

TRAFFIC CONGESTION SOLUTION FLYOVER

Vaibhav buchade¹, Hemant buchade², Sagar bagal³, Prashant mete⁴, Asst.prof.M.D Sawant⁵

¹ B.E, Department of civil engineering, JSPM'S RSCOE, Maharashtra, India

² B.E, Department of civil engineering, JSPM'S RSCOE, Maharashtra, India

³ B.E, Department of civil engineering, JSPM'S RSCOE, Maharashtra, India

⁴ B.E, Department of civil engineering, JSPM'S RSCOE, Maharashtra, India

⁵ Asst.prof.M.D.sawant, department of civil engineering, JSPM'S RSCOE, Maharashtra, India

ABSTRACT

Congestion a serious and worsening problem traffic congestion has been increasing in much of the developed or not and everything indicates that it will continue to get worse representing an undoubted menace to the quality of urban life. Its mean expression in a progressive reduction in traffic speeds resulting in increases in journey time, fuel consumption, other operating costs and environmental pollution as compared with an uninterrupted traffic flow. The harmful effects of congestion are suffered directly by the vehicles that are trying to circulate. They are not only suffered by motorists, however but also by users of public transport generally lower income person who not only take longer to travel from one place to another but also have to pay higher fares on account of congestion how should the problem be tackled.

Keyword: Congestion solution flyover

1. INTRODUCTION

Traffic congestion or traffic jams is one of the major issues in most metropolitan cities like pune. The city has become densely populated. Today the pune population is around 35lakhs. Registered vehicles are around 36.2lakh which is exceeding the human population. Congestion occurs when the normal flow of traffic is interrupted by high density of vehicles resulting in excess travel time. The most common definition congestion is the state of traffic. Flow is when the travel demand exceeds road capacity. During the peak hours i.e. 8 to 11 in the morning and 6 to 8 in the evening traffic situation get worst where IT company and other companies are located in nearby Hinjewadi . Some issues which created the traffic problem there are no proper planning violation of the rules and regulation and wrong construction.

1.1 Aim –

To plan and study the layout of flyover in an urban city as a solution to traffic congestion to assure undistributed flow of traffic.

1.2 Objective -

1. To reduce the accident rate by reducing vehicle congestion.

2. To eliminating bottlenecks due to inadequate road geometry.
3. Development of road system for traffic controlling traffic without signals at intersection.

2. DATA COLLECTION AND DATA ANALYSIS

Narrow roads in pune are much widespread, have small roads and lanes. Due to illegal possession these small roads are getting narrower and becoming reason to traffic jam. Traffic signals are out of sync many times on purpose or occasionally when the computers are malfunctioning ending creating traffic chaos in the city. Increase in population will lead to increase in vehicle which is a bad traffic management and this could be vital reason for traffic congestion. Following are the factors causing traffic congestion.

- Recurring congestion –
 1. Bottlenecks and capacity
 2. Insufficient/improper infrastructure
 3. Variation in traffic flow
- Non-recurring congestion –
 1. Weather
 2. Traffic incidents /accidents



Fig -1: Hinjewadi-wakad flyover

2.1 Vehicle density on Hinjewadi – waked road -

Hinjewadi – waked road to analyze the traffic load nearby the project site. The total vehicle count at this point is observed to be 9,684 nos. during the survey of 12 hours. The two wheelers contribute maximum in the traffic volume. The two wheelers observed are 5,665 nos. in numbers followed by four –wheeler and vehicles with 2,575 nos. in numbers respectively.

The peak hour traffic flow in the morning was observed 1,176 nos. vehicles on the road and in the evening, the peak hour observed between 6-7 PM with count of 1,289 nos. vehicles.

Table -1: Classified traffic volume count collected in January 2020

Location	2-wheeler	3-wheeler	4-wheeler	Buses	Heavy	Total
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					vehicles	
Hinjewadi-wakad road	5665	927	2575	257	260	9684

2.2 Vehicle density on national highway – 48 -

Walking	Bicycle	2-wheeler	4- wheeler	Bus /Truck/Auto	Total
546	894	23934	9648	5606	40628

This data includes domestic four wheelers, truck, buses, travel cars, etc. No bikes or three wheelers are considered. This traffic volume will be passing on NH- 48 contributing to traffic at Hinjewadi – waked bridge.

3. MODIFIED FLYOVER



Fig -2: existing structure at Hinjewadi – waked flyover.

