Relocation of Surat Central Bus Station

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Abstract

The existing GSRTC bus station in Surat is located at Delhi Gate and as per the observations made in 2015, it faces the dilemma of inadequate space. Buses did not depart from the platforms provided within the premises. The recent renovations have been noticed but the problem of traffic congestion due to the central bus station being in the west of the railway station and the central bus depot being in the east, still prevails. It is proposed to plan a new Central Bus Station in the nearby area on L.H. Road, with improved services. Also an approach road to be constructed, connecting the newly proposed bus station with Sahara Darwaja. The proposed bus station would increase the passenger handling efficiency and would decrease the traffic in station area. It would also accommodate the GSRTC offices, employee quarters, bus depot, a fire station, a fuel station and a shopping mall with multiple. **Keyword- Relocation, Bus Station, Passenger, Terminal**

I. INTRODUCTION

Surat ranks 4th in a global study of fastest developing cities in the world. The area of Surat city within Municipal Corporation limit is 326.515 sq. km. and its population as per the census of 2011 is 44,66,826. Considering the percentage growth rate of city, the estimated population of city will be approximately about 53 lac in 2021 and 62 lac in 2031. But with the progress of city and population increase, the urbanization also results into major city problems like traffic congestion, slums, crimes, etc.

Today our major problem is traffic congestion, particularly near the Railway station area. This dilemma can be solved by relocating the Central Bus Station of the city which is located in front of the main entrance of the Railway station. The proposed site for relocation is opposite the Lambe Hanuman Temple, on L.H. Road, Umarwada at the south of eastern entry of Railway station.

The existing central bus station covers an area of about 4947 sq. mt. which includes civil works, passenger utility counters, etc. There is no provision of fuel station, service station, work shop, etc. at this place. There are about 12 terminals currently used by 2130 buses daily but during peak hours a complete mismanagement has been observed.

When the serviced bus travels towards the bus station in order to depart it has to move in a direction opposite to the flow of traffic which causes traffic congestion. But the root cause of traffic is the auto-stand just outside the Railway station. More than half of the road is covered by the rickshaws. The journey from North of the Railway station towards the South should take about 1 minute but the availability of less space on the road makes it a journey of about 10 minutes at peak hours.

II. LITERATURE REVIEW

A. Radcliffe Bus Station Replacement

This document comprises a planning and design and access statement and has been prepared by Bury Council in support of a full planning application for the provision of a replacement Bus Station in Radcliffe Town Centre as part of wider regeneration proposals in line with the aspirations set out in the Radcliffe Town Centre 2010 Master plan.

The site is located in Radcliffe Town Centre, some 2.5 miles (4 km) southwest of Bury and 6.5 miles (10.5 km) northwest of Manchester. The area around the site is currently used for public car parking serving the Town Centre and Radcliffe Market, and a range of commercial uses comprising a mix of retail, office and leisure.

The scope of the works will include the provision of a new high quality Bus Station facility comprising:

- 3 x double bus stands;
- 1 x single bus stand;
- Provision of hard landscaping;
- Provision of pedestrian crossing points; and
- Ancillary planting and street furniture

The existing bus station and the Dale Street car park will close as a result of the development, and it is intended that the relocation of the bus station will enable a retail based regeneration scheme to be progressed on the site of the existing bus station in accordance with the Council's approved Radcliffe Town Centre 2010 Master plan (approved March 2012).

The proposed bus station concourse area will become a new open public space for Radcliffe Town Centre. It is intended that the palette of materials to be used will be similar to those in the Piazza in order to provide a degree of consistency across the public realm within the Town Centre.

B. Transit Capacity and Quality of Service Manual

Passenger waiting areas are the places within the premises of a bus station or bus stop, where passengers wait for their particular bus to arrive. The recommended procedures for computing the size of passenger waiting areas at bus stops is based on maintaining a desirable level of service. The primary measure of effectiveness for defining pedestrian level of service is the average space available to each pedestrian. The level of service for a pedestrian waiting area is based not only on space but also the degree of mobility allowed.

The level of service required for waiting within a facility is a function of the amount of time spent waiting and the number of people waiting. A person's acceptance of close interpersonal spacing will also depend on the characteristics of the population, the weather conditions, and the type of facility.

Passenger amenities are those elements provided at a bus station to enhance comfort, convenience, and security for the passengers. Amenities include such items as shelters, benches, vending machines, trash receptacles, phone booths, information signs, lighting, and landscaping. Amenities at most bus stations are placed in response to a human need or a need to address an environmental condition.

A critical component at major bus and rail stations is the provision of bus transfer areas where buses serving the station can board and alight passengers. These areas are known as berths. Four types of bus berthing are typically applied:

- Linear
- Saw-tooth
- Angle
- Drive-through

In recent years, new electronic technology has been developed to provide improved traveller information systems. For transit stations, "real-time" passenger communications can assist in managing passenger flows and queues. This can include providing information on bus departure times, bus berth locations, and out of service elevators and other facilities.

