



Parking Management- A Solution for Congestion

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Abstract — India is nowadays facing a new problem – lack of sufficient parking space. With families getting smaller and the total number of motor vehicles exceeding the total number of heads per family, the parking scenario is woefully falling short of the current requirements in the country. The cities in India are highly congested and on top of that the parked cars claim a lot of space that could otherwise be used in a better way. The problem has been further exacerbated by the fact that nowadays even people from low income group are able to own cars. The number of families with cars has become much more than what the country is able to manage. The situation is such that on any given working day approximately 40% of the roads in urban India are taken up for just parking the cars.

Keywords- On Street Parking, Off Street Parking, Volume, Load, Parking Index

I. INTRODUCTION

The growing population of India has created many problems – one of the challenging ones being car parking which we confront almost every day. Besides the problem of space for cars moving on the road, greater is the problem of space for a parked vehicle considering that private vehicles remain parked for most of their time. Parking is one of the major problems that is created by the increasing road track. It is an impact of transport development. The availability of less space in urban areas has increased the demand for parking space especially in areas like Central business district. The traffic management in the many cities is marked by introduction of a series of one-way traffic system. The one-way traffic system has, however, implications on pedestrian safety and fuel consumption.

On a normal working day, 40 per cent of the road space in any average-sized Indian city is used for parking rather than for movement of traffic. With every middle class family affording a car, the number of four-wheelers being added to the vehicular population is simply shooting through the roof. Going by the trend, no amount of space will be sufficient to accommodate stationary vehicles, thereby squeezing the movement of public transport to narrower lanes. All the cities in India face severe parking problems. Though parking has negligible effect on quality of transport but there is damage to the life of engine due to parking.. There are two types of parking's, they are off-street parking and the other is on-street parking. Off street parking is common in big shopping malls and theatres and huge offices which are used by employees & customers, on the other hand on-street parking is traffic problem causing as the parking is directly controlled by market forces, with individual parking and hence has high demand and is considered as public property. Some might argue that parking is one of the lesser woes of urban transport, but this view has led to its exclusion from the policy frame work, causing many traffic bottlenecks. This results in poor quality urban transport, misuse of land and increasing social and environmental costs.

II. LITERATURE REVIEW

Michel Owayjan, Bahaa Sleem, Elio Saad, Amer Maroun American University of Science & Technology

Car parking may be considered a problem, especially in the big cities. Unorganized parking systems are time wasting and cause traffic jams. When a customer visits a mall or a center it may take him/her a long time to locate free areas. Later on, after spending a couple of hours in the mall or center, it may be a difficult task to relocate the parked car. Moreover more time is needed to pay for parking fees because of the long waiting queues. Accordingly, there is a need to create and design a parking management system

Miguel Jaller (January 2014), parking in the city: challenge for the freight traffic

This paper provides insight into the magnitude of the freight parking problem in large urban areas, and the effectiveness of alternative solution strategies. It does so by estimating the demand for parking using freight trip generation estimates, and the supply of parking on the basis of curb space. The paper discusses freight parking management demand strategies developed by governmental agencies and other organizations

Bhasker Vijaykumar Bhatt1, Fenil Rajeshkumar Gandhi (2014)

Have carried out their work on parking needs at intersections of developed T. P. Schemes of Surat under the GTPUD Act, 1976. Land use and width of road along with existing parking facilities have an impact where the act has no specific provisions. Study identifies Parking consumes 0.1% - 2.46% road land at intersections.

Tom budd Cranfield university (august- 2013), an empirical examination of the growing phenomenon of off-site residential car parking provision:

The situation at UK airports parking management is a strategy that has been extensively employed by authorities and organizations world-wide in an attempt to address traffic-related congestion and associated environmental impacts at a variety of sites and scales. At airports, parking control and pricing regimes are used to generate revenue and manage traffic demand. On the supply side, within the last few years a new trend in unregulated off-site, predominately residential, car parking provision around UK airports has emerged and quickly grown in popularity

The paper concludes by contending that airport operators and local authorities need to be cognizant of the existence of, and the challenges and opportunities associated with, alternative parking provision in order to be able to better plan for, and respond to the planning, environmental, and consumer implications it may create.