- Existing structure is modified using AutoCAD software 3D modelling.
- A circular flyover has been designed at the intersection.
- 8- Way access is provided to meet national highway as well as Hinjewadi – waked road.
- Under pass for Hinjewadi – waked road for signal free travel has been provided in the layout.

3.1 Modified flyover details -

- Nation highway -48 =35m width (6 lanes).
- Hinjewadi – wakad road = 21m (4 lanes).
- Approach road from ground level to flyover =one way 6m.
- Slope of flyover approach road under pass 30 degrees.
- Elevated circle =two lanes clockwise direction 8m
- Pre- existing service road at all 4 corners = two lanes one way direction.
- Hight of tunnel / grade separate = 6m.
- Hight of flyover from national highway = 10m.
- Traffic signals = none.

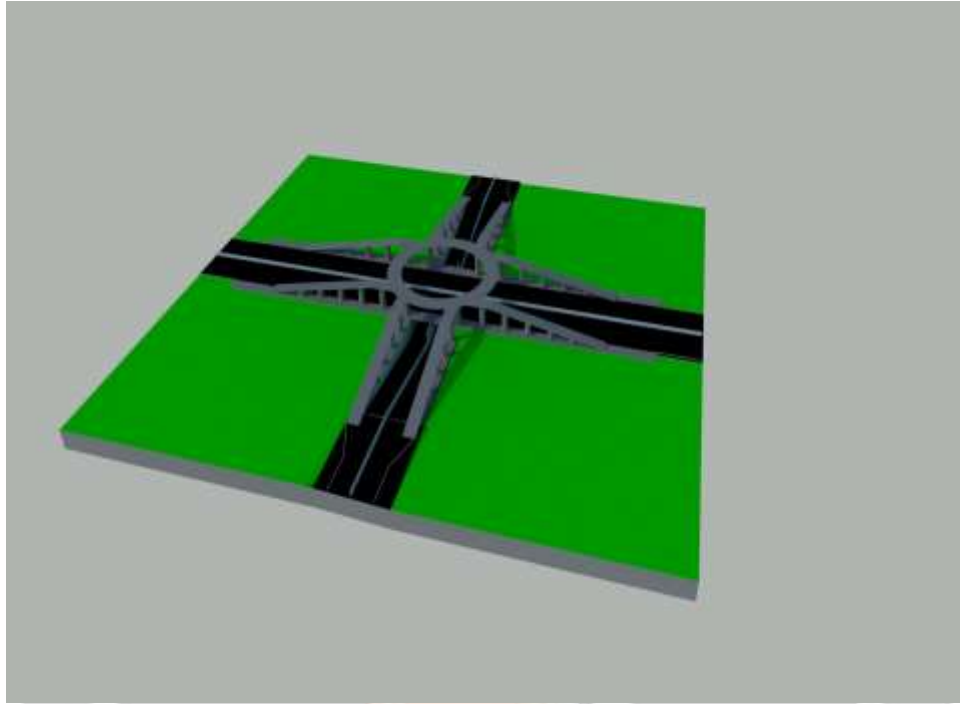


Fig -3: modified flyover.

4. CONCLUSIONS

Traffic Congestion is an everyday problem faced by the population of any developing country and the various factors introducing traffic congestion are narrow roads, illegal parking, improper lane management, low occupancy factor, etc. The most common measures implemented throughout these cities are to construct alternative routes or road widening. While the construction of alternative routes is affected by various socio-economic and political factors, it has been understood that widening of roads does not always help in reducing the congestion. Greater the width of road, greater is the number of vehicles. But private vehicles give the utmost comfort to a commuter and thus, travelers tend to use their own vehicles. This leads to increase in Modal

Share of private vehicles, and thereby a substantial decrease in the share of public vehicles.

In Hinjewadi, according to various surveys conducted, the private vehicle ridership is more than eighty percent while the public vehicle ridership is as low as nine percent. The occupancy factor obtained for bikes and cars is also as low as 1.25 and 1.87 respectively. The immediate need to curb the congestion is blatant as the vicinity experiences around 4-5 fatal accidents and around 20 minor or major accidents per month. The average queue length and stoppage time at major intersections, travel time during the peak hours, average trip length, etc. were also studied and tabulated. To solve this issue of congestion must be modified with flyover to accommodate the existing traffic load. But ground condition and other socio-economic problems must also be considered while doing so.

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