III. PLANNING PROPOSAL

The proposed site is 300 metres away to the south of the eastern entrance of the Railway station. It is a very large area of 88,340 sq. mt. and contains only the depot headquarters, bus service station, workshops and quarters for the GSRTC employees and rest lies as a wasteland. The unused area is intended to be used as the relocation site for the Central Bus Station.

The planning of any Government building begins with the knowledge of the population as per the latest census and a target population for which the building is to be planned. With the similar concept the horizon year for the proposed central bus station is kept 2051 (Forecasted population 1.27 crore).

To overcome the traffic problem, the existing Central bus station must be relocated to the proposed site. The existing Central bus station which will be an empty space after the relocation, can be developed as a paid auto-stand. Also to lessen the nuisance of pedestrian traffic on the main road, a foot over bridge is proposed to be constructed from Platform no. 1 of the Railway station with two destination outlets, the first one to the city bus stand and the other one to the proposed auto-stand/multilevel parking. Another foot over bridge is to be constructed from the eastern entry of the Railway Station connecting it to the proposed Central Bus Station.

The proposed plan contains various buildings making the most efficient use of the available land area, leaving appropriate portions for future expansion to avoid the problems of relocation that the existing central bus station faces. Following are the components that are proposed within the site:

- Central Bus Station
- Bus depot
- GSRTC offices
- Shopping mall
- Movie theatre
- Fire station
- Fuel station
- Employee quarters

According to clause 5.5.6 Fire (Page no. 19) of National Building Code (NBC) of India, one fire station or sub-fire station within 1 km to 3 km (for every 2,00,000 population) must be provided. The eastern side of the Surat city with respect to Railway station includes areas like TPS - 4. Ashwanikumar - Navagam, TPS - 8. Umarwada. The total population of the above areas as per the census of 2011 is 12,36,810 and currently there are only 2 fire stations (Kapodra fire station and Mota Varachha fire station) serving these areas.

To avoid major casualties in case of emergency in the future, proposal has been made to provide a fire station at the proposed site at a distance of about 900 m from Surat's Railway Station. The fire station would include the housing shelters for its employees and would be spread in an area of 6000 m² (excluding housing quarters).

B. Fuel Station

It is proposed that a fuel station be provided which would be open for all the GSRTC buses but that would neither include city buses nor other public/private vehicles. As the existing fuel station only suffices the diesel needs of the bus depot, the proposed fuel station will continue to do so in the future but the provision of more area for fuel station will allow the other buses to use the facility which will generate revenue for GSRTC.

As per clause 5.5.4 Distribution Services (Page No. 18), National Building Code (NBC) of India, the minimum area for the provision of a petrol/diesel filling center consisting of only filling station is 30 m x 17 m. An area of 35 m x 35 m (1225 m2) has been provided for the proposed fuel station.

C. Bus Depot

According to the collected data, existing bus depot consists of two shelters for the maintenance and heavy repair of buses and one workshop building for the purpose of servicing the buses. The project proposes a bus depot of 11,420 m2 which can accommodate the workshop as well as the repair and maintenance shelters with an increased capacity of handling and servicing more buses simultaneously. The existing bus depot can operate about 25 buses simultaneously. The proposed bus depot can handle almost double the number of buses than the present one.

Also, the existing bus depot is about 450 mt. away from the existing central bus station, from where the buses depart. So every serviced bus has to travel a distance of 450 mt. in order to allow the passengers to take their seats before departure. The proposed bus depot is within the plot, reducing this distance to about less than 100 mt.

D. Housing Quarters

There are 87 families living in the provided housing facilities. It has become old, damaged, unhygienic and unsafe for living. The project proposal includes an area of 5380 sq. mt. for housing quarters.

The project proposes the provision of three buildings of four storey having eight housing facilities on each floor for low income employees and one building of four storey having four housing units on each floor for officers of higher designation. The remaining area can be used for visitor's parking and play area for the children.

E. Shopping Mall and Terminal Building

The terminal building is adjoined with the shopping mall.

The basement area provided is about 8910 sq. mt. out of which about 4830 sq. mt. may be used for visitor's parking for shopping mall and movie theatre, while an area of 2770 sq. mt. can also be used for parking but only for employees of GSRTC office. The remaining area in the basement is used for the storage of parcel goods brought by the buses and any other necessary rooms. But considering any unaccounted growth in the number of users, an area of 4500 sq. mt. for future expansion has been provided.

The ground floor includes a visitor's parking in the front. The visitor's parking is 123.64 mt. long and 10.85 mt. wide. The main entry in the mall is in the center. In the center of the passage, on both the sides of the main entry, escalators are provided to reach the first floor. On the eastern side, beside the staircase, an entry to the mall has been provided, as the bus's entry into the bus station lies on this side and it might stop for the passengers to alight. Apart from this entry and the main entry on the northern side, the shopping mall can also be entered from the basement via the stairs and elevators provided on both east and west corners, as well as from the elevators. Across the main entry, lies the entrance gate to the terminal building of the central bus station in the south. A ground floor plan for the shopping mall has been shown below:



While entering the terminal building via shopping mall, on both the sides of the entrance gates, VIP waiting areas are provided with cloak rooms. On both the corners along the VIP waiting areas, food courts are provided for the ease of the passengers making the bus journey.

