

RESOLUTION NO. 1991-104

A RESOLUTION ADOPTING PROCEDURES FOR PLANNING,
DESIGNING AND OPERATING BUS PARK-AND-RIDE
FACILITIES FOR THE GREATER CLEVELAND REGIONAL
TRANSIT AUTHORITY.

WHEREAS, the Greater Cleveland Regional Transit Authority has as its primary objective to increase ridership; and

WHEREAS, to meet this primary objective, the Greater Cleveland Regional Transit Authority must develop new and improved transit services; and

WHEREAS, the development of a system of Park-and-Ride facilities allows for provision of new and improved transit services; and

WHEREAS, the Procedures for Planning, Designing and Operating Bus Park-and-Ride Facilities for the Greater Cleveland Regional Transit Authority provides development of Park-and-Ride Facilities systematically so as to meet the primary objective of increased ridership;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Trustees of the Greater Cleveland Regional Transit Authority:

Section 1: That the Authority hereby adopts Procedures for Planning, Designing and Operating Bus Park-and-Ride Facilities for the Greater Cleveland Regional Transit Authority, which is attached hereto and incorporated by reference as if fully rewritten herein.

Section 2: That this resolution take effect immediately upon its adoption by the Board of Trustees.

Adopted: May 21, 1991



President

Attest: 

General Manager/Secretary-Treasurer

Attachment: Procedures for Planning, Designing and Operating Bus
Park-And-Ride Facilities for the Greater Cleveland
Regional Transit Authority

**PROCEDURES FOR
PLANNING, DESIGNING AND OPERATING
BUS PARK-AND-RIDE FACILITIES FOR THE
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY**

Prepared by the
Operations Planning Department
November 1990

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1. INTRODUCTION

The Greater Cleveland Regional Transit Authority has recognized the need to establish a comprehensive bus Park-and-Ride program throughout its service area. The rail rapid transit system already has such a program which is well utilized. The implementation of a Park-and-Ride program in conjunction with refocused bus service will provide opportunities to better serve both new and existing transit markets in the Greater Cleveland area with attractive, high quality bus service. This document sets forth the recommended policies and procedures for planning, designing and operating bus Park-and-Ride facilities for the Greater Cleveland Regional Transit Authority.

A Park-and-Ride lot is a facility which permits a patron to drive a private vehicle to a convenient location and park or drop someone off [kiss-and-ride], and complete their journey by riding public transit. There are two types of bus park-and-ride programs:

- The present RTA program that has successfully augmented access to existing RTA bus routes [flyer, express, and local] by presenting opportunities to park-and-ride at some 40 small, joint use facilities along the route alignment. These are located at shopping centers, churches, parks, schools, and other private and public facilities. Unable to secure formal agreements, RTA cannot publicize these Park-and-Ride lots. RTA also has two exclusive use bus Park-and-Ride facilities, one in Berea at Sprague and Fair Roads and one in Strongsville at the intersection of the Ohio Turnpike and U.S. Route 42 (Pearl Rd). Overall, the current program has focused on expanding existing RTA transit markets.
- The program proposed here involves development of an integrated product [park-and-ride facility, commuter service operation, and an aggressive marketing campaign] for a new target market for RTA -- discretionary work commuters.

Well patronized Park-and-Ride programs of the latter type typically have certain characteristics which contribute to their success:

- Highly visible location near a freeway interchange or on a primary arterial route at a point between the residences and work destinations of potential users;
- Served by high-frequency, high-speed transit service during peak periods that offers competitive travel times to the personal automobile with good off-peak return service to the facility during middays and evenings;
- Facility provides good security for patrons and vehicles; and
- Program is driven by an effective marketing strategy that combines integrated service design and promotion with a responsive service operation.

The decision to develop a park-n-ride facility is based on an analysis of the transportation needs of a given area. If a facility can be developed using an existing parking area with minor capital investment and minor adjustments in routing and scheduling, an in-depth

analysis of potential demand, ridership, and service is not required. This is the current program of augmenting existing service markets. Conversely, a Park-and-Ride that is part of developing a new transit market and may require a dedicated facility involving land acquisition, facility construction, and significant changes in transit service or operating costs warrants a thorough analysis of all factors which might have an impact on the ultimate success of the facility and services.

The following sections present guidelines for facility development, service design, operations, and marketing strategies. The following section details the proposed RTA Park-and-Ride Development Plan.

