

# Design of an Off-Street Parking - A Case Study of Vadodara Railway Station

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## ABSTRACT

Parking is one of the major problems that is created by the increasing road traffic. It is an important development. The availability of less space in urban areas has increased the demand for off-street parking space in area like railway station. In this focused on analyzing the existing condition of parking by “registration number survey” to collect parking data. Such as parking demand, parking accumulation, rate of turnover and to know level of service and after analyzed give better parking design and facilities. In the context above parking facility at railway station of vadodara, have been studied in this project work. The parking surveys undertaken parking supply and demand assessment which is informed about the proper parking, planning and its strategy. The parking assessment policy and strategy is one of the most complex areas of transport planning as parking interfaces with economic development of public transport and traffic issues.

**Keywords:** Off-Street Parking , Registration Number Survey , Data Analysis , Parking Accumulation , Parking Turnover

## I. INTRODUCTION

Now a day, Traffic congestion has been increasing worldwide as a result of insufficient road development, growing number of vehicles, Low speed, increased accident rates, increased fuel consumption etc. it raises the demand for the concept of intelligent transportation system to the conventional transportation system. The principal reason for traffic congestion in India is that the road, space and infrastructure have not improved on par with the traffic. The seriousness of the problem is reflected in the report of World Bank that estimates the economic losses incurred on account of congestion and poor roads alone run as high as 56 billion a year in India. There is, therefore, an urgent need to explore and develop better traffic management option to ease traffic congestion. Intelligent Transportation Systems (ITS) is a tested route to mitigate traffic congestion problems. ITS can be broadly defined as the use of

technology for improving transportation systems. The major objectives of ITS is to evaluate, develop, analyze and integrate new technologies and concepts to achieve traffic efficiency, improve environmental quality, save energy, conserve time and enhance safety and comfort for drivers, pedestrians and other traffic groups. Intelligent Transport Systems represents the next step in the evolution of the entire transportation system. These technologies include the latest in computer, electronic, communication and safety systems. ITS have a central role to play in funding countries' transportation systems.

Intelligent Transportation Systems (ITS) is the application of computer, electronics, and communication technologies and management strategies in an integrated manner to provide traveller information to increase the safety and efficiency of the surface transportation systems. These systems involve vehicles, drivers, passengers, road

operators, and managers all interacting with each other and the environment, and linking with the complex infrastructure systems to improve the safety and capacity of road systems.

ITS improves transportation safety and mobility and enhances global connectivity by means of productivity improvements achieved through the integration of advanced communications technologies into the transportation infrastructure and in vehicles. Intelligent transportation systems encompass a broad range of wireless and wire line communication based information and electronics technologies to better manage traffic and maximize the utilization of the existing transportation infrastructure. It improves driving experience, safety and capacity of road systems, reduces risks in transportation, relieves traffic congestion, improves transportation efficiency and reduces pollution.

There are increasing the uses of vehicles, the requirement of parking space and facility is more. The present scenario of parking facility give rise to illegal parking at the road shoulders reducing the effective use and efficiency of road. Which further leads to traffic jam. Accident rates are also increase due to parking problem. To solve this parking problems required to study parking area, analysis and then solution of this area. An off-street parking and on street parking are the two types of parking. These types of parking is selecting by the survey and analysis of the traffic of that area.

Most of parking problems are occur at the public place like railway station, bus station, theaters, gardens etc. To do proper design of parking can reduce the problem of parking. Parking problem occur at the vadodara railway station. So we select the vadodara railway station to design the parking. Off-street parking method select to design parking because the quantity of vehicle is more so it is not possible to use on street parking. After survey and analysis of vadodara railway station we can decide which method of off-street parking can be use.

## II. Typers Of Parking

To solve parking problem we have to method, an off-street parking and on street parking.

1. On street parking : in this type, the vehicles are parked near the edge of curb of the road.

Type of On street parking :

- Parallel parking
- 30° angle parking
- 45° angle parking
- 60° angle parking
- Right angle parking

2. Off-Street parking : in this type, the vehicles are not parked near the edge of the curb of the road, but vehicles are parked at provided particular parking area.

Types of off-street parking :

- Surface cars parks
- Multi-storey parks
- Roof parks
- Mechanical car parks
- Underground parks

## III. Parking Problem And Solution

One of the problem created by road traffic is parking. Not only do vehicles require street space to move about, but also do they require space to park where the occupants can be loaded and unloaded. With the growing population of motor vehicles, the problem of parking has assumed serious proportions. A systematic study of the parking characteristics and demand and regulatory measures that are possible for controlling parking is of great help to a traffic engineer as well as a town planner.

- One of the serious problem of parking is the loss of street space and the attendant traffic congestion. The

capacity of the streets is reduced, the journey speed drops down and the journey time and delay increase.

- The manoeuvres associated with parking and unparking are known to cause road accidents. Careless opening of the doors of parked vehicles, moving out of a parked position and bringing a car to the parking location from the mainstream of traffic are some of the common causes of parking accidents.
- Parked cars obstruct the movement of fire-fighting vehicles and greatly impede their operations. They block access to hydrants and access to building, etc.

#### IV. Survey

##### 1. Parking Area(A)

Sr. No.	Vehicle Type	No. of Vehicle Parking
1.	2 - Wheeler	520
2.	3 - Wheeler	None
3.	4- Wheeler	None

##### 2. Parking Area(B)

Sr.No.	Vehicle Type	No. of Vehicle Parking
1.	2 - Wheeler	420
2.	3 - Wheeler	None
3.	4 - Wheeler	None

##### 3. Parking Area(C)

Sr.No.	Vehicle Type	No. of Vehicle Parking
1.	2 - Wheeler	None
2.	3 - Wheeler	38
3.	4 - Wheeler	42

##### 4. Parking Area(D)

Sr. No.	Vehicle Type	No. of Vehicle Parking
1.	2 - Wheeler	390
2.	3 - Wheeler	None
3.	4 - Wheeler	None

##### 5. Parking Area(E)

Sr. No.	Vehicle Type	No. of Vehicle Parking
1.	2 - Wheeler	1815
2.	3 - Wheeler	None
3.	4 - Wheeler	30

#### V. Conclusion

From above planning vehicle sufficient parking in multi-storey at Vadodara railway station. So, Parking congestion problem at station is solved and people parked their vehicle in parking area and also save time to parked vehicle.

#### VI. References

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