

Planning of New Municipal Bus Terminal, Pandalam

Bismi M Buhari¹, Alan Varghese², Bibin Babu³, Gokulkrishnan R⁴, Raveena R Nair⁵

¹Asst. Professor,

²³⁴⁵ Student

Civil Department,

Musaliar College of Engineering & Technology,
Pathanamthitta.

Abstract-Pandalam being a fastly growing town, faces serious traffic congestion problems. The present scenario at the existing bus station at Pandalam faces lack of basic amenities ,traffic congestion problems, lack of proper parking facilities for passenger vehicles,improper parking of buses etc . Inorder to overcome this situation, it is required to suggest a new location for the bus terminal based on the studies.This study aims at the implementation of modern facilities and proposing a best way to tackle the present traffic congestion.

Keywords: Bus count survey, Reconnaissance survey, Traffic volume survey, Pedestrian survey.

I. INTRODUCTION

The present study at Pandalam bus station focuses on the planning of new bus terminal at proposed site. The existing bus station lacks basic facilities and poses serious traffic congestion problems due to the entry and exit of buses, which accelerate the traffic block in road. By taking these problems into consideration ,it has been decided to shift the bus stand to a new proposed site.For this purpose various traffic surveys are conducted and new plans are proposed.

II. OBJECTIVES

- Identification and studying the present scenario at Pandalam bus station and planning a new one.
- Conduct traffic survey.
- Collect necessary datas required for the planning.
- Tackle the problem of traffic congestion, to increase the easiness of passengers, to provide better platform facilities, to make the passenger movement safe and better.

III. LIMITATIONS

The traffic surveys conducted at the site was during the peak hours of the day due to heavy crowd and traffic. Thus accurate datas may be lacking.

IV. SCOPE

To conduct necessary studies regarding the planning of new bus terminal and thereby reducing the problem of traffic congestion and providing sufficient basic facilities. This also helps in improving the overall efficiency of the area adjoining the bus stand.

V. STUDY OF PRESENT SITUATION AT EXISTING BUS STATION

A General

Pandalam is a fastly growing town located at Adoor Taluk of Pathanamthitta district, Kerala. As per census 2011, Pandalam town has a population of 49099 and a population density of 1700 per sq.km.

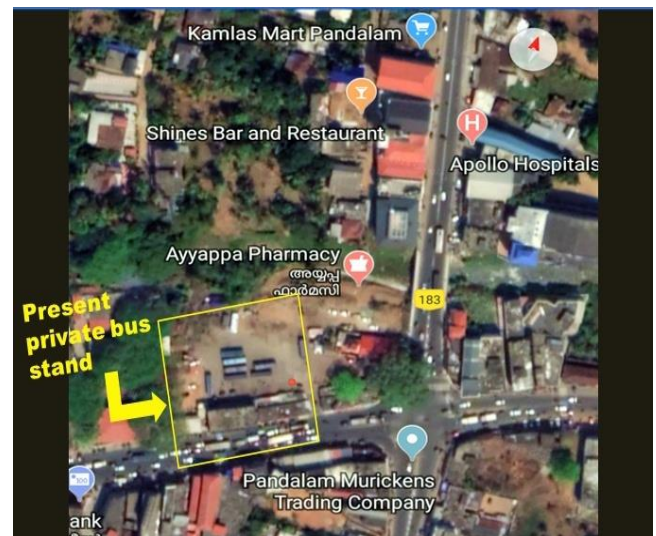


Fig 1. Location and congestion infront of present bus stand.

B Bus Count Survey

The bus count survey is conducted at the present bus stand on 16/09/2019. It is conducted to find out the no. of buses passing per hour. The survey started from 6am-6pm. It is found that an average of 30 buses passing per hour.

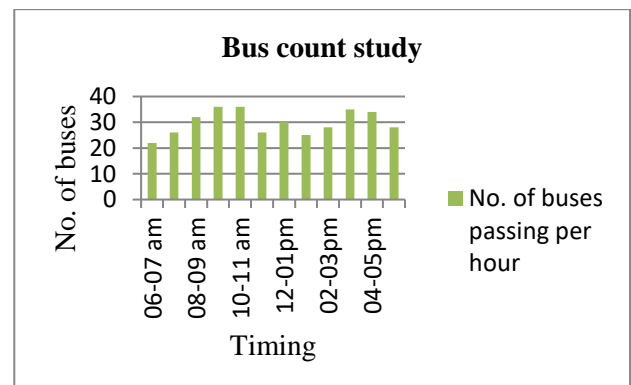


Fig.2 Timing v/s No. of buses

C Condition of Present Bus

There is a traffic congestion in front of the bus stand due to the entry and exit of buses, which affects the whole traffic system. Due to this the safe movement of the passengers were restricted. The entrance and exit for passengers are not separately provided, so the possibilities of accident is more. Lack of toilet facilities is another major problem. The platform facilities are not present now.



