

STUDY AND DESIGN OF PARKING FACILITIES IN ITMU, VADODARA

¹ Shah Yash SanjayKumar

²Patel Shivam Dipakbhai³Patel Brijesh Rajanbhai⁴Prajapati Ishan Ramesh Kumar

1 U.G. student, civil engineering department, ITM universe, Vadodara, Gujarat, India

2 U.G. student, civil engineering department, ITM universe, Vadodara, Gujarat, India

3 U.G. student, civil engineering department, ITM universe, Vadodara, Gujarat, India

4 U.G. student, civil engineering department, ITM universe, Vadodara, Gujarat, India

Abstract: *Parking on ITM Universe campus has long been a difficult proposition. Rising student enrolment and the necessary additional faculty and support staff have increased demand for parking. Projected campus population growth will only exacerbate the problem. The increasing number of private vehicles in campus has been inducing detrimental effects on the campus in terms of increase in traffic congestion, lack of park space utilization, damaging vehicles and form long queue on the road, and parking lots facility is very far from the all department so that it is taken more time to reach destination. Parking is an essential requirement of the transportation system. The availability of parking is related to the location and the type of parking spaces followed by infrastructure of these spaces and enforcement of regulations. Parking spaces are required by Students, employees and visitors and the movement of traffic. This Study investigates problems with current parking practices with the parking accumulation in Itmu campus, Vadodara. Definition of project is to provide Parking Facilities in Itmu, Vadodara. Parking Designs are developed as per guidelines.*

Keywords: *Parking Study, Parking Facility, Parking Data, Parking Accumulation, Surface Parking*

1. INTRODUCTION

Parking is an essential requirement of the transportation system. The availability of parking is related to the location and the type of parking spaces followed by infrastructure of these spaces and enforcement of regulations. Parking spaces are required by Students, employees and visitors and the movement of traffic. Before taking any measures for the betterment of conditions, data regarding availability of parking space, extent of its usage and parking demand is essential. Parking surveys are intended to provide all these information. The Current Parking situation is analysed with in the campus plan. This analysis showed that there would be increase in parking area and future growth is expected to be accommodated using proper arrangements. Past trends and future changes are also considered. Therefore in this paper an attempt has been made to point out various aspects of parking characteristics such as location, area, accumulation and volume in the parking spaces followed by some guidelines and provisions which will surely make better ITM Universe in future.

2. LITERATURE REVIEW

Studies must be conducted to collect the required information about the capacity and use of existing parking facilities. In addition, information about the demand for parking is needed. Before parking studies can be initiated, the study area must be defined. A cordon line is drawn to delineate the study area. It should include traffic generators and a periphery, including all points within an appropriate walking distance. The survey area should also include any area that might be impacted by the parking modifications.

The boundary should be drawn to facilitate cordon counts by minimizing the number of entrance and exit points. Once the study area has been defined, there are several different types of Data that may be required. These Data are listed below.

- ❖ Existing Parking Facilities
- ❖ Parking Terminology
- ❖ Data Collection
- ❖ To Obtain Information regarding demand for parking spaces
- ❖ The demand For Parking Space

Parking Studies provides guidelines for the appropriate use of parking studies. It is intended to help decision maker's gain a clear understanding of when a parking study is appropriate and what questions can be answered by the study. Data needed to prepare an accurate study is also presented.

