Abridgment

A STUDY OF PASSENGER TRANSFER FACILITIES

Edward G. Bates, Jr., Urban Transportation Systems Associates, Inc.

Throughout the country, a considerable effort is being made to improve public transit. However, one element of the total transit system which has not been studied at any level of detail and which has not improved to any great extent is the passenger transfer facility. The success of transit is going to depend on improvements made to all segments of the system, including safe, convenient transfer facilities. This study includes an inventory of facilities in some larger communities in New England, and a classification of facilities by size of area served and extent of system. According to an attitude survey, transit operators see a need for improved transfer facilities, minimized transfer times, and provision of shelters. The survey showed that pulsating systems had the highest number of transfers, averaging 27 percent, while transfers on non-pulsating systems generally averaged about 6 percent. The study concludes that transfer facilities must be improved to make transit more efficient and to encourage usage.

During the past few years, a considerable amount of work has been performed to develop plans for more effective urban bus systems. These planning efforts have considered the need for new buses, improved bus routes, improved frequencies, fare structures, transportation for the elderly and handicapped, and management. However, little consideration has been given to the need for improved transfer facilities.

Most systems radiate from the downtown area and stop at a central location, providing an opportunity for patrons to transfer between bus routes. In many areas, these transfer facilities are no more than the curbstone and a sidewalk with possibly a "No Parking Bus Stop" sign. In a few areas, the transfer facility has been developed to include bus shelters, pavement markings, bus schedules, and other amenities to encourage people to utilize the local system. The primary function of the facility is to accommodate transfers between local buses and in some larger areas, between various modes of transportation. The importance of such facilities will be difficult to determine, using objective techniques. Very little data exist concerning the need for transfer facilities.

Functions of Transfer Facilities

Communities with more than one bus probably have locations where passengers transfer between routes. In smaller areas, if transferring exists at all, it is only between a few local buses. In larger communities with large fleets and other modes such as rail and taxi, the need for transferring is greater. In some areas, the magnitude of transferring is considerably higher than in similar areas due to steps that have been taken to encourage transfers.

The attitude in many areas is that service must be as direct as possible, therefore minimizing transfers. However, it is virtually impossible to provide that type of service to all users. The planner and operator must determine the major movements in the area and design routes and schedules to satisfy the movements. After those conditions have been met, steps to increase the number of transferring passengers will increase the productivity of the system. The actions to be taken to maximize transfers vary, depending on the size of the service area and the types of services provided.

Types of Transfer Facilities

In some urban areas, especially the larger ones, there may be five forms of transportation which could utilize a transfer facility; they are local bus, intercity bus, rail, taxi, and demand-responsive service. Each service fulfills a special need for the traveling public and furthermore, each service requires that certain conditions exist in order to operate as efficiently as possible. It would appear that an ideal condition is for all modes to use one facility as which passengers board, alight, and transfer. It is seldom possible for this situation to exist or to be developed in an urban central business district. Some conditions to be satisfied in locating terminals for each mode follow.

Local Bus Service. A large proportion of local bus passengers presently utilize service to the center of the urban area. Recognizing that many passengers must transfer, and that many passengers have destinations in the CBD, the most effective location for a local bus transfer facility is in the center of the downtown area. The facility should be con-

veniently located to all local bus routes and to the center of commercial and business activities. Scheduling should be developed to minimize transfer times. Buses departing the terminal at the same time encourage transfers. If such scheduling is not utilized or is unreliable, transfers are not made and a terminal is not required.

The cost of transfers is another important issue on which attitudes vary. One thought is that the transfer extends the length of service and adds flexibility; therefore, there should be a charge. Another attitude is that the inefficiency of service develops the need for transferring; therefore, there should be no charge.

