

SÃO PAULO, BRAZIL

9 DE JULHO AND JABAQUARA BUSWAYS

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CITY CONTEXT

The São Paulo Metropolitan Region (SMPR) has a population of 16.8 million within 39 municipalities. Of these municipalities, the São Paulo Municipality is predominant, with a population of 8.5 million. About 20 million person trips take place each day by mechanized modes, and the importance of bus travel is demonstrated by the fact that 38% of mechanized mode trips are made by bus. Over many years, São Paulo has been a world leader in seeking innovative physical means to assist bus operations and innovative bus management (notably the bus platoon-train system). The city adopted a trunk-feeder bus service concept, using bus-only lanes placed in central median reservations. The trunk routes are served by trolley buses, articulated and double-articulated buses, and standard commuter buses.

The Paes de Barns (1975) and the Santo Arnavo (1985) corridors have stops on offset islands located to the right of the bus flow. On Vila Nova Cachuerinha corridor (1991), buses run in the extreme left lanes nearest to the median strip and stop at raised islands to allow level access to buses, thereby reducing dwell times. All vehicles have extra doors on the left side. In addition to the expanding busway system, a network of fully segregated busways known as VLP has been proposed. A 9-kilometer [5.6-mile] section of the VLP has been opened.

In a short review, it is not possible to present a comprehensive picture of bus priority in a “mega” city such as São Paulo. Thus, this review concentrates on a limited number of schemes and on aspects of those schemes that contain important lessons for other cities. This case study deals with various aspects of the 9 de Julho Busway and the São Mateus – Jabaquara Busway.

9 DE JULHO BUSWAY

BASIC INFORMATION/ SYSTEM DESCRIPTION

The Avenida 9 de Julho/Santo Amaro Busway extends 11 kilometers [7 miles] along a radial corridor to the southwest of the city center. The busway comprises a reserved track that is discontinuous for two short sections: the first section is through a tunnel where there is inadequate width for the full busway/road cross-section and the second section is through an underpass.

The busway is located in the center of the road (see [Figure 1](#)). There is one bus lane in each direction and double-width tracks at bus stops that permit overtaking of stopped buses by through buses (see [Figures 2](#) and [3](#)). Bus stops are spaced at about 600 meters [200 feet] and contain island platforms; generally, these are accessed by passengers at mid-block traffic signals. Few left turns by other traffic are permitted across the busway; such turns are generally accommodated by turns at side roads. Within the bus stop areas, buses in opposing directions are separated by “New Jersey” type concrete barriers. Between stops, busway tracks are separated from general traffic by heavy road studs.

Bus services, including double-deck and trolley buses, are operated in a regulated environment by private companies and the state bus company, CMTC. CMTC manages the busway, which includes the provision of a tow truck for breakdowns.

Data show very high bus flows (some 220+ buses per hour during peaks), high passenger throughputs (18,000 to 20,000 passengers per hour), and commercial speeds of about 20 kilometers per hour (12 miles per hour).

ASSESSMENT—SOME IMPORTANT LESSONS

The busway is one of the best designed and most effective of South American busways in terms of passengers served, station designs, and operating speeds attained. The busway was an operational success and demonstrates the following:

- A high-capacity public transport facility could be introduced into an existing right-of-way of relatively limited width (21 meters [69 feet] curb to curb);
- Very high passenger bus flows are made possible by innovation in design (provision for bus-on-bus overtaking areas at stops);
- The busway carries equivalent numbers of passengers to any light rail (LRT) system at a fraction of the cost;
- A busway scheme could give passengers far greater flexibility on a major corridor than could have been provided by an LRT because buses can join and leave the busway and thus reduce the need for passenger interchange;
- The level of service – in terms of frequency and commercial speed – are equal to or better than urban LRT; and
- Bus stop efficiency could be improved by better passenger information and signs.

Nevertheless, the busway has resulted in some adverse environmental and land use impacts over time. These are the following:

- *Environment and Image:* Bus flows are high, and while some buses are electric-trolleybuses, most are diesel powered. Thus, emissions and resultant air pollution are problems. Under present conditions, the 9 de Julho Busway does not present the image of a quality public transport facility able to compete with LRT.

There is of course no reason why a busway should not be designed and operated to enhance rather than undermine its corridor. The provision of high-capacity, “clean” buses (e.g., CNG electric power or diesel-electric hybrids), high standards of track, and efficient off-bus fare systems are all eminently feasible and should be the norm rather than the exception for busways (see Quito case study). Although such measures may increase cost, the increase would be small in relation to LRT.