3. OBJECTIVE

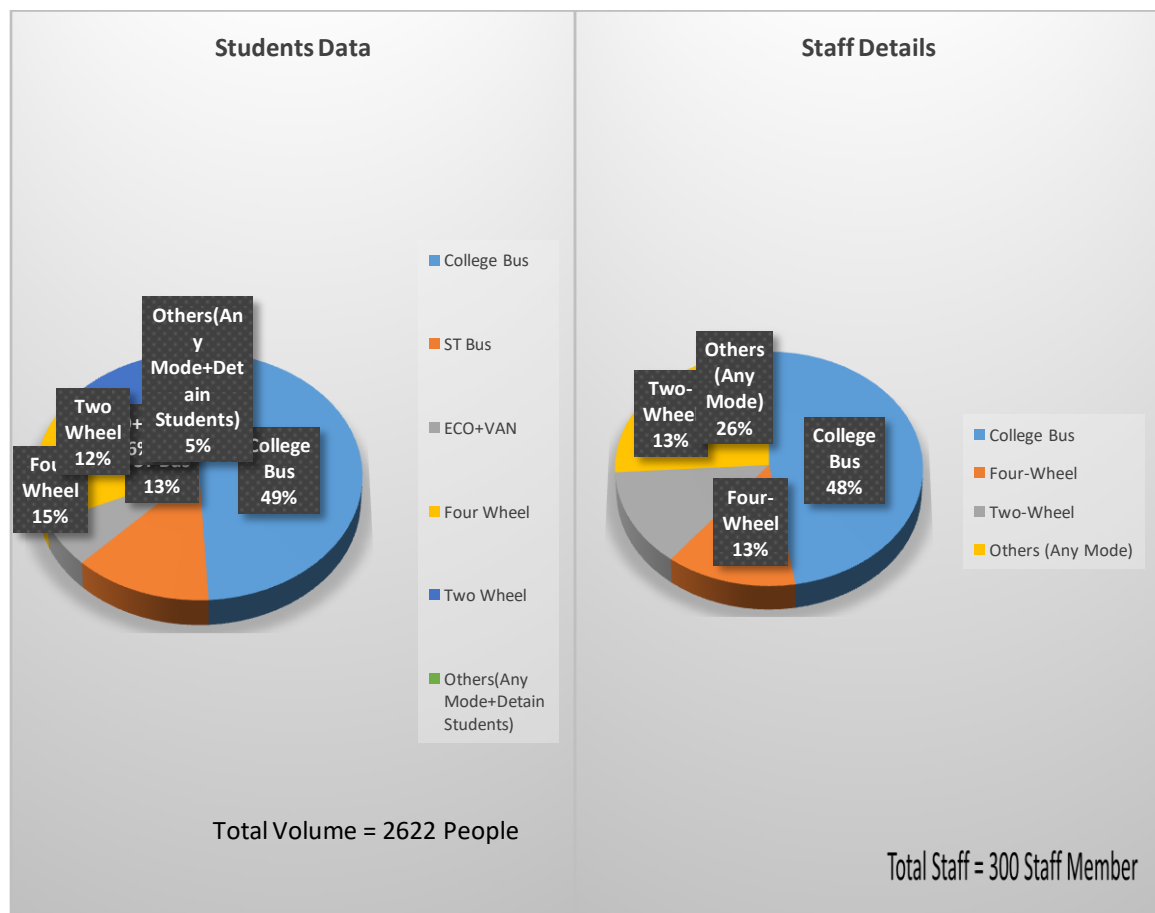
- ❖ To Obtain Information regarding demand for parking spaces
- ❖ For improvement and Regulation Of existing parking facilities
- ❖ For Future Development plans
- ❖ The demand For Parking Space
- ❖ To Decide about Shaded Parking