Fig.3 Entrance and exit of buses.

VI. STUDY FOR PROPOSED BUS TERMINAL

A Reconnaissance Survey

The location of new bus stand was identified. Location is near KSRTC bus station Pandalam. Reconnaissance survey at the proposed site is conducted. The area was identified to be marshy. The approximate area was estimated to be 1.2 acres. The boundary points were also identified. The new plot is facing towards newly proposed bypass road.



Fig.4 Plot for proposed bus terminal.

B Traffic Volume Study

It is to determine the volume of traffic moving on roadways. This study was conducted in front of present bus stand. It was conducted on 17/ 07/2019 a working day and

20/07/2019 a holiday. No. of vehicles in each hour are estimated. Vehicles are categorized as one wheeler, two wheeler, three wheeler, four wheeler and heavy vehicles. Average no. of vehicles are calculated. The average peak hours were identified as 9-10 am and 3-4 pm.

TABLE I. AVERAGE TRAFFIC VOLUME

Timings	Two wheeler	Three wheeler	Four wheeler	Heavy vehicles	Total no. of vehicles.
06-07am	102	67	66	28	263
07-08am	232	105	85	52	473
08-09am	537	277	265	105	1183
09-10am	510	319	314	142	1273
10-11am	493	306	317	123	1239
11-12pm	470	322	324	120	1235
12-01pm	451	282	260	102	1094
01-02pm	472	310	342	98	1220
02-03pm	503	299	326	128	1255
03-04pm	534	322	346	112	1313
04-05pm	537	307	322	100	1265
05-06pm	331	255	272	87	944

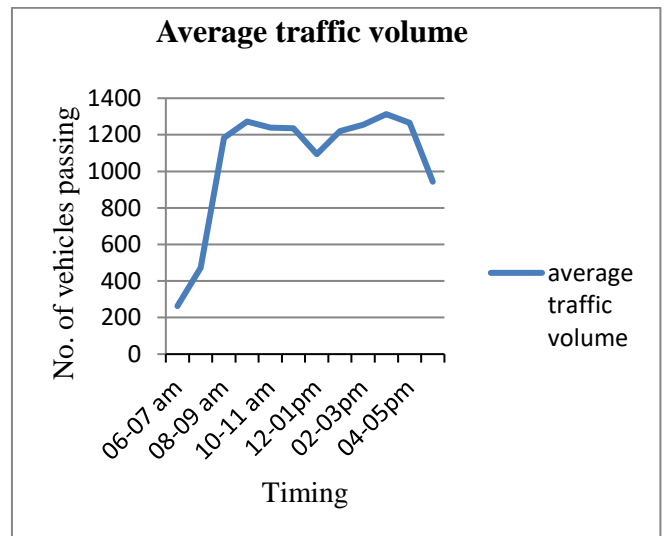


Fig.5 Average Traffic Volume

C Parked Vehicle Survey.

The parked vehicle survey is conducted on different days. The vehicles are categorized as 2-wheelers, 3-wheelers and 4-wheelers. Parking of vehicles at each hour is taken and an average no. of parked vehicles is shown in TABLE 2.

TABLE 2. AVERAGE NO. OF PARKED VEHICLES

Type of vehicles	Average no. of vehicles parked.
2-Wheeler	85
3-Wheeler	27
4-Wheeler	7

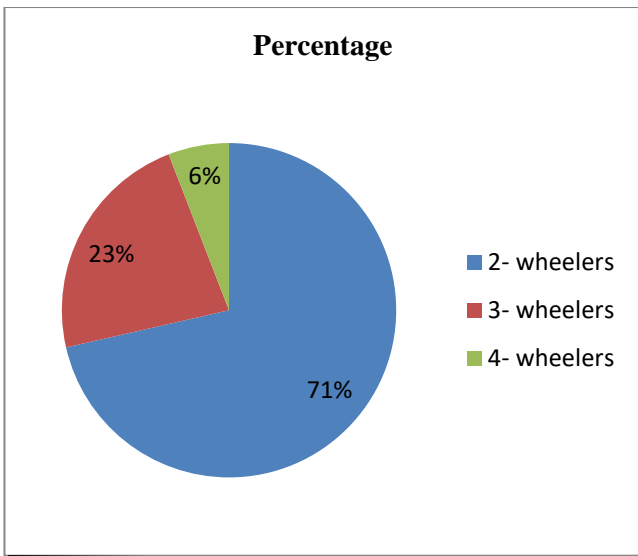


Fig.6 Percentage of vehicles parked.