- *Land Use:* The 9 de Julho track presents a barrier to cross-corridor movement and community integration. This severance effect is similar to any fixed track system, bus or LRT, and is a real issue. Improved cross-busway connections for both vehicles and pedestrians are necessary, and although this may affect bus commercial speeds, it is a price that must be paid.

SÃO MATEUA—JABAQUARA BUSWAY

BASIC INFORMATION/SYSTEM DESCRIPTION

The São Mateua—Jabaquara Busway commenced operations in 1993. It is comprised of a mix of trolleybuses and other buses, but is intended for use by only trolleybuses in the future. The busway extends for 33 kilometers (20 miles); 31 kilometers (19 miles) are segregated, reserved busway track. Generally, the track is located in the center of the road with one bus lane in each direction. Bus stops are spaced at about 600 meters (2000 feet) and comprise island platforms; these are accessed by pedestrians/passengers at mid-block traffic signals. Commercial speed is reported as 22 kph (14 mph) (1997), and demand is reported as some 70 million passengers boarding per year (maximum load point data are not available).

ASSESSMENT—SOME IMPORTANT LESSONS

The scheme is not physically or operationally very different from other busways in Brazil, and there are reports of quality problems such as the need for pavement (bus track) maintenance. However, the busway is unique in how it is operated and administered. Bus services are delivered through an operator concession. The state of São Paulo has granted a 20-year concession for the supply of buses to the busway and their operation on it. Key aspects of the concession are the following:

- The concession is subject to competitive bidding.
- An objective of the concession is to mobilize resources and incentives for the operator to change from diesel buses to trolleybuses.
- The concession defines the criteria for the service to be operated, and delivery is monitored by a state agency. The operator is also responsible for the routine and periodic maintenance of busway infrastructure.
- The state sets the fares and reviews those fares “in such a way to ensure the economic and financial equilibrium of the trolleybus system” (Rebelo and Marchardo).
- The operator revenues are derived from fares and advertising. The operator also receives a premium if the changeover from diesel to trolleybus is accelerated. The state receives percentages of nonoperating revenue and of operating revenue.

Some aspects of the concession may not be acceptable or appropriate in other city or country contexts, and there have been some difficulties. (There were problems with responsibility for repair of the infrastructure at handover, when the concession took over an existing busway. Also, concessions were first proposed in São Paulo in 1995 but were not initially successfully concluded.) Nevertheless, the concession is understood to be working well, and the approach is innovative and unique.

Unlike LRT, busway transit has suffered from the lack of a promoter for operation of integrated vehicle-infrastructure schemes. The concession approach may move busway operation closer to the type of financing and operation that has been successful for LRT and trams.

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Figure 1: General View of Busway (Showing Heavy Weight Road Studs as Bus-traffic Dividers)

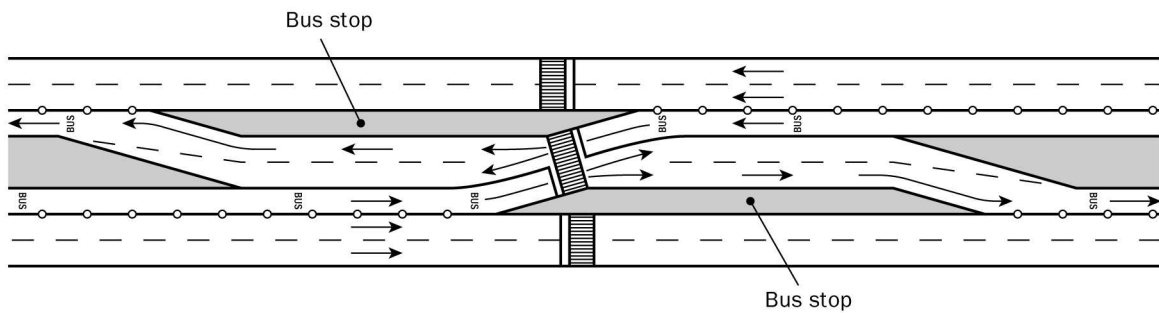


Figure 2: Bus-on-bus Overtaking Arrangements at Bus Stops (reproduced from UK TRL Research Report 329 ISSN 0266-5247)



Figure 3: Busway Showing Double Width Lane at Stops to Allow Bus-on-bus Overtaking (Location Near Start of Busway and Busway Is Only One Way at this Point)