2. RTA BUS PARK-AND-RIDE DEVELOPMENT PLAN

The *Bus Park-and-Ride Development Plan* is based on the strategies and design criteria which are identified in the following sections and adheres to the overall long range RTA system-wide program. The overall objective of the plan is to identify sites for Park-and-Ride facilities throughout Cuyahoga County, such that all major commuter corridors are provided with either rail or bus Park-and-Ride service.

Areas that are of high or growing population density and that are outside of the minimum distance from the Cleveland CBD [10-12 miles or 30 minute commute] will be considered for Park-and-Ride service. In keeping with the other Area Criteria discussed in Section 5, each Park-and-Ride area will serve a large commuter market, focus around freeway interchanges wherever possible to intercept commuters early in their trips, be located outbound of major traffic congestion, and possibly have alternative midday/evening service. Each area designated for development of Park-and-Ride service will provide maximum attractive access to a large number of potential riders.

2.1 AREA IDENTIFICATION

The following areas ringing Cuyahoga County have been identified for development of RTA Park-and-Ride facilities and are located on the map in Figure 2-1:

- West I-90 (Westlake)
- West I-480 (North Olmsted)
- South I-77 (Brecksville)
- Southeast I-480/I-271 (Oakwood/Bedford Heights)
- Southeast U.S. 422 (Solon)
- Northeast I-271/I-90 (Highland Heights/Mayfield Village)
- Northeast I-90 (Euclid)