D Pedestrian Survey

The pedestrian survey is conducted at the entry and exit of present bus stand. The survey is conducted in different days. The average value obtained is shown in Table 3.

TABLE 3. AVERAGE PEDESTRIAN FLOW

Timing	No. Of pedestrians
8-9 am	92
9-10 am	312
10-11am	340
11-12am	300
12-1 pm	224
1-2pm	172
2-3 pm	116
3-4 pm	348
4-5pm	288
5-6 pm	256

VII. PREPARATION OF PLAN

The plan is prepared on the basis of the Kerala Municipal Building Rule. According to it the following are planned.

- Minimum side clearance for the building as per KMBR is 1m and 1.5m .
- Minimum distance between plot boundary and road is 3m for NH, SH, district roads and 2m for other roads.
- Area of parking space for motor cars should be minimum 15m² and length of parking bay should be minimum 5.5m.
- The minimum area of assembly buildings should be 200 sq.m.
- The minimum width of verandah should be 1.5m.
- The minimum area of latrine and bathroom should not be less than 1.1m² and 1.5m² resp.
- The height of latrine or bathroom should not be less than 2.2m.

- The max gradient of ramp provided should not be more than 1 in 12 and min width should be 120cm.
- The roof adopted for terminal building and toilet complex is concrete roof.
- Roof for bus terminal platform is shell type roof.

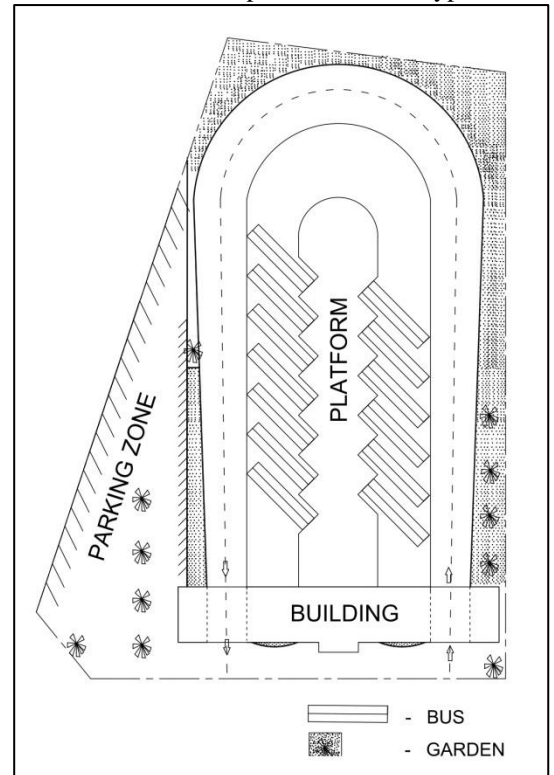


Fig.7 Plan of proposed bus terminal

VIII. CONCLUSION

- The present situation at the existing bus station is thoroughly studied and the problems causing the traffic congestion at Pandalam junction is identified.
- The surveys conducted are traffic volume study, pedestrian survey, bus count analysis and parked vehicle survey.
- The solutions to tackle this situation is to shift the present bus station to a new site and planning it accordingly in an efficient manner.

REFERENCES

- [1] Abin C Idicula; Elizabeth Joseph;,"Improvisation of Nagampadam Bus Terminal", IJSTE, vol:3,issue:01,2016.
- [2] Agarwal P.K; Singh A.P; " Performance improvement of urban bus system: issues and Solutions", IJEST, Vol:02, 4759-4766,2010.
- [3] Azhar Al Mudhaffar; Albania Nissan; Karl Lennart Bang; "Bus stop and bus terminal capacity",Transport Research Procedia 1762-1771,2016.
- [4] Jay S Pandya; Yogesh Patel; "Redesign of of Gandhinagar bus terminal a case study", IJRET, Vol. 05 issue:01,2018.
- [5] Kerala Municipal Building Rules 2019.
- [6] Reena Kuruvila; Sreekumar R;," Redesign of existing private bus terminal at Kothamangalam, IRJET, Vol:05, issue: 03,2018.