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Analysis of Traffic Volume and Fly over Construction for Traffic Problems in Kompally Junction, Hyderabad, GHMC

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Abstract

Traffic engineers use engineering methods and techniques to attain the safe and time-efficient movement of people and goods on roadways. The safe and time-efficient movement of the individuals and time-dependent on traffic flow, which is directly connected to the traffic characteristics, the three parameters of traffic flow are volume, speed, and density. The amount of vehicle has enlarged expressively within the last decade due to the increase of the economic status of people. In this study, emphasis is given on traffic volume data collection and the different analysis is carried out. For a better understanding of the existing status of traffic flow at the chosen junction kompally junction, a traffic survey is conducted, with the help of data collection, it has made clear to understand the traffic patterns during the different period time. To diminish traffic congestion at an at-grade intersection in kompally junction one way is to construct a flyover bridge. This paper presents the problems that still exist at the flyover improved junction and suggests surging the benefits of the flyover such as creating phase times and improving the physical area under the bridge. Flyover bridge is planned using the popular drafting software AutoCAD 2D. It was further designed and analyzed using the premiere analysis software STADD PRO and creating a 3D model of flyover bridge we used the animation software 3ds MAX. The salient features of the flyover bridge are manually designed and estimate. Analysis from the present study help control the traffic flow at the intersection

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and also suggestion some traffic management measures to improve the traffic movement in this region.

Keywords: *Traffic Volume, PCU (Passenger Car Unit)*

INTRODUCTION

Traffic volume studies are conducted to determine the volume of traffic moving on the roads and the classification of roadway vehicles at a particular section during a particular time. Coimbatore has well-developed transport infrastructures that are not well maintained and developed according to the growing needs of transport, making traffic congestion a major area problem in the city. The number of vehicles has increased tremendously in the metropolitan areas of the city. The condition becomes worst in a peak hour where an increasing number of vehicles contribute to the traffic congestion in the particular area. The proper functioning of urban areas, therefore, depends on the efficient transport network, which is the backbone of their very existence. To control the traffic in upcoming days is a difficult task. Hence as a result to provide flyover construction for the control of traffic characteristics. The project area is having a very high density of traffic flow. The public felt inconvenient to cross the busy road & therefore the flyover is essential required at the junction. For easy traffic flow of agricultural goods without traffic, congestion flyover is essential to overcome the traffic congestion required.

Construction of a flyover across four roads in kompally junction. The total length of flyover is 20m and the width of 4m. All the drawings are drafted by AutoCAD and 3d view is given by 3ds MAX and analyzed by STADDprovi8.

Flyover evaluation

The project evaluation compares the cases with and without the flyover project to assess the benefits arising from the project. The benefits include savings in the value of time (VOT), vehicle operating cost (VOT), and cost of accidents.

1. Value of time (VOT)

Value of time means the cost (equivalent to money) that is lost due to delay during a trip, but when traffic flow through the intersection is improved after the flyover is operational, the increased intersection

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2. Vehicle operating costs (VOC)

Vehicle operating costs of fuel; lubricant cost, idling of the engine, and operation cost, correlated with a number, type, vehicle speed, and traffic volume. When vehicles are waiting for a green signal at the intersection stop line with the engine running; waste fuel consumption results which also vary with the type of vehicles. The different traffic volumes between cases without and with the project can be converted to equivalent terms.

TRAFFIC SURVEY (Data collection)

A traffic survey was made for 30 days, in the selected area from 8.00 AM to 8.00 PM. This was selected based on the past traffic study as an average of peak hours. These data were used to analyze the traffic volume.

TRAFFIC PROJECTION

The passenger car unit of a vehicle type depends upon the size, and speed of the vehicle type and environment. They are not dependent on the flow and road width. As per IRC: 92-2000, the traffic volume limit is 10000PCUs/hour. The capacity of the junction was estimated at 6547 PCS's/hour. The design period is taken as 30 years. One year would be taken for the construction. So traffic is projection. So traffic is projected for 30 years.

METHODOLOGY

The methodology of the project includes a selection of intersection, traffic survey at the peak hours, and problem definition and goals related to data collection through the manual count of volume capacity and traffic survey and data analysis of the junction

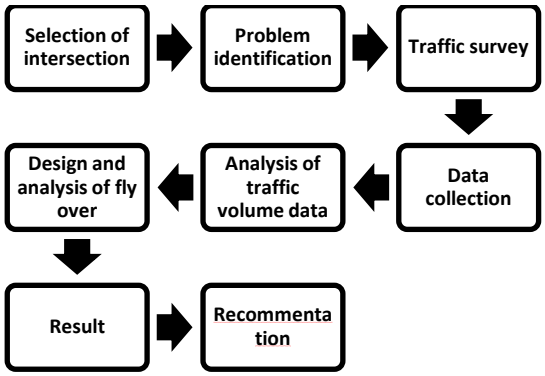


Fig. 1: Approach and Methodology

RESULT AND DISCUSSION

Traffic volume data for the kompally junction: A traffic survey was made for 20 days, in the selected site from 8.00 AM to 8.00 PM. This time was selected based on the past traffic study as an average of peak hours. All the four arms of the site were observed and the number of vehicles passed was converted to PCU's (Passenger car unit). The passenger car unit of a vehicle type depends upon the size, and speed of the vehicle type and environment. They are not dependent on the flow and road width. In this information, we calculate the average traffic volume.