Geetam Tiwari (2012)

Has carried out their work on pedestrians, cyclists and non-motorized rickshaws are the most critical elements in mixed traffic. If infrastructure design does not meet the requirements of these three all modes of transport operate in sub-optimal conditions. It is possible to redesign existing roads to provide a safe and convenient environment for non-motorized modes of transport. This also results in the improved efficiency of public transport vehicles and an enhanced capacity of the transport corridor when measured in number of passengers per hour per lane

Dawei IVxinsha fu (January 2011), to analyze the parking problems and find solutions in urban central areas

Parking is one of the most important influence factors in urban roads, such as traffic safety, operating efficiency and traffic order. If the urban road system is absent of fixed parking spots, lacking of rational planning and parking management, it will result in traffic congest, evoking traffic accidents and severely reducing the capacity of traffic. This article studies the parking issues in the center area of a city. To regulate parking provision and management and effectively relief the difficulty of parking in the center area, it puts forward the appropriate solution through the investigation and analysis in site

Bonnie J. Johnson, Ph.D., AICP; and Stacey Swearingen White, Ph.D. (2010)

Have presented City engineers and planners have a critical role to play in the advancement of sustainable transportation systems at the local level. Practices that promote water quality and/or public health through transportation infrastructure are two central components of this role. This study explores innovations related to sustainable transportation systems using the Kansas City, Missouri, metropolitan area. Interviews with engineers and planners reveal that the automobile still dominates planning and decision making.

Calthrop (2001)

Presented a spatially homogeneous model characterizing the steady-state equilibrium of on and off-street parking, in which the time searching for on-street parking balanced the higher fee associated with off-street parking. And he concludes that driver's search for vacant parking space cause congestion to the through as well as adjacent travelers.

III. NEED OF STUDY

Due to continuous increase in number of vehicles, parking problem arises in big cities. To reduce the problems arise due to traffic in the big cities. There are different options available to transport planner. Alternate may be multi-storey or basement parking. India's vast infrastructure needs are expanding all the time, and this presents enormous opportunities. The population has already surpassed 1.2 billion, and it continues to grow at a heady rate. Global trade is placing acute pressure on India's inefficient ports. Rapid industrialization is intensifying the strain on the nation's unreliable network for electricity and water.

The need to upgrade India's infrastructure is especially acute in huge cities.

- India's urban population of around 375 million is projected to reach 500 million by 2017.
- By 2030, the country is expected to have 68 cities with over 1 million residents.
- This torrid rate of urbanization means that massive investment will be required in everything from metro systems to clean water supplies, power generation to affordable housing.

Infrastructure investment needs could be a higher percentage of GDP in fast-growing developing economies, reflecting the extensive new infrastructure they will require and the increased maintenance needs that can be expected beginning around ten years after the initial investment in that infrastructure.

IV. SCOPE & OBJECTIVE OF STUDY

4.1. Scope

- Congestion Parking takes considerable street space leading to the lowering of the road capacity. Hence, speed will be reduced; journey time and delay will also subsequently increase. The operational cost of the vehicle increases leading to great economical loss to the community.
- Accidents Careless maneuvering of parking and un-parking leads to accidents which are referred to as parking accidents. Common type of parking accidents occur while driving out a car from the parking area, careless opening of the doors of parked cars, and while bringing in the vehicle to the parking lot for parking.
- Environmental pollution they also cause pollution to the environment because stopping and starting of vehicles while parking and un-parking results in noise and fumes. They also aced the aesthetic beauty of the buildings because a car parked at every available space creates a feeling that building rises from a plinth of cars.
- Obstruction to firefighting operations Parked vehicles may obstruct the movement of firefighting vehicles. Sometimes they block access to hydrants and access to buildings

4.2. Objective

- To identify the problems related to parking in existing area by collecting parking data.
- To carry out modification for smooth traffic flow.
- To find out benefits of project.
- To carry out impact study of project.
- Study benefit from future economic and trade growth.



Figure 1. Parking Area, LDRP Campus

V. ANALYSIS

- ✓ Campus of LDRP College was analyzed for the parking problem. The current parking area is very small, and congested.
- ✓ In current condition around 450 bikes & 60 cars are parked in the area.
- ✓ Now a days on street parking is not legal so it's necessary to convert it into off street parking by using basement parking system in campus premise.
- ✓ If a basement is constructed then around 300 bikes can be parked in it while remaining bikes parked nearby University building, and 60 cars parked on the ground floor.

VI. CONCLUSION

Before planning such a project it is necessary to study overall feasibility. Budget will also depend on many factors like rate of material and machinery. Total approximate cost of project might be around 1.5 Cr including all the cost. Thus planning of basement parking in campus will require brief study of cost and analyze the space available.

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