

# Parking Requirement at Road Intersections in T. P. Schemes of Surat City

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**Abstract** — Parking really matters to urban mobility. Due to economic development of state, the urbanization in Gujarat spreading at very fast rate in last few decades. Urbanization in Gujarat is governed by Land pooling and redistribution tool of land management which is mentioned in Gujarat Town Planning and Urban Development Act, 1976. It is called the Town planning scheme mechanism. The Act provides criteria for different land use reservation, but it lacks specifications about parking area provision for public utility. Need to integrate the parking area reservation in the town planning scheme process just as the other land use reservations mentioned is essential, because the parking give major contribution in congestion through reducing the carriageway capacities and by reducing the flow of traffic through making obstruction. If we are going to make city growth in planned manner then, all components should be taken in planning process to make better execution of it by using existing experience of congestion and parking issues. Focus of my present work shall be identification of unauthorized parking observed at intersections of important roads in a planned and implemented final T. P. Schemes of Surat and to intervene if any relation is there between land use composition and parking area requirement. There is the reason why only the land use relations, because when the draft TPS prepared, the land use structure previously identified and known before the implementation done on the real site, so we can predict the parking area need.

**Index Terms**— Land-Use, Parking, Road Intersection, Surat.

## I. INTRODUCTION

Whenever the engine of any automobile is in off condition it will demand parking. The tremendously increase in the population concentration in few metropolitan cities in the India has resulted in increase in the travel demand, transportation facilities demand. The increase in population and expansion of urban centers has been attended by increasing car ownership rate and increasing demand for movement for various purposes and it has generates huge parking demand mainly in metropolitan cities. Most of the metropolitan cities of India are experiencing increasing problems related to parking. With the increasing number of cars on our roads, parking causes enormous costs – pollution, congestion, traffic delays and wastage of fuel and driver frustration. General problems that occur in urban transportation is the traffic jam due to inappropriate parking.

Parking is one of the major and serious problem that challenges the urban planner and traffic and transport engineer. With the growth in population of motor vehicles, the problem of parking has caused serious extents. Now, the designing of a parking space has always been a important and challenging part of a traffic and transportation system. Now lack of on-street parking facilities has led to roadway congestion and in turn affected the flow of the roadway and its capacity and in most cases the off street parking remain unused. A systematic study of parking characteristic, its demand as per land-use composition and regulatory measures that are possible to tackle is of great help to a traffic engineers as well as town planner.

Now the land use in cities for population growth is controlled through land management tools. Land management tools and techniques used for planned development of urban areas. The planned development need to give desired ideal results for effective functioning of cities

This research paper highlights there is serious need to integrate parking component in TPS model.

## Objective

To evaluate parking demand as per land use composition of major intersections of existing TPS development in Surat.

## II. NEED FOR STUDY

Globally known fact is that, the Surat city is one of the major and rapidly growing urban settlements covering a population of around 44.62 lacs (as per Census of India, 2011) having its major economic contribution through commercial and industrial activities. Due to the fast commercial and industrial activities development of the city, the growth of the personalized vehicle was found 11% annually. Surat may have developed adequate infrastructure for about 18 lacs vehicles that play on the city roads but there is no policy as yet for vehicle parking. There is absolutely no parking space for a vehicle near the important places and if provide the parking facilities then it is used by the informal shoppers. In Surat city mix mode of transport vehicles are seen in all zone of different T. P. The increase of vehicular moment needs more parking spaces in the city area.

Present scenario of the Surat city is very heavy traffic congestion at all important places around the road intersections because of unauthorized on-street parking and informal shoppers. Result is very slow vehicle circulation during peak hours. To reduce the

problem effects, pay and park spots have been developed by Surat Municipal Corporation (SMC) at many places however the problem of parking in Surat is stand still enhancing the congestion.

### **Identification of the issue: Parking**

In Town Planning Schemes, focus is not given on parking space requirements. There is no provision for the parking spaces for on-street parking. However, Parking Space provision is given for buildings constructed individually. Hence, there is a need to identify this issue.

### **Parking problems**

For any person or cargo moving in a vehicle, a terminal facility is essential both at the origin and the destination. When the person has to stop en route for some purpose other than traffic related, the vehicle needs some halting facility, without disturbing traffic flow otherwise on the street. Such a service is called parking.

### **III. CONCEPT**

The Indian Roads Congress formulated the parking standards in its Special Publication IRC SP: 12 of 1973, which laid down the parking standards for different land use activities for Metropolitan cities of India. A review of the parking standards of the metropolitan cities of India shows that there is no analytical method for assessing the parking demand and formulating the standard. The parking standards are constantly revised and are subjected to changes on par with the increase in demand.

The parking standards for Surat formulated by Surat Urban Development Authority and prescribed in the Development Control Regulations (DCR) norms does not give any specification for on-street parking. There are no norms are available for the on-street parking area provision for town planning scheme process in UDPFI, GTPUD Act or any other guidelines.

Now, Cities growth organically happened before the land management models come in to the picture. The TPS model is one of the best models for land management, which is implemented in Gujarat. Now TPS model is applied to plan controlled development and make the cities more efficient, so it is necessary that the result after its execution will be desired.

Traffic is an important part of Cities and its flow within TPS have to be smooth and efficient mobility of traffic and least traffic congestion problems. So there is a need for parking component in TPS development and some specifications and control guidelines should be there to make TPS model and its development better. The vehicles parked or standing on any intersection cause bottleneck and reduce the road capacity and reduce the traffic flow which results in congestion and it leads to time loss, resource loss, pollution and driver frustration. The intersection having already their own traffic due to mixing of lanes and low speed due to turning and parking in particularly that area is the major contributor in congestion so here there is need to provision of parking near intersection and here is my attempt to identify any relation between land use composition and Parking requirement.

