Planning of New Municipal Bus Terminal, Pandalam

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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. In order 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 data 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 data 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.

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.

![Bus count study](image-url)
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.

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.

B Traffic Volume Study
It is to determine the volume of traffic moving on roadways. This study was conducted infront 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 1. 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                    |

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 showed 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                               |
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                |
| 10-11 am     | 340                |
| 11-12 am     | 300                |
| 12-1 pm      | 234                |
| 1-2 pm       | 172                |
| 2-3 pm       | 116                |
| 3-4 pm       | 348                |
| 4-5 pm       | 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.

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