Intercity Service. In some areas, over 90 percent of persons using intercity service arrive or leave the present bus station by auto. Intercity buses usually travel long distances, using expressways as much as possible to minimize travel time, so it is critical for these vehicles to spend as little time as possible on city streets. The closer to an expressway interchange the intercity terminal, the more efficient the service. This terminal must provide facilities not necessarily required for other services, such as passenger baggage handling, ticketing, package delivery service, and a passenger waiting room with seats. There also must be adequate bus storage and passenger access to them.

Rail Service. The majority of rail passengers travel to the rail station by auto. To serve these passengers, a waiting room is usually provided in the CBD. In areas with taxi service, cab standing areas should be provided.

Demand-Responsive Service. This service could encourage patrons to gather at the transfer facility for their rides home, providing that they are mobile and that the facility is within walking distance. This will reduce vehicle travel time, increasing service efficiency.

One facility to satisfy all these services must be located adjacent to the rail facility, close to an expressway interchange, and in the CBD. In many areas, such a location cannot be provided.

Size of Area

A direct relationship exists between the size of the urban area and the number of local buses and variety of modes providing service.

Small Urban Areas-To 50,000 Population. Generally, the only effective local bus service that will operate in an area of this size, other than demand-responsive service, is fixed route/fixed schedule service radiating from the CBD. The type of scheduling which encourages the greatest number of transfers is a pulsating system wherein all buses leave the downtown area at the same time and return together to transfer passengers. This type of local bus service requires some kind of facility to accommodate transfers.

Medium Size Urban Areas-50,000-500,000 Population. The medium size area with a large number of buses generally provides local service frequently enough not to require a pulsating system to minimize transfer waiting time. Many of these systems radiate from a central location in the CBD and therefore require a transfer area. If a pulsating schedule is not used, the space required for bus waiting can be reduced.

Large Urban Areas-500,000 and Up Population. In large urban areas, a variety of transfer facilities may be needed. There are facilities located in the downtown area for transferring between local service and other modes. In suburban areas, facilities are needed to accommodate transferring between modes and local service, but usually these are not as large as downtown facilities.

Local and express bus routes may serve rail stations and cross other bus routes, allowing transferring. Bus routes and rail service going to the central area may be located in various segments of the CBD rather than at one central location. This typical type of service requires a variety of transfer points.

Large urban areas with radial rail and bus service require suburban transfer facilities. These facilities often include major commuter parking facilities to allow the transit passenger to utilize fixed rail or the local bus system. In addition, suburban buses traveling to the urban area may meet the fixed rail system at the terminal, allowing for transfers between bus and rail. These types of facilities may also provide taxi service and, on occasion, long-haul intercity bus service.

Bus Scheduling

In many areas, frequencies are often half-hour or greater. Some areas schedule service so that buses come together and depart at the same time, minimizing the transfer waiting time. This type of transfer service requires layover space that some areas find difficult to provide. The Brockton, Massachusetts system operates 20 vehicles on a pulsating system, requiring space on two intersecting streets to accommodate vehicles during the transfer period. On longer frequency systems, transfers are discouraged if a pulsating schedule is not used. Before the Brockton system introduced the pulsating schedule, it had approximately 70 daily transfers. When the pulsating schedule was adopted, the number of daily transfers increased to more than 800, and at the same time, the cost of transferring was eliminated. The transfer facility requirements for a pulsating system therefore, are much greater than for a system which schedules a minimum number of buses in the CBD transfer facility at one time.

In larger areas where bus frequency may be 10 to 15 minutes, it is not necessary to schedule buses in a pulsating fashion, first, because there are too many and second, because the amount of transfer time is not that great. The pulsating system requires each bus to be on time. A bus that is behind schedule may slow down the entire system.

Existing Transfer Facilities

With a new concern for energy conservation, pollution, and the survival of cities, local, state, and federal governments are involved in supporting transit service with capital investments and operating subsidies. Through the use of public monies, many improvements have been made including purchasing new buses and funding operating assistance. However, improvements to transfer facilities have not

become very popular, although there is a growing interest in encouraging ridership by increasing transfers.