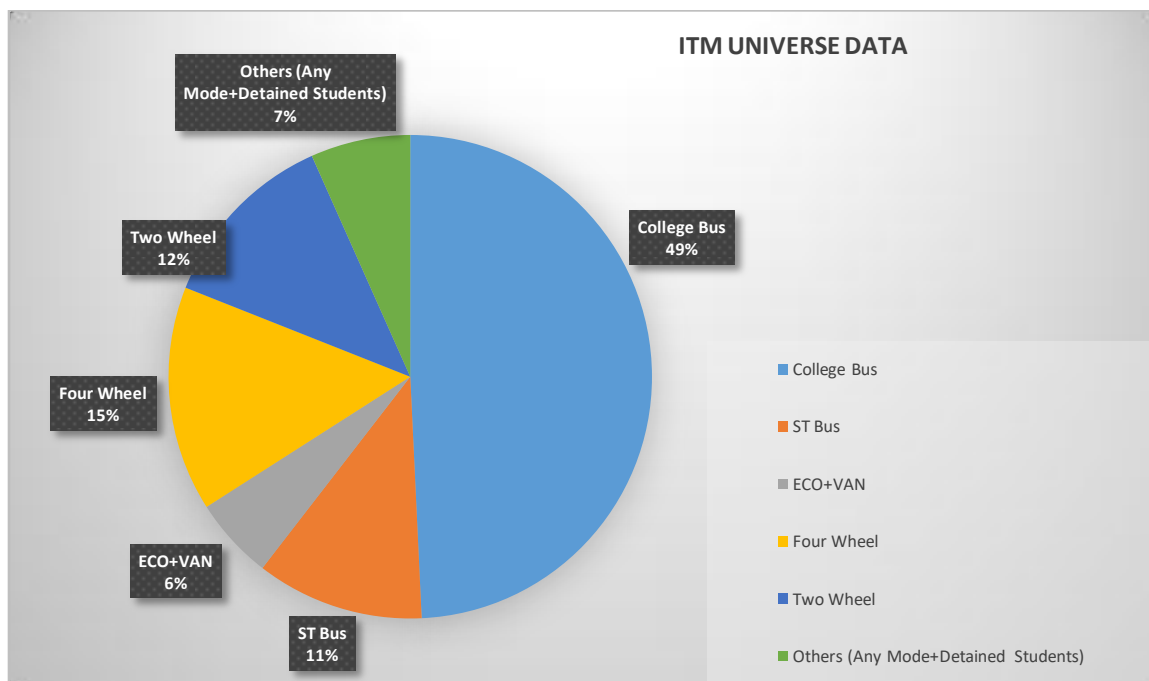
4. SCOPE

There is need to conduct survey on the availability of all vacant spaces to explore the possibility of converting such places in to parking areas.