### **IV. LITERATURE REVIEW**

#### **1) National Urban Transport Policy 2006**

As per report, the land is most valuable thing in urban area and parking needs large area portions, so efficient use of land done for parking areas when determining principles. The report give encouragement to public transport through discouraging the use of private vehicles. The park and ride facilities should be given more and encouraging it for use of public transport and give a rise in parking fees which recovers the cost of land. It suggest that there should be relaxations in FAR for making multi-level parking's mainly for commercial complexes and should be made on PPP base. It suggests that the proper legislation made for preventing the use of right of way of road system for parking.

#### **2) Odisha Urban Parking Policy by Housing & Urban Development Department Resolution, 2013**

The urban parking policy of Odisha understands parking as a civic amenity for citizens. The mass transportation, parking policy and non-motorized transport facilities should be prioritized. As per the national urban transport policy, there is immediate need of the efficient mass transportation system and transit-oriented development for urban areas. The policy also discourage the daily personalized motorized vehicle use and promotion of public transport and NMT. The policy gives some objectives which they aimed. It gives suggestion that there should be assessment of parking needs in urban area. There is need of proper policy interventions and incentives for better parking management. It gives parking regulations for different areas and strict enforcement for illegal parking. The policy paper suggests the financing of parking facilities from state government to the ULBs for grants, loans and special assistance and some measures like higher rate of tax on personal vehicles, tax incentives for city buses to competitive fare from public.

The City Parking Plan and Town Parking Plan should be prepared by each ULB in consonance with Development, Master and Zonal plans. The city mobility plan should be prepared with integrating parking provisions. The Directorate of Town Planning, Odisha shall be the nodal agency to extend technical advice, guidance and support to ULBs for formulation of city based mobility and parking space development plan as and when needed. The process of Implementation, Review and Co-ordination is described in policy paper. The Housing and Urban Development Department will issue further guidelines and instructions for smooth implementation of this Policy and any doubt and dispute relating the policy shall be referred to Housing & Urban Development Department of the Government of Odisha for clarification and the decision of the their Government in this regard shall be final and binding on all concerned.

### 3) Final Report of Working Group on Urban Transport National Transport Development Policy Committee (NTDPC) (Ministry of Urban Development 30/03/2012 (MoUD), GOI).

As per the report of Working Group on Urban Transport (30/03/2012) (Ministry of Urban Development, Government of India), the parking facilities given for large community like neighbourhood unit level instead of individual parking facilities for mainly each building or unit and standards should be vary from zone to zone and city to city and reviewed periodically. The working group had given the principles and they emphasis on discourage to private vehicle use and to encourage and promote to public transport. The parking is not legal right so the user must pay full parking fees and no subsidization in public places. The subsidization given to only parking at feeder terminals and prioritized. The report's parking management strategies gives promotion to technology advancement and city-wide parking facilities mainly for two-wheelers and cycles to promote public transport through park and ride.

### 4) J. Aderamo , K. A. Salau , "Parking patterns and problems in developing countries: A case from Ilorin, Nigeria", *African Journal of Engineering Research* Vol. 1(2), pp. 40-48, May 2013

The paper studied the patterns of parking, problems of parking and their causes in Ilorin for reducing the problems. They have showed the urbanization growth and related transport problems in Nigeria country. Illegal and road-side parking is major problem in metropolis of Llorin (Nigeria). The purpose of their study is to assess parking problems and to give suggestions for tackling urban transportation problem. They studied related literature of existing conventional parking standards and related research papers.

The data used in study are socio-economic characteristics of respondent vehicle parkers, existing parking facilities along sampled streets, locations where parking facilities are required, types of parking system available in the study area, and existing parking regulations and control. The random sampling survey done of ten streets for on-street parking. Two sets of survey questionnaire were used, one for on-street and one for off-street. The data also taken from state ministry of transport, the traffic division and police division. They studied 3- legged , 4- legged and 5- legged intersection.

*Table 1 Characteristics of the studied intersections.*

S/No.	Intersection name	Intersection types	Land-use characteristics
1	Pakata/Adeta	5-legged	Institutional, residential estate, commercial, motor parks, retail shops
2	Surulere/Agbo-Oba	4-legged	Market, commercial centre, institutional, residential estate, retail shops
3	Oloje/Mount Carmel College	3-legged	Market, commercial, motor park, institutional, residential estate, retail shops
4	Taiwo/Ita Amodu	4-legged	Commercial centres, retail shops, institutional
5	Gambari/Balogun Fulani	3-legged	Motor park, institutional, offices, market, commercial centres, retail shops, government residential area
6	Omoda/Ajikobi	4-legged	Retailing shops, institutional, commercial, motor parks

The study shows that of all the vehicle types recorded at the sampled junctions, motorcycles had the highest and then respectively others. Their analysis revealed that variations exist in traffic flows and delays at the studied intersections. Their study shows Parking problems alone were found to contribute 23.9% of delays at the road intersection in Ilorin. Regression method was used to model parking demand along the selected streets and the off-street parking facilities which could aid in estimating the parking need in the metropolis. Parking demand models have been built for estimating on-street parking and off-street demands of selected streets and parking facilities in Ilorin. This will go a long way in assessing the parking needs of the different parts of the city. The study concluded that there is need of traffic management system in Llorin and problems should be not left until the level of large centers of metropolis attained.

## V. CONCLUDING REMARKS

From above literature, there is a need to integrate Parking provision in the town planning scheme process for planned development of urban area also there is need to include some specifications in guideline for on-street parking provision.

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