Existing RTA Bus Park & Ride Lots
Strongsville & Berea



Target Areas for RTA Bus Park & Ride Lots

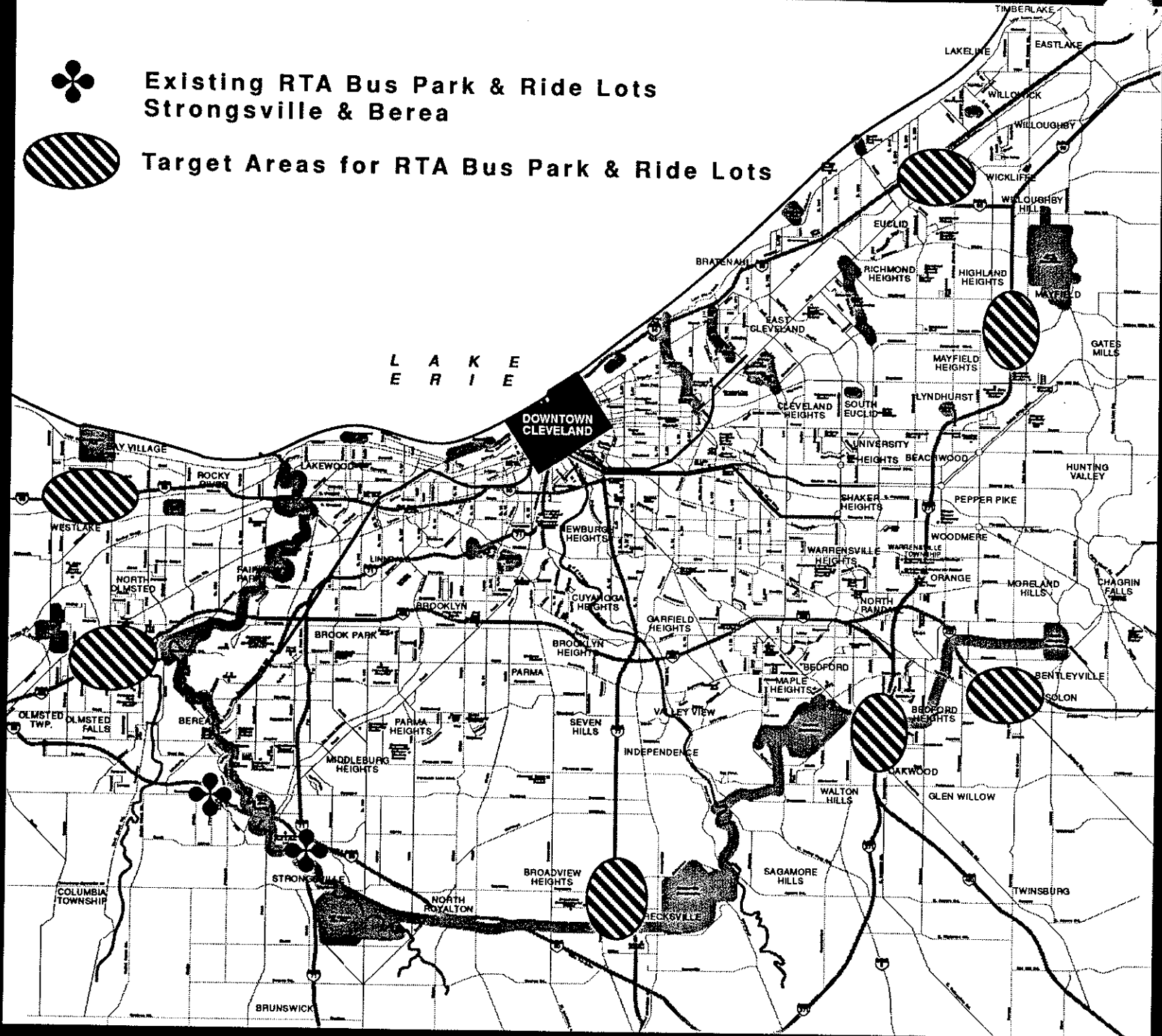


Figure 2.1

Two existing bus RTA Park-and-Rides are noted in Figure 2-1. There are 54 parking spaces available at the Sprague and Fair Lot in Berea, which was redesigned in 1981. Approximately 70 percent of these spaces are utilized regularly by RTA patrons. The Strongsville Park-and-Ride opened in June, 1990 with nearly 400 spaces available. During its first week of service, over 25 percent of the parking was utilized and continues to grow. There is expansion capability with an additional 260 spaces available. The Strongsville Park-and-Ride was made possible through an intergovernmental agreement between RTA, the City of Strongsville, the Ohio Turnpike Commission, and the Ohio Department of Transportation. The Park-and-Ride is on a site leased from the Ohio Turnpike Commission by RTA. Access to I-71 is available at Pearl Road. Preliminary 1990 census figures indicate that the population of Strongsville has increased by more than 23 percent since 1980.

Westlake. Westlake has experienced a 38 percent increase in population within the last decade according to 1990 preliminary census figures. A Park-and-Ride within proximity of either the Crocker Road or the Columbia Road I-90 interchanges would provide the preferred freeway access.

North Olmsted. North Olmsted contains the huge Great Northern complex with its mix of regional shopping, hotel and office development. It is a well-established, densely populated community with a history of transit usage through the North Olmsted Municipal Bus Line. Freeway access is available to I-480 with the Stearns Road and Great Northern Boulevard interchanges. It is also near the CBD commute path for residents of the growing communities of Olmsted Falls and Olmsted Township, which show preliminary census increases of nearly 15 percent and 20 percent, respectively, in the past ten years.

Brecksville/Broadview Heights. The I-77 corridor south of Cleveland has been an area of interest to RTA for Park-and-Ride development for the past decade. It was identified as a preferred corridor in which to pursue Park-and-Ride development in a 1979 feasibility study. To that end, efforts were made to obtain grant funding and the project was carried for some time in RTA's *Transportation Improvement Program*. Finding an appropriate location for the facility has proven difficult, however. As Brecksville and Broadview Heights continue to grow (16 percent and 12 percent preliminary census increase, respectively) and the informal Park-and-Ride activity along Route 21 which has existed for years continues, locating a site near I-77 at Route 82 or possibly at the Miller Road or Wallings Road interchanges will be pursued.

Solon/Oakwood/Bedford Heights. Locations to the southeast that take advantage of freeway access via the I-480/I-271 routing and the relocated U.S. 422 will be pursued in order to serve continuing development in this general area. Solon, because of its continued population growth (29 percent preliminary census increase), and Oakwood and Bedford Heights, because of freeway access, offer the most promise.

Euclid/Highland Heights/Mayfield Village. The locations proposed for the northeast would provide access to a large commuter market from the well-established, densely populated communities, such as Euclid, and growing communities, such as Highland Heights and Mayfield Village. The availability of freeway access at various I-90 locations and an I-271 interchange not far removed from I-90 (Wilson Mills) make the area optimal for Park-and-Ride potential.

RTA has already incorporated several of the area locations identified in Section 2.1 in its *1991-1995 Five Year Transportation Improvement Program (TIP)*, and will add those remaining in the upcoming *1992-1996 TIP*.

2.2 IMPLEMENTATION STRATEGY

It is envisioned that the Park-and-Ride project team will involve several RTA functional areas in terms of preliminary work, the actual site selection process, and the final development of the facility, service operation, and marketing. An integrated multi-disciplinary approach is called for with the Operations Planning Department¹ undertaking overall project coordination responsibility during the development phases. The anticipated tasks and RTA Department participation are detailed in the following sections.