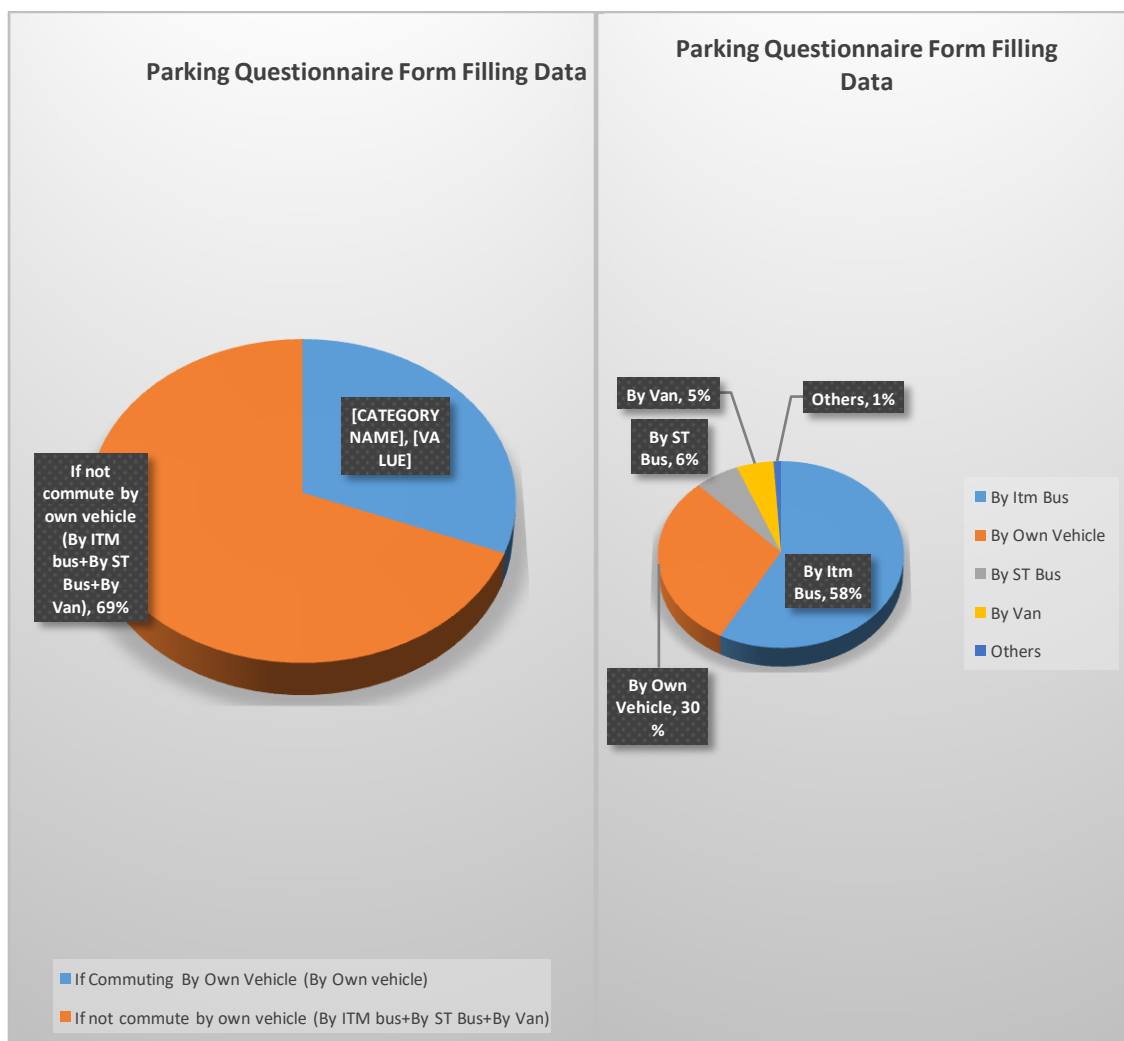
5. METHODOLOGY

5.1 Data collection-Vehicles, Modes, students, staffs

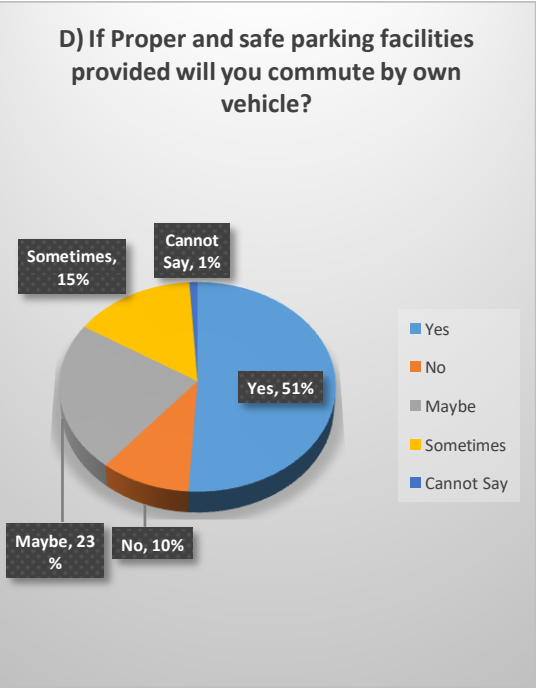
