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Parking Study at Simhachalam Temple Hill Top in Visakhapatnam - Case Study

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Abstract- The Historic Varaha Narasimha Swami's temple is located on Simhachalam hill at an elevation of 244 mats, built in the 11th century by the King Sri Krishnadevarayam. Thousands of pilgrims visit the temple from various parts of Andhra Pradesh and Odisha daily. There is no proper parking place or parking slots available for two and four wheelers. In the present work, the parking demand on Simhachalam hill top is studied and proposed a place for two wheeler, four wheeler and bus parking slots based on the analysis. As per the demand about 100 two wheeler slots, 320 four wheelers slots and 20 bus parking slots have been proposed.

Key words: Parking, Traffic, Road Geometry, Parking Demand

1. INTRODUCTION

Parking Demand refers to the amount of parking that would be used at a particular time, place and price. It is a critical factor in evaluating parking problems and solutions. Parking demand is affected by vehicle ownership, trip rates, mode split, duration (how long motorists park), geographic location (i.e., downtown, regional town centre or suburban), the quality of travel alternatives, type of trip (work, shopping, recreational), and factors such as fuel and road pricing. Since the location is on a hill, and the purpose of trips is to visit Lord Narasimha swami temple, most of the trips are by the pilgrims. There are very few trips made by the employees of the temple and most of them use either public transport (bus) or they go by steps. The Chandanotsavam or the Nijaroopa Darshanam Day, is the annual ritual conducted at the temple. It is only on this day that devotees would have a chance to see the actual shape of the lord (Nirjaroopam). On normal days, the Lord in the temple is visible with a layer of Chandanam (Sandalwood paste) covered. This process is conducted on the Vaisakha Suddha Tadiya as per the Telugu almanac. It is on the Chandanotsavam day that the Lord's Sandalwood paste is removed and is covered with a fresh layer of Sandalwood paste brought from Andhra Pradesh and Orissa. The ceremonial process would take some time and during the process of removal of the sandal paste, the sanctum sanctorum doors will be closed. Abhishekam and special pujas will be performed after the diety is fully uncovered.
This happens at around 3:00 PM. Heriditary Trustee of the temple, Ananda Gajapathi Raju will be the first person to have the darshan of the Lord on this day at around 4:00 PM.
Millions of people from round the world. particular from the coastal states of Andhra Pradesh, Orissa, Karnataka and Tamil Nadu vist the Temple to take the darshan of the Lord in his true form.

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II. DATA COLLECTION

The following data is collected for designing the parking slots

1. **Topography details of the Area**
2. **Vehicular data at the toll gate**
3. **Soil properties**
4. **Cross Drainage works**
5. **Daily population of pilgrims**

Existing Toll Charges for various vehicles are shown in Table 1. Traffic volume on the hill top road in the year 2012-2013 is shown in Table 2. From the table, it is observed that 1,39,401 two wheelers, 1,33,538 four wheelers, 4,735 private buses, 46,805 RTC buses and 31,500 devasthanam buses are going to hill top annually.

Every year during Vaisakha Suddha Tadiya, traffic volumes are high due to chandanotsavam. Traffic volume on that particular day is given in Table 3.

Table 1. Toll Charges for Various Vehicles

Sl. No	Type of Vehicle	Charges (Rs)/ trip
1	Two wheelers	10
2	Cars/Vans/Jeeps	30
3	Buses	200
4	Trucks	75

Table 2. Traffic volume on hill top road in year 2012-2013

Month	Two wheelers	Four wheelers	Private Buses	APSRTC Buses	Devasthanam Buses
April-2012	11110	10563	303	3500	2400
May-2012	12931	14736	847	5005	3000
June-2012	11788	13302	323	3500	2400
July-2012	10164	10069	288	3500	2400
August-2012	10756	10052	301	3500	2400
September-2012	8928	8014	308	3500	2700
October-2012	10041	11807	442	4050	2700
November-2012	13487	10168	360	4050	2700

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December-2012	15703	13862	439	4050	2700
January-2013	13467	11676	455	4050	2700
February-2013	9772	9592	307	4050	2700
March-2013	11254	9697	362	4050	2700
Total	**139401**	**133538**	**4735**	**46805**	**31500**

Table 3. Peak Day volume during Chandanotsavam

Sl. No	Description of vehicle	Volume
1	Two wheelers	Not allowed
2	Four Wheelers	980
3	APSRTC Bus Trips	336
4	Devasthanam Bus Trips	120
5	Pedestrians	110000

III. Design of Parking Places

The parking layout has been designed in three locations with peripheral road connectivity at Entry and Exit to minimize disturbance, traffic congestions and traffic delays. A car parking size of 2.50 mts x 5.00 mts and 2.60 mts x5.50 mts have been recommended in design for 4 wheeler parking with required drive ways in the ratio of 75:25 to accommodate LMV & Modern Cars. The parking layouts also planned exclusively away from the public Bus Bays so as to facilitate to operate the same on commercial terms for revenue backups to the Devasthanam. Different parking patterns have been studied such as Parallel Parking, Angular Parking etc for the stalls. However, 90 degrees and Angular Parking are proposed with recommended size of stalls and drive way to accommodate maximum number of vehicles. The parking layout is shown in the Fig. 1 and the details of various parking locations with number of parking slots are given in Table 4.

Table 4: Capacity of each parking location with number parking slots for various types of vehicles

Sl. No	Description of location	No of four wheel parking	No. of Bus parking slots	No of two wheeler parking	Bus Bay parking
1	Parking Bay -1	150	-	50	10
2	Parking Bay -2	110	-	50	
3	VIP Parking	60	-	-	-
4	Bus Bay	-	20	-	-
Total		320	20	100	10

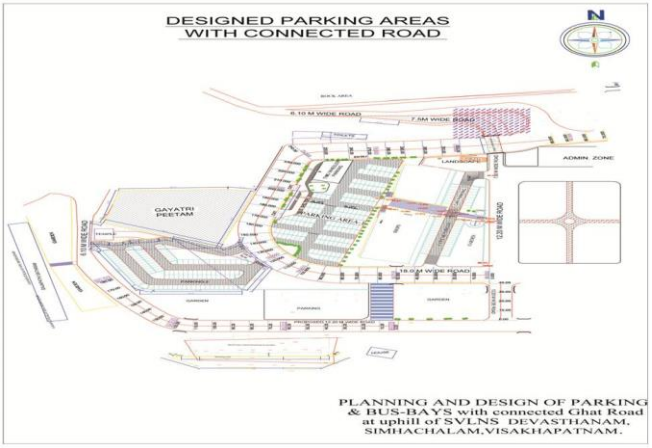

Fig.1 Plan of various parking locations

IV. Discussion and Conclusions

Since, the parking facility development will serve for the improved traffic and volume of vehicles, investment made on the construction of developments can be recurred with Revenue developed from parking fees in next 4 to 5 years.

By development of organized parking lots and accommodating as many as 320 No of four wheeler car spaces 20 No of Bus Parking, 100 No of Two wheelers slots and exclusive bus bay for Government Buses and Devasthanam Bus service, the benefits achieved to a great extent against the existing uneven and unpaved ground terrain in respect of

- Safe and comfortable parking and Pollution free Environment
- Congestion free traffic and Complete system of Drainage and Disposal
- Accident free drive and Good Esthetics and Ambience
- Benefit to car users as well to pedestrian walkers

The designed parking shall serve the temple tourist volumes for the next 10 years with trouble free traffic flow to meet 90% of the demand.

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