- Preliminary Work. The key elements include development of standard facility specifications (E&C), conduct market research (Marketing), determine local, state, and federal regulatory constraints (Legal), develop standard contractual language for joint use/joint development agreements (Legal), and initiate contacts with key community leaders and groups (Public Relations/Community Affairs).
- Finalize Area Locations. The proposed area locations need to be further reviewed in light of the results of the market research and additional work confirming commuter travel routes. This work should provide both a better indication of concentrations of CBD employees in these prospective areas and prioritizing/narrowing the area choices for the site selection process. Operations Planning will be responsible for this task.
- Secure Project Funding. This task will a cooperative effort between Operations Planning, Strategic Planning, and Finance.
- Select Sites. The actual selection process will also be a joint effort between Operations Planning, Bus Transportation, and E&C with the identification of a series of candidate sites. Operations Planning will be responsible for coordinating efforts to evaluate and finalize individual sites. Assistance with preparing Conceptual Site Plans (E&C) and proposals to third parties (Marketing/Public Relations/Community Affairs) will be required.

¹ Includes both the Service Planning and Scheduling functions.

- Secure Site Approvals. Operations Planning will coordinate the securing of site approvals with help from E&C, Legal, and Public Relations/Community Affairs.
- Acquire Site/Execute Use Agreement. Legal has the lead responsibility in both undertaking land acquisition and executing agreements for joint/exclusive use of sites. Operations Planning will provide assistance as needed.
- Design and Construct Facilities. The Engineering and Construction Department will have lead responsibility for designing and constructing the Park-and-Ride facilities. Input on facility operations (Operations Planning/Bus Transportation), facility maintenance (Facility Maintenance), joint use/development (Operations Planning/Legal), and passenger waiting and concession areas (Operations Planning/Marketing) is anticipated.
- Develop Service and Operating Program. Operations Planning will have lead responsibility for developing the service and operating program with key input from both Bus Transportation and Marketing.
- Develop Marketing Program. Marketing will have the lead with input from Operations Planning.
- Implement Park-and-Ride Service Operation. Bus Transportation will undertake with support from Operations Planning.

2.3 CURRENT FUNDING STATUS

The Authority has a finite base of funding and the responsibility to provide a specified level of service throughout its service area. The *FY1991 Service Management Plan* will likely call for a limited increase to the level of service in a planned, systematic program commensurate with the Authority's goal to increase ridership. The implementation of the proposed Park-and-Ride program would require additional funds. Sources of funds for future Park-and-Ride development must be identified. Of immediate importance are several locations which have already been identified for possible development as part of the short-term implementation strategy, including:

- North Royalton Service Garage Layover
- Bay Village Cahoon Park Layover
- Bay Village Clague Park-and-Ride
- Willowick East 314th St. Layover
- Independence Park-and-Ride
- Westlake Layover/Park-and-Ride

Funding allocations in the current TIP are set at one million dollars per year for Park-and-Ride development. As a gauge to determine realistic funding requirements for the Park-and-Ride program, the cost of the Strongsville Park-and-Ride can be used as a guide in estimating future funding needs. That facility was constructed at a cost of approximately \$1.5 million, and provides parking for just under 400 cars. As the site is leased, no monies for land acquisition were involved. Consequently, a cost of \$2.85 million is estimated for development of an RTA-owned exclusive Park-and-Ride facility based on the following assumptions:

- 600 parking spaces
- 100 spaces per acre requiring a 6 acre site
- \$200,000 per acre acquisition cost (average \$4.60 per square foot)
- \$1.5 million construction cost
- 10% cost for architectural and engineering (\$150,000)
- Total cost of \$2.85 million

This type of facility is the most costly and is the last choice in terms of development options per the strategies discussed in Section 5.3.

Federal funding for Park-and-Ride construction has traditionally been available from UMTA Section 9 Formula Capital, Section 3 Discretionary Capital, and Title 23 Interstate Transfer sources. The amount of Federal funding in future years, however, remains in doubt. Title 23 funds may eventually be depleted. Section 9 monies may be severely lessened or eliminated. Section 3 grants are being approved more often where transit properties have "overmatched" [i.e., provided a local share of project cost greater than the typical 20/25 percent]. As these funds become more difficult to obtain, greater local and state public funding will be required to continue the program, unless a major infusion of private monies through joint development efforts are secured. This infusion may also assist in obtaining some of the scarce UMTA funding. They have looked most favorably on projects where Federal participation is lessened because of joint public-private funding efforts.