In the south, across the VIP waiting rooms on both the sides, lies the Tickets and Inquiry centers. Adjoining to the tickets and inquiry centers further south, various offices lie. A direct entry in the Terminal building from the basement is provided and it lies across the entrance from shopping mall. Moving further south of the offices, a large recreational area of 75 mt. x 60 mt., open to sky, has been provided in the center. On both the sides of the recreational area, lies the passenger waiting area, adjoining to which the bus terminals are allocated – Mumbai Terminal in the east and Ahmedabad Terminal in the west. There are 21 terminals on both the sides.

The passenger waiting areas have been planned assuming that at least 15 to 20 passengers of each bus will wait in the waiting area. Hence 400 passenger seats were adequate for provision, but to avoid overcrowding in the future, 450 passenger seats have been provided on each side, making the proposed central bus station capable to host 900 passengers easily without causing them any discomfort.



Fig. 2: Passenger Waiting Area

The first floor in the shopping mall can be accessed via the stairs, elevators and escalators from within the mall. It can also be accessed from outside through the proposed foot over bridge connecting railway station and the proposed central bus station. Escalators are provided for the vertical circulation between the foot over bridge and ground floor.

All the shops and washrooms allocated are similar to those on the ground floor. A two-meter-wide corridor is provided for horizontal circulation on the floor. On the center of the first floor, escalators are provided (facing north) for accessing the second floor. A plan below shows the first floor of the shopping mall.



The first floor in the shopping mall is not connected with the first floor in the GSRTC office to avoid the unnecessary disturbance to the employees. The existing GSRTC office has more than 100 employees working while the proposed office can accommodate more than 250 employees comfortably.

A C.C.T.V. surveillance room has been proposed on the first floor and beside it lies the control centre of the Real Time Information System. A Real Time Information System is a system which gives precise details about the location of the buses that might be arriving or the one that might have departed. If all the buses are equipped with a GPS device with a transmitter, the location of any bus at a given time can be tracked within a minute. The passengers can be greatly benefitted from this system.

The second floor mainly contains game zone (548 sq. mt.) and movie theatre (3300 sq. mt.). The second floor in the terminal building can be accessed via the provided stairs and elevators. It has two dormitories. These dormitories can be given on rent to any group of people visiting Surat city, requiring low fare shelters. This helps in generating revenue. A part of the second floor is occupied by the Conference and Welfare room. Any conference held by GSRTC or by any other private or government firm, can be organized in this room. The remaining part of the second floor has been provided for future use.

The terrace consists of nothing except the three staircase cabins. It is an area of more than 12,800 sq. mt. The project does not contain any plan of generating solar power. But in the future if this area is used for the generation of solar power, it may be possible to suffice more than 75% of the power needs of the proposed Central Bus Station. In this way, it will be a noteworthy achievement in the field of infrastructure as well.

F. Approach Road

An approach road connecting L.H. Road with Sahara Darwaja is also proposed to be constructed. This would open a new route for the buses that travel towards Mumbai. The proposed road to be constructed will be 24.38 mt. wide and about 1.1 km long. Auto-stand/Multilevel Parking

After the relocation has been completed, the existing Central Bus Station will be an unused area. It may be developed as an auto-stand which would reduce the traffic congestion outside the railway station caused mainly due to auto rickshaws; or a multilevel parking may be constructed by SMC which would even solve the public parking problem faced by Railway Station.

G. Foot over Bridges

The project proposes the extension of the foot over bridge on the Railway Station near the L.H. Road underpass. It can be extended and connected to the first floor of the proposed shopping mall. This would bring the passengers directly to the Central Bus Station without much walking to do, keeping them away from the streets.

To lessen the nuisance of pedestrian traffic on the main road, a foot over bridge is proposed to be constructed from Platform no. 1 of the Railway station with two destination outlets, the first one to the city bus stand and the other one to the proposed auto-stand/multilevel parking.



IV. CONCLUSION

It can be concluded that if the existing central bus station is relocated as proposed, it will bring a sound solution to the problem of traffic congestion near railway station. The relocation alone will just help Surat city to get itself an iconic bus station like none present. For the solution of the traffic problem, the development of the auto-stand as proposed is also inevitable. To solve the nuisance of pedestrian traffic, the construction of the proposed foot over bridge will help a lot. Vehicles will have full width of the road for use while the pedestrians will be able to cross the road safely and speedily. The approach road will shorten the route, save time, fuel and consequently money, and will avoid the entry of the buses on the west of the railway underpass. This will again help in reducing the traffic.

The proposed solution is a long shot, but if executed properly, step by step it will transform the image of the area near the Railway Station, improving the standard of living of the people in the surrounding.

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