

**ESTIMATING THE IMPACT OF FLYOVER BASED ON
VEHICLE DELAY, FUEL CONSUMPTION AND EMISSION:
CASE STUDY OF BHIKAJI CAMA PLACE FLYOVER NEW
DELHI**

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LENJISA BEDADA ABERA

160303211001

Under the supervision of

Dr.Mukti Advani

Prof. Jayesh Juremalani



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**DEPARTMENT OF CIVIL ENGINEERING
PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY
FACULTY OF ENGINEERING & TECHNOLOGY
PARUL UNIVERSITY
P.O. Limda – 391 760, GUJARAT, INDIA**

Abstract

Usually, intersections manage high traffic volume and leads to congestion. To ease traffic congestion at an at-grade intersection, flyovers are considered as a solution to reduce delay. However, it is observed that this solution is a short term resulting to same congestion levels after few years due to increased personalised vehicle traffic. It is important to understand the period of flyovers' life span for which it works as a solution and the remaining period when it may not be able to serve the purpose for which it is being constructed.

To analyse this time period of a flyover various parameters are being considered i.e. vehicular delay, fuel consumption, emission and level of service for the range of traffic volume. With this aim, an intersection with at-grade signal control and a flyover (Bhikaji Cama Place intersection, New Delhi, India) is considered as a case study. Study is broadly divided into four scenarios. Scenario (A): Existing condition (with flyover and with existing signal phasing plan), Scenario (B): with flyover and with proposed signal phasing plan, Scenario (C): without flyover and proposed signal phasing plan, Scenarios (D) without flyover for forecasting traffic.

For various simulation based analyses, VISSIM (PTV) has been used to compare alternate scenarios. Further, Simulation has been calibrated for existing traffic conditions and validated based on average speed and delay of vehicles observed on different approaches of the intersection. Accepted model was with the difference less than 10 percent.

For this study, alternate phase signal system were designed and compared for existing traffic volume to obtain optimum cycle length and it has been found that, delay, fuel consumption and emission were tremendously decrease which is presented in table (6.1) and table (5.20).

In this study, it has been found that, fuel consumption for two straight traffic movement at grade is less than the fuel consumption on flyover i.e. 13.91ml/pcu and 46.55 ml/pcu at grade and on flyover respectively