The present FY1991 RTA Budget includes Park-and-Ride facility development funds of \$3.99 million as part of a five year \$19.95 million program.

3. SERVICE DESIGN AND OPERATIONS

The design of services and the implementation of responsive day-to-day operations are other key elements in a successful Park-and-Ride service.

3.1 SERVICE DESIGN

The development of high quality commuter bus service calls for service that can compete with travel by private automobile for customers. RTA's existing *Express Services* by design are limited-stop local services and are not expected to be effective competition for private vehicle travel. The *Flyer Services*, on the other hand, are somewhat designed to offer fast, direct bus transit to the CBD, principally during peak commute times. Their weakness is that they are dependent in most instances on informal Park-and-Ride activity and walk-ups for ridership, making it difficult to maintain frequent service and cost-effectiveness at the same time. As a result, it is anticipated in designing Commuter Park-and-Ride service that existing Flyer and Express routes serving the same travel corridor will be considered for consolidation with the new service, especially during peak periods.

Other service design issues include frequency, span, schedule timing, route alignment, vehicle type, and fare collection. These are discussed in the following sections:

- a. Frequency. Initial service frequencies proposed for RTA Commuter Park-and-Ride services are graduated during the major work commute times to the CBD per the following table.

TIME PERIOD	FREQUENCY
Peak -- Maximum Demand	10-12 minutes
Peak -- Average Demand	12-15 minutes
Peak -- Periphery Lower Demand	20-30 minutes
Midday/Evening	60 minutes

These initial frequencies are recommended in order to both:

- Maximize the potential ridership by making the service attractive to both markets that are oriented around *their trip* and those that simply *catch the next bus*. The former group of riders have regular times for trip-making, not unlike persons that carpool or vanpool. This group is normally of limited size and less sensitive to service frequencies than the other group that *catch the next trip*. This latter group

is considerably larger than the former and is sensitive to the time between trips. Experience around the country has indicated that the sensitivity threshold for this group is in the 10-12 minute range; and

- Effectively utilize the proposed 600 space Park-and-Ride facilities proposed earlier. Experience has shown that facilities of this size with typical Kiss-and-Ride activity will productively support the above service frequencies.

As the service and market matures, service frequencies can be adjusted to meet actual demand. Further increases in service frequencies and lot size would be made only on the basis of demonstrated capacity needs. Park-and-Ride service being demand-based will need on-going monitoring to insure that both performance requirements and capacity needs are being effectively met.

- Span. There is an established wisdom that access to the major commute market requires service to the Park-and-Ride facility throughout the regular service day. While peak travel is very time-sensitive, midday and evening service coverage may be accomplished using a combination freeway route that serves several Park-and-Ride facilities or even, in some cases, a local arterial route.
- Schedule Timing. AM Peak schedule times should be based on key CBD arrival times with departures from Park-and-Ride facilities extrapolated. PM Peak times will be timed based on CBD departure times. Consideration should be given in developing schedules to the time needed by passengers to travel between their work destination and bus stops.
- Route Alignment. The route alignment for Commuter Park-and-Ride service must be perceived by prospective customers to be fast and direct. This normally means that the alignment should duplicate their usual travel paths, which means maximizing use of freeways. Unfortunately, freeways often have the greatest variability in on-time performance, making round trip scheduling difficult and placing a higher responsibility on day-to-day operations. The establishment of alternative alignments for use during traffic problems is a necessary undertaking. Key problem areas should be candidates for exclusive bus/HOV lanes.

CBD route alignments also need careful consideration in order to provide quick direct access to key work destinations with a minimum of circuitry. Many systems find that separation of commuter and local boarding stops assist smooth CBD operations due to differences in boarding times. Commuter boarding generally takes longer and can delay local service at the same stops.

e. Vehicle Type. Experience in many other cities is showing that commuters are sensitive to the type of vehicle used to operate Park-and-Ride service. Introduction of coaches with commuter amenities such as:

- Reclining seats,
- Parcel racks,
- Reading lamps, and
- Cellular telephones [installed in some systems at cellular telephone company cost with revenues shared]

have generally led to increased ridership when combined with the other elements discussed here. The bus is an integral part of the overall *product* that the customer is purchasing for their premium fare.

f. Fare Collection. Current fare collection policy for inbound express and flyer buses calls for the fare to be collected as passengers alight in the CBD. This will delay CBD operations and create more conflict between local and express/flyer buses. Consideration should be given to collecting inbound fares for Park-and-Ride services at the facilities, effectively using the site dwell time before scheduled departure.