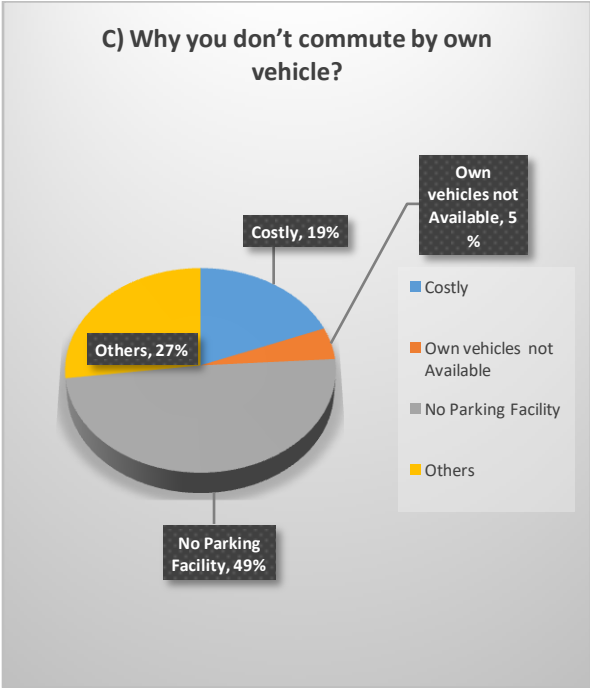
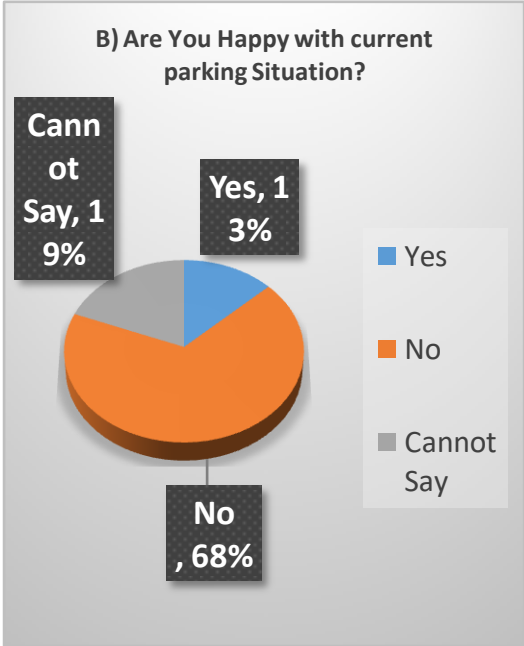
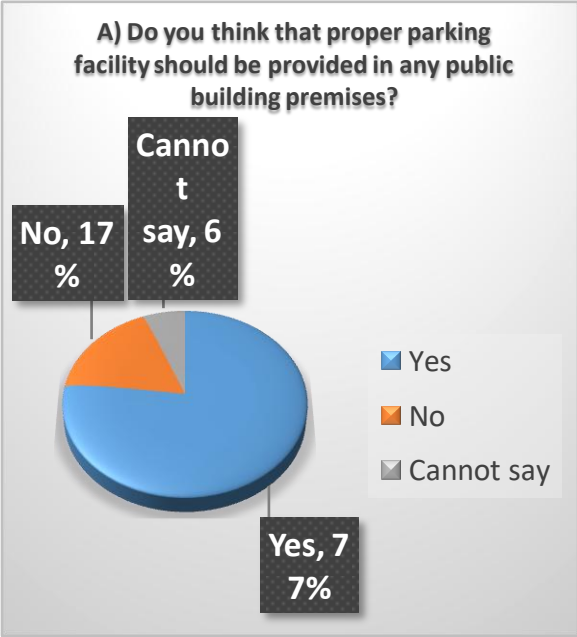