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Table 1: Traffic volume count (no. of vehicle hourly) at kompally circle

Date	Buses					PrivateVehicles&IPT			GoodsVehicles			SlowMovingVehicles
	Public Transport		Educational/ Institutional	Other Bus*	Mini Bus/Tempo	Cars	Passenger Auto	TwoWheeler	LCV/ Mini-truck/ Tempo	Goods Auto	Cycles	Others (JCB, Road Roller, etc.)
	Govt.	Private										
5.10.2020	47.25	49.5	6	72.8	4.25	445	95.62	3533.15	13.12	105.18	54.125	-
6.10.2020	67.5	65.6	3	57.75	7.87	432.25	101.25	3070.2	13.12	66.93	47.25	1
7.10.2020	60.75	61.5	3	64	11.25	467.12	102	3301.78	11.25	89.62	44.06	-
8.10.2020	70.5	70.12	6	66	13.5	514.37	103	3178.78	9.37	114.93	51	-
9.10.2020	60	57.3	6	54	11.25	505.25	104.81	3521.06	9.37	80.06	41	-
23.11.2020	64.8	53.25	6	55.87	9.75	493.75	114.68	3685.59	9.75	90.75	47.31	-
24.11.2020	63	57.37	6	54	10.87	498	105.65	3358.31	11.25	98.06	39.43	-
25.11.2020	64.8	55.12	6	54.75	13.87	515.5	105.75	3659.62	11.25	108	46.43	4
26.11.2020	65.62	57.75	3	58.87	10.87	472.5	113.81	3407.81	11.25	96	38.43	-
27.11.2020	64.12	59.62	6	55.5	10.87	514.87	106.87	2832.75	16.87	107.43	35.37	-
25.12.2020	58.125	51.75	6	57.75	13.87	494.125	105.18	3336.28	15.2	107.25	44.37	-
28.12.2020	62.25	54.75	3	60	21.75	466.125	115.68	2532.75	14.25	101.06	48.75	-
29.12.2020	64.87	50.25	3	52.5	19.5	504.125	102.93	3341.81	16.5	93.18	35.06	-
30.12.2020	65.62	56.62	6	53.62	16.125	482.87	116.06	6214.40	16.125	110.06	42.75	-
31.12.2020	62.25	57.75	6	59.62	18	482.87	105.37	3315.84	18.75	102.18	45.37	-

PCU Value for different vehicle types by IRC: 106-1990

Table 2: PCU values

Types of vehicle	PCU value
Bus	2.2
Truck	2.2
Car	1
Two-wheeler	0.5
Bicycle	0.5
Three-wheeler	1.2
Light commercial vehicle	1.4
Van	1
Minibus	1.4

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CONCLUSION

The study of traffic volume count and analysis for kompally junction, Hyderabad, GHMC. Traffic volume is the most delicate information to implement transportation planning, design, and construct a flyover. Only because of this traffic volume survey we got to know the road condition. To construct a flyover to improve the traffic volume of Kompally Junction at Hyderabad, GHMC. To decrease the traffic congestion during peak hours. To increase the passenger's safety and comfort. The intersection was constructed to increase capacity and to reduce vehicle delay and long queues at the grade level. Benefits of a flyover in terms of saving in travel time and vehicle.

REFERENCES

1. IRC 65:1976, “Recommended Practice for Traffic Rotaries". Indian Road Congress (IRC), New Delhi.
2. IRC 93:1985, “Guidelines on Design and Installation of Road Traffic Signals”.
3. IRC 106:1990, Guidelines for Capacity of Urban Roads”. “Traffic Engineering and Transport Planning” by Kadiyali L R.
4. “Highway Engineering” by S. K. Khanna and C.E.G. Justo.
5. International Journal of Research in Science & Engineering Volume: 3 Issue: 2 March-April 2017.
6. International Journal for Scientific Research & Development Volume: 3 Issue: 06 2015.
7. International Journal of Science Technology & Engineering Volume: 3 Issue: 08 March-April 2017.
8. IOP Conf. Series: 14th International Conference on E-Education and E Technology (ICSET)-2017.
9. International Journal of Engineering & Technology Volume: 5 Issue: 06 Dec-2015.

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