3.2 DAILY OPERATIONS

Operation of Commuter Park-and-Ride service will generally place a greater burden on daily operations to deal effectively with possible disruptions, including coach breakdowns, late or early trips, missed runs, vehicle comfort, and operator courtesy. The commuter market has been found to be very sensitive to daily service quality and also shows a greater propensity to report problems than the average transit rider. Issues needing consideration include:

- Dynamic monitoring of on-time performance to allow for adequate response time.
- Staging of backup buses at strategic locations during both peak periods.
- Development of detailed site and routing maps and paddles to assist operators in running on-time and via the correct alignment.

4. MARKETING STRATEGIES

A major element in the success of a Park-and-Ride program is the marketing strategy intended to promote use of the facilities and service. Marketing efforts should be based on detailed market research focused on CBD employee travel and designed to address the following issues:

- Awareness. A key objective should be to develop broad community awareness of the Park-and-Ride services. While development of a highly visible Park-and-Ride facility that many commuters must pass daily will create significant awareness, consideration should be given to additional cost-effective opportunities. These include:
 - Rear advertising on commuter buses
 - Billboards along commute freeways with Park-and-Ride service
 - Radio with strong *drive time* ratings
 - Park-and-Ride availability signs on freeways and major arterials -- standard ODOT signs can be used with a special application: *RTA Park-and-Ride -- Express Service to Downtown Cleveland -- Call 621-9500.*
 - Park-and-Ride trailblazer signs directing patrons to the facility should include the RTA logo and the 621-9500 RTAAnswerline.
 - Company/TMA communications of CBD employers and, where appropriate, reverse commute employers.
 - Contact with community organizations -- presentations.

The different media can often be obtained with trades for bus advertising and may represent minimal cost campaigns. The signage campaign can likely be administered in-house.

- Incentive. Creating the desire to try the service for the first time or ride more frequently if a current customer is the incentive objective. The incentive campaign is often woven in with the awareness campaign and focuses on communicating the following:
 - Competitive travel times [e.g., set up race between commuters on Park-and-Ride and in car with radio station that you are running commute campaign with, as well as local papers].

- Cost savings -- with rising gasoline prices this element of the campaign has regained effectiveness [e.g., not just the amount of savings, but what you can do with the saved money: vacations, new boat, college, savings account after 10 years, etc]. Commuter passes -- both the discount price of the pass over cash fares and the possible subsidization by CBD employers should be considered.
- Attitude issues -- these benefits of riding Park-and-Ride service should be considered. Many effective campaigns have been developed in the industry around these issues. Testimonials from current riders on billboards, bus rears, and radio during commute periods have been utilized successfully [for example: *you could be sleeping/reading/listening to music/etc; why are you driving?*].
- CBD Employers -- gaining the cooperation of downtown employers will be a critical element. Their advocacy and support of awareness and incentive campaigns is often the pivotal difference in the success of Park-and-Ride services. Direct contact with each employer will be necessary -- the Downtown Chamber of Commerce or other employer group should be asked for assistance in making contacts and also for an endorsement. Where appropriate, these same efforts should be directed at suburban reverse commute employers.

Key areas of interest to employers usually are: tax write-off opportunities for pass subsidies, comparative costs between pass subsidies and the cost of employee parking [the latest issue may be opportunities for employers who shift employees from driving to transit to turn some of their parking back into income generating parking], and improvements in employee attendance and attitudes.

- Advocacy. As discussed above, advocacy should create and maintain a favorable image for the park-n-ride program. It is a key component to RTA success in Park-and-Ride with support for good locations for facilities and possible exclusive bus/HOV lanes/Rail options imperative to immediate and long-term goals. Aggressive advocacy will also help break down community behavior barriers to transit use by discretionary riders. Advocacy campaigns should be directed toward employers, community organizations, and elected officials as well as potential user markets. As discussed above, advocacy should be an integral part of all marketing campaigns.

5. FACILITY DEVELOPMENT GUIDELINES

The guidelines for developing park-and-ride facilities are presented in four sections: area selection, site selection, development strategies, and facility design standards.

5.1 AREA SELECTION CRITERIA

The first step in developing a Park-and-Ride program is to identify the areas where the facilities should be located. Generally, the most effective location for a Park-and-Ride facility is on a direct line between the residences and work destinations of a large number of potential users. In most cities, including Cleveland, the only nucleus of work destinations with enough focus and volume is the Central Business District (CBD). Consequently, a facility will experience greater use in an area where a high proportion of residents work in the CBD.