As part of this study, an inventory of transfer facilities was made in a number of urban areas in New England. Table 1 shows facility amenities, the number of local buses, and the type of schedule.

Table 1. Inventory of Transfer Facilities

Location	Number of Buses	Type of Schedule	Facility Amenities: Shelter	Painted Curbs	Information	Benches	"No Parking" Signs
Bridgeport, Ct.	40	N-Pulse.	x		x	x	
Danbury, Ct.	4	N-Pulse.					x
Hartford, Ct.	185	N-Pulse. Pulse.	x			x	x
New London, Ct.	2	N-Pulse.					
Waterbury, Ct.	19	N-Pulse.			x		
Westport, Ct.	18	Pulse.	x	x		x	x
Brockton, Ma.	20	Pulse.					x
Fall River, Ma.	18	N-Pulse.	x		x		x
Fitchburg, Ma.	7	N-Pulse.				x	x
Haverhill, Ma.	3	Pulse.					x
Lawrence, Ma.	8	N-Pulse.					x
Lowell, Ma.	23	N-Pulse.	x	x		x	x
New Bedford, Ma.	20	N-Pulse.	x		x	x	x
Pittsfield, Ma.	6	N-Pulse.					x
Portland, Me.	50	N-Pulse.					x
Manchester, N.H.	15	N-Pulse.					x
Providence, R.I.	191	N-Pulse.	x	x			x

Pulse = Pulsating Schedule
N-Pulse = Non-Pulsating Schedule

An attitude survey was sent to 21 transit operators in New England to determine their attitudes toward passenger transfers. Following are some major points made by those replying:

1. Seventy percent believed it was important to encourage transfers.
2. All agreed that transfer time should be minimized.
3. Seventy percent believed it was important to locate the transfer facility with other transportation services.
4. All agreed that a downtown facility should be sheltered from the elements.
5. Thirty percent felt that the facility should be off the street.
6. A number of operators did not know how many transfers were being made. The Brockton and Westport systems, both pulsating, each have about 27 percent transfers; the non-pulsating systems generally have below six percent.

Considerations for Future Improvements

Throughout the transfer facility planning process, it is important that the city planner or development agency and transit planner coordinate their efforts to assure that the facility serves the needs of the urban area and the transit system. City planners should understand that a transfer facility serves an important function and should consider that function in the planning process. The transit planner must realize that the logical area for implementation of a facility may have other demands placed upon it, some of which result in increased revenue for the community. Following are objectives to be considered in the planning process. They are neither in priority order nor are they inclusive.

1. Provide convenient, efficient, safe facilities for passenger transfers.
2. Locate the facility in an area providing quick, uncongested access to and from the facility. The facility serving local transit should be located on as many bus routes as possible.
3. Minimize conflicts with auto traffic movements in the area of the facility.
4. Provide an attractive facility which will aid promotion of local ridership, encouraging usage.
5. Costs of operation and maintenance should be reasonable.

If transferring is made as appealing as possible, with minimum transfer times, free transfers, and effective promotion, ridership can be increased. Bus system administrators and local officials must decide if the location of a transit facility is merely a sidewalk/curbside facility or a well-identified, marketable facility.

Often the biggest problems to overcome in developing a transit facility are the institutional problems generated by political and public policy machinery. In some cases, public agencies find themselves in a competitive, rather than cooperative situation when faced with prospects of consolidating or integrating various modal systems.

In recommending the development of a facility, it is important to encourage the support of businesses, elected officials, and the public. Too often local officials take a rather passive view, in part because the public has not campaigned for improvements. They see only that improvements to the system will cost money, possibly increasing taxes.

At present, no set standards, suggested policies or guidelines exist to support the need for transfer facilities. Planners and designers are without the materials needed to develop the layout, signing, and information systems. Standards and guidelines must be available to assure adequate facilities.