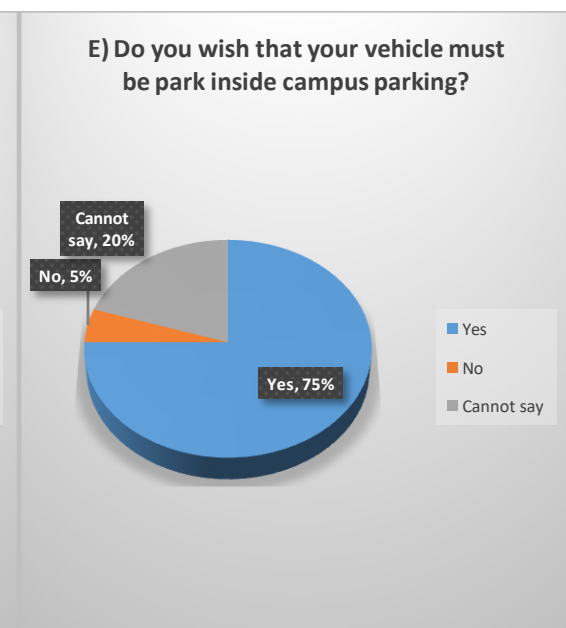
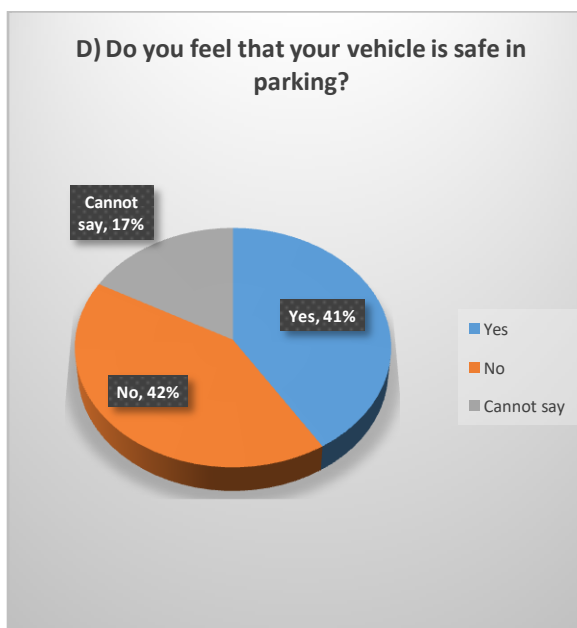
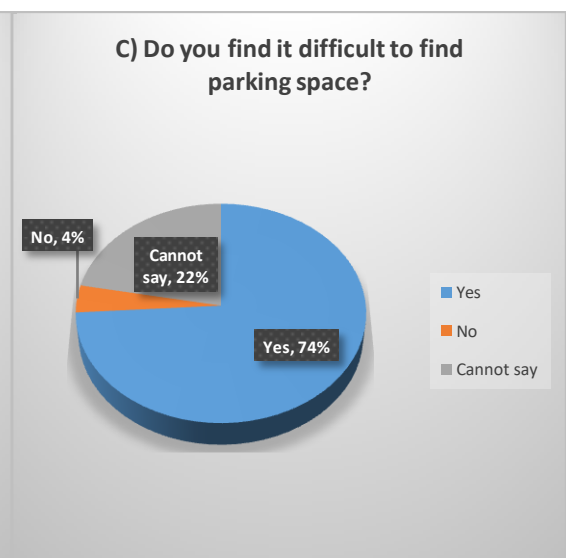
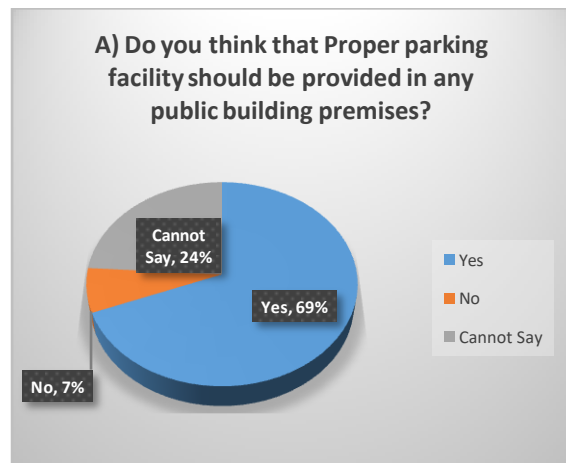
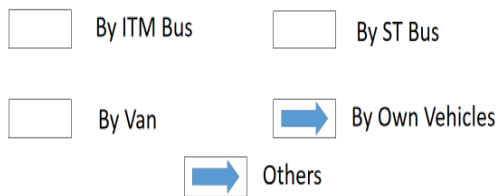
5.2 Design of Form filling and Analysis



How do you mostly commute Itm?



How do you mostly commute I/m?