A residential area heavily populated by office workers will usually generate a greater amount of Park-and-Ride use than one comprised primarily of industrial workers. This stems from the fact that office workers are often concentrated in the CBD, while industrial workers have dispersed work locations outside the CBD. Experience in other cities has indicated that park-n-ride service cannot be cost-effectively operated to work destinations in areas not having CBD level employment densities. As a result, only the Cleveland CBD can presently justify dedicated park-and-ride services.

As noted in the introductory section, the location of park-and-ride facilities should be on a direct line between the commuters residence and work destination. The idea of providing *intervening opportunities* in park-and-ride development is well established. This recognizes the need to not only locate park-and-ride facilities where commute volumes are high, but to also consider where along the commuter's journey the opportunity to park-and-ride is going to have the greatest attraction. The attractiveness of a park-and-ride will be largely affected by its distance from the CBD, the level of traffic congestion present on the freeway at that point, and its visibility and accessibility to commuters. Thus, the general criteria for identifying target areas to locate park-and-ride facilities are:

- a. Large Commuter Volumes. Ideally, facilities should be located where large volumes of work commute travel to the CBD are focused, such as near freeway interchanges. Where freeways are not available for commute trips, consideration can be given to locating a park-n-ride facility along the primary arterial street provided that sufficient commute travel volumes are present. A large commute travel volume assures sufficient potential ridership to justify attractive service frequencies for the park-and-ride facility.
- b. Intercept Commuters Near Residences. Park-and-ride facilities should be located close to the residential end of the commute trip with proximity inversely related to the length of the trip. Conventional wisdom says that the park-and-ride location should

allow for intercepting the commuter before they access the freeway, a key travel decision point. While operating park-and-rides at all freeway interchanges is clearly not feasible, locating them at those interchanges with the highest CBD traffic volumes during commute periods will cost-effectively provide *intervening opportunities* to a maximum number of potential riders.

- c. Distance from CBD. Generally, park-and-ride facilities should serve commuters with a minimum commute time of at least 30 minutes or about 10-12 miles. The time needed to divert to the park-and-ride and wait/board the bus make travel times even for express trips less competitive with the private automobile. Conversely, the greater the commute distance, the more opportunity to provide park-and-ride service that offers competitive transit travel times.
- d. Traffic Congestion. Park-and-Ride lots should be located just outside areas of major congestion from the CBD, both real and perceived. This will provide potential riders the incentive of avoiding the hassle of driving through the congested areas at the decision point to use the park-and-ride service. It will also improve the competitive position of the park-and-ride service travel times relative to the personal automobile. This is especially true where bus/HOV priority treatments are present in congested areas, e.g., ramp metering exemptions or exclusive lanes.
- e. Existing Transit Service. Areas with existing transit services that can be redeployed to provide peak period commuter service [flyers and, perhaps, some express routes] or can provide midday/evening service to the facility [express and local routes] should be given special attention, since possible operating cost-efficiencies may be present. This is especially the case if a transit center exists or is planned in the area.

5.2 SITE SELECTION CRITERIA

Once an area is targeted for a park-and-ride facility, the identification of candidate sites is undertaken. A field survey of each area should be conducted to locate the most suitable sites based on the following criteria:

- a. Accessibility. Park-and-ride facilities should be easily accessible to both bus and automobile traffic and conveniently intercept morning work commute trips bound for the CBD. In a site selection at a freeway interchange, this requires a balance between easy access for inbound commuters on both local streets and the freeway and access for the bus to minimize both operating cost and out-of-direction impacts if the park-and-ride is an enroute stop. This requires a thorough examination of traffic dynamics around the site prior to initiating the site selection process. In general, locating the facility on the inbound side of both the local arterial and the freeway presents the optimal situation where the majority of vehicles will be making right turns into the facility during the key morning travel period -- this minimizes any turning delays that might be a daily disincentive to using the park-and-ride facility.

- b. Site Size/Expansion Potential. Candidate sites should be large enough to accommodate both projected short and long term demand, while permitting proper on-site circulation of automobiles, buses, and pedestrians. Experience in other cities has shown that sites with at least 600 spaces [around 6 acres] are generally the optimal in supporting service frequencies that are attractive to discretionary commuters [10 minutes or better]. This requirement may be relaxed slightly in cases where there are existing joint use sites that meet the remaining criteria.
- c. Minimize Development Costs. Park-and-ride candidate sites should be selected to minimize the cost of development by using existing parking facilities and/or avoiding land acquisition costs where possible. Provided that effective marketing and operations are not affected and that permanent or long term agreements can be secured, the order of priority in site selection should be:
1. Developed publicly or privately owned sites with available parking space.
 2. Undeveloped publicly or privately owned sites where parking would need to be constructed [either jointly or by RTA].
 3. Land acquired for construction of new facilities.

