Traffic Volume Count for Design of Turbo-Roundabout at Umiya Hall Cross-Road

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Abstract: This study deals with a traffic operation issues and traffic evaluation, for the developing efficient traffic flow and to minimize the traffic conflict points. Turbo-roundabout are a dynamic type of roundabout which recently become more popular for their significant advantages like, it provides channelized multilane intersection with physical separation between lanes prevent side collisions while crossing the roundabout and it also eliminate the necessity of stopping at crossing streams of vehicles.

Index Terms **– Turbo-Roundabout, Conflict points, Channelized intersection.**

I. INTRODUCTION

India has a road network of over 59 lakhs km (5.9 million) as of 31 January 2019, the second longest road network in the world. Ahmedabad is the seventh largest city of India. The city is having 2310 km of asphalt road network and the traffic is increasing day by day. The urban roads generally carries the heterogeneous traffic which is the combination of various vehicles such as Pedal cycle, Hand drawn carts, Animal drawn carts, Motor cycles, Auto-Rickshaws, Cars, Light Commercial Vehicles, Buses and Trucks. These all vehicles are having their different speed and sizes which affect traffic flow at cross roads.

Roundabouts are globally recognized as a solutions that certify high level of fluidity, capacity and road safety and generally they are credited for having advantages in terms of pollutant emissions. The roundabouts are a safety solution of intersections and there is increase in transformation of complex intersections into roundabouts to exceed the safety of the road users, it is very difficult to make a multi-lane roundabouts, safe and efficient to all the road users.

Double lane roundabouts are having higher traffic capacity then a single lane roundabouts; however, there are also some disadvantages: traffic conflict is created due to high speed of vehicle at lane changing, weaving, circulation and in exit on wider traffic lanes.

II. PROBLEM STATEMENT

The Indian traffic scenario comprises of heterogeneous conditions which can be characterized as sharing of road space among many traffic vehicles having different physical dimensions, poor lane discipline and vehicle following concept is not the norm. These characteristics promote a huge impact on the performance of traffic on roads. This study is required; to reduce the traffic congestion at cross road and to provide a free traffic flow and this study also deals with the safety of road users and also in reducing traffic congestion.

III. OBJECTIVE

1). To Analyze the vehicular traffic condition at the cross road.
2). To estimate the capacity at the cross road.

IV. STUDY AREA

The city is generally facing the problems of traffic congestion on definite stretches of road. The study area taken is Umiya Hall cross road on Chandlodiya road in Chandlodiya. It is the major road connecting to 132ft ring road through Akhbar Nagar Circle, connecting to Gaurav Path through Prabhat Chowk and connected to S.G.Highway through Gota Cross Road.

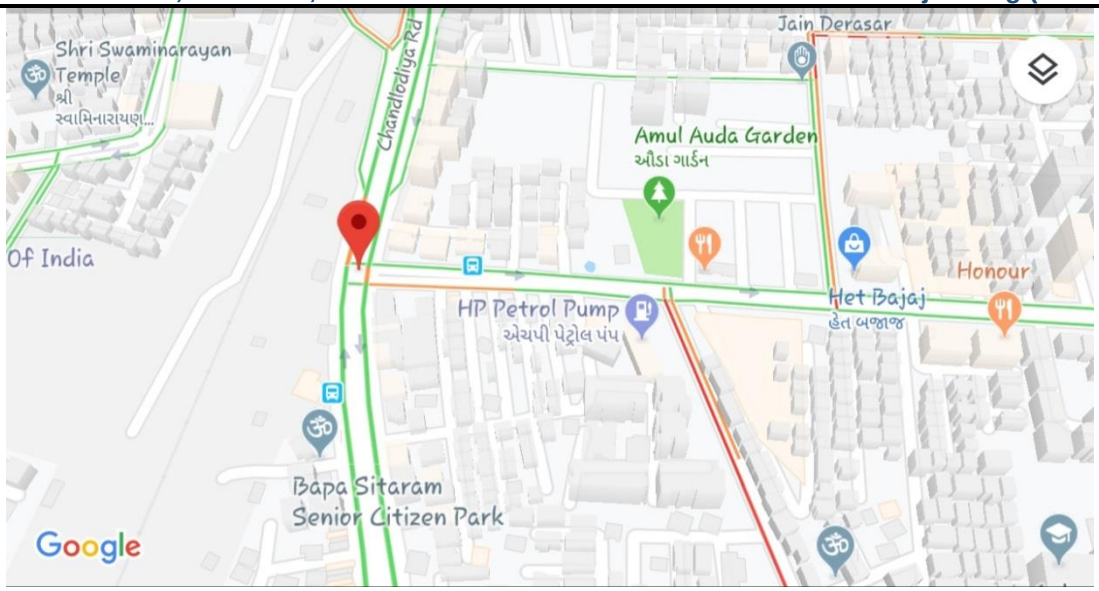

Figure 1 Study Area Map (Source :- https://www.google.co.in/maps)

V. DATA COLLECTION AND ANALYSIS

The Classified Volume Count is calculated using videography technique. The camera was placed on top of a road side building to achieve an adequate viewing height to cover the study area without any obstruction. The data is collected and the numbers of vehicle going towards Akhbar Nagar Circle, Gota Cross Road and Prabhat Chowk is calculated and we get the maximum peak hour i.e. 10:00 AM to 11:00AM.

CLASSIFIED VOLUME COUNT		
SR.NO	**NAME OF APPROACH**	**TOTAL VEHICLE IN PCU/HOUR (PEAK HOUR)**
1.	Vishwakarma Chowk Approach	2565
2.	Akhbar Nagar Circle Approach	2597
3.	Prabhat Chowk Approach	2052

VI. CONCLUSION

The maximum traffic handling capacity or basic capacity of four-lane divided is 1800 PCU/HOUR/LANE as per IRC-106-1990. The maximum volume in peak hour is 2565 PCU/HOUR at Vishwakarma Chowk, 2597 PCU/HOUR at Akhbar Nagar Circle and 2052 PCU/HOUR at Prabhat Chowk. According to data collection and analysis V/C ratio is 1.425, 1.731 and 1.415 respectively.

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