Navlakha bus Station) are under the flyover, there should be a route to access them without any signals. In order to obtain this condition, flyover should be modified and provided with an entry and exit at an intersection.
2. As per obtained data maximum traffic are diveted to Palasia junction So Palasia junction would be Suitable position to provide the modification as it has the highest traffic flow and easy to provide landings as right of way of the road is optimum.
3. Road side friction also caused capacity reduction because of temporary bottlenecks created by on-street parking, wrong movement vehicle etc

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