5.3 Parking layout Design by Guidelines

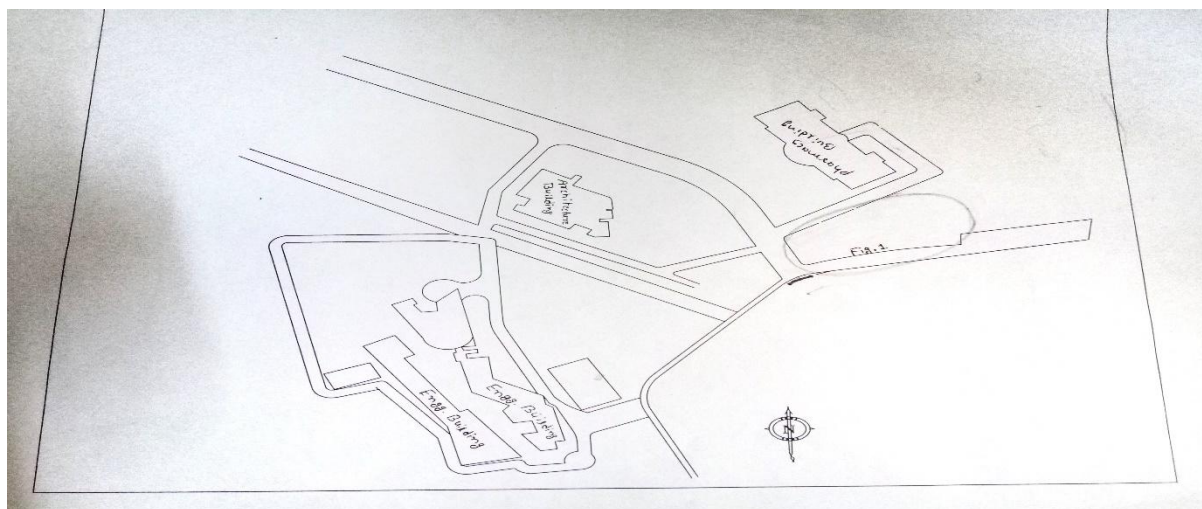


Fig. shows the layout of ITM Universe, Vadodra plan Details.

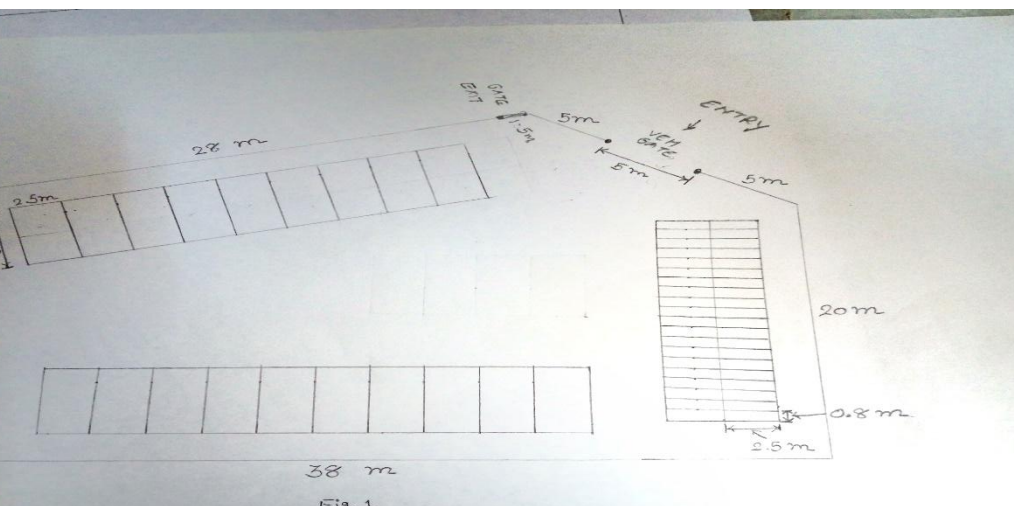


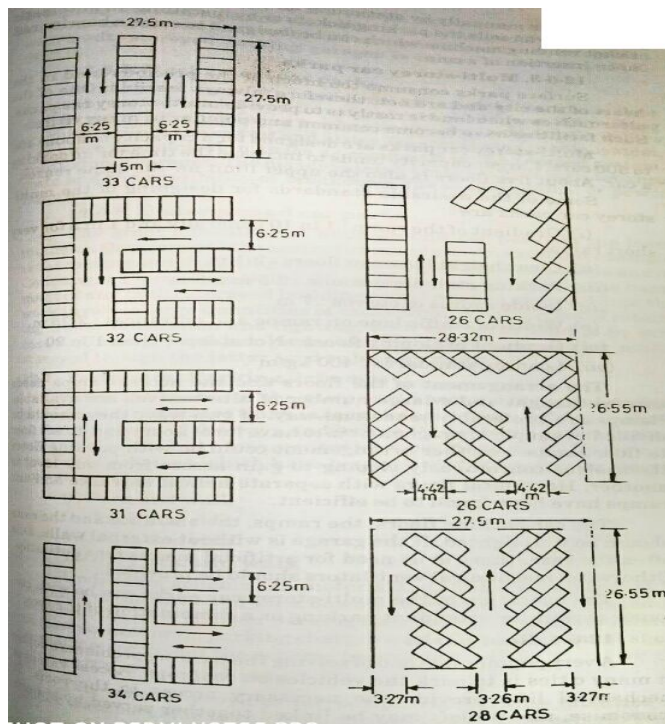
Fig. shows the Proposed Parking details of ITM Universe, Vadodra.

6. PARKING TERMINOLOGY

Before taking any measures for the betterment of conditions, data regarding availability of parking space, extent of its usage and parking demand is essential. Parking surveys are intended to provide all these information. The following parking statistics are normally important.

- 1) **Parking accumulation:** It is defined as the number of vehicles parked at a given instant of time.
- 2) **Parking volume:** Parking volume is the total number of vehicles parked at a given duration of time.
- 3) **Parking load:** Parking load gives the area under the accumulation curve.
- 4) **Parking duration:** The Length of time spent by a vehicle in a parking space.
- 5) **Parking index:** It is defined as the ratio of number of bays occupied in a time duration to the total space available.
- 6) **Parking turnover:** The rate of use of a parking space. Divide the parking volume for a specified period by the number of parking spaces.

7. SURFACE CAR PARKING



Surface car parks, properly located and developed on a piece of vacant land or surrounding an office complex or supermarket, are very popular with the motorists. Great care is needed in their design and operation. A stall size of 2.5 m x 5.0 m is probably adequate for Indian Conditions. A variety of layouts can be possible depending upon the area. A few of them are illustrated in Fig. (A) When applying the above standards, the parking space requirement of a Car can be considered as 3 m x 6 m when individual parking space is required and 2.5 m x 5 m when community parking is envisaged. For two-wheeler, a stall 0.8 m x 2.5 m is desirable.

8. CONCLUSION

- ❖ 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 great economical loss to the community. According to the parking study on existing traffic condition on the road network it is must and required to remove on street parking system for efficient transportation system.
- ❖ Benefits of parking area to Students, Staffs etc. Specially during events,
- ❖ Safety of vehicles,
- ❖ Shaded Parking for High Level Authorities

9. REFERENCES

1. Kadiyali.L.R. (2007), `Traffic Engineering and Transport planning', 7th edition, Khanna publishers, Delhi.
2. L. R Kadiyali.Traffic Engineering and Transportation Planning. Khanna Publishers, New Delhi, 1987.
3. Prop.Tom.V.Methew, Parking Studies Lecture Notes in Transportation Systems Engineering, _IIT Bombay (tvm@civil.iitb.ac.in) March 8, 2017
4. Khanna S.K – Justo C.E.G (2010), ` Highway Engineering', 9th edition, Nem Chand and Bros. publishers, Roorkee(U.P)
5. Parking and Vehicular Access General Code, 31 May 2013