A critical element where joint use of parking and/or land is under consideration [Options 1 and 2 above] is *selling* the value of park-and-ride service to site owners. This is often the most difficult task in successfully developing cost-effective park-and-ride facilities. This is further discussed below in *Development Strategy*.

- d. Maximize Potential Reverse Commute Demand. Most park-and-ride services rely solely on the peak direction commute demand to support the operation. However, locating the facility either adjacent to or in close proximity to suburban work destinations that draw commuters from the CBD vicinity can provide significant additional ridership in the off-peak or reverse commute direction, filling empty seats on return trips and improving service cost-effectiveness and productivity.
- e. Maximize Visibility. One of the critical elements in successful park-and-ride service is having a well marked, highly visible facility. The value of:
- Having the facility easy to find and use [eliminating a key disincentive -- the bad experience of getting lost and not finding the facility]; and of
 - Making potential users continuously aware of the park-and-ride service option each day during their commutes presents an ongoing passive marketing campaign that is effective in generating new ridership.
- f. Security. Another key element for success is the provision of security for both persons and vehicles at the park-and-ride facility. Qualitative research in other systems has indicated that a *perceived* lack of security is an important disincentive for both potential new riders and for existing riders to terminate use. Not surprisingly,

perceived security problems are greater at dedicated use sites, than at joint use facilities where there is constant activity. Staffing an exclusive use site only partially mitigated this problem. Negative incidents are well communicated between riders.

- g. Community Support. A review of community regulations, especially restrictions on land use, that could influence the site selection process should be undertaken. RTA should also work with local leaders to develop a community consensus for the Park-and-Ride facility. Solid community support can be a critical element in the success of any joint use/joint development strategy.

This information should be screened for the candidate sites with the most suitable identified for further evaluation. The additional evaluation for each of the finalist sites focuses on developing the following:

- Conceptual Site Plan with parking space and vehicle/pedestrian movements identified
- Local traffic circulation impacts
- Local community impacts
- Existing transit service impacts
- Joint development opportunities/impacts on existing use
- Cost of developing and operating the Park-and-Ride facility

5.3 DEVELOPMENT STRATEGIES

It is proposed that RTA pursue a development strategy that follows the above area and site criteria. The critical element in this strategy focuses on minimizing site development costs where possible. This requires that site selection priority be given to first, joint use sites, second, joint development of sites owned by third parties, and last, development of sites acquired by RTA.

- a. Joint Use of Existing Parking Owned by a Third Party. This strategy can provide a relatively immediate, low cost response to Park-and-Ride service needs. An existing parking lot available at a large activity center that meets the area and site criteria ideally can provide an optimal permanent solution if a long term agreement can be reached with the owner. If not it can provide an interim solution while permanent parking is being constructed at another site.

Potential joint use sites that are likely to meet the 600 parking space minimum include: shopping centers/malls, cinemas, large churches, sports stadiums and tracks (public and private), recreation centers/parks, and other sites with workday parking space availability. The primary difficulty is usually securing a long term agreement with activity centers, who are typically skeptical of any giveaway to transit. This places a premium on presenting a thoughtful, thorough proposal to private and public owners of potential joint use sites that addresses both their concerns and the potential benefits of Park-and-Ride use. The key issues to cover in a proposal are:

- Parking -- ensuring that plenty of parking is available for regular site activities is typically the key concern of most site owners. It is imperative that the proposal display a thorough knowledge of current site parking needs [time lapse photography can be a clincher] and convincing arguments that transit Park-and-Ride use takes place when there are plenty of spaces available. At shopping centers/malls, Christmas is a traditional reason for owners to black ball transit Park-and-Ride use year round. At many retail centers, midday parking needs, even during the Christmas season, allow for many hundreds of Park-and-Riders without creating parking shortages for any of the stores if the Park-and-Ride area is well-located and well-supervised [find out who owns the different parking areas -- the center or the anchor stores]. Incentives that can be offered to make RTA's proposal more attractive include free transit shuttle service from supplemental lots [particularly for employees] and free advertising space on the fleet.
- Maintenance Problems and Pavement Risks -- after parking problems, maintenance and pavement damage are key concerns for property owners, especially if the buses enter the site [which is usually desirable]. Such facilities may often require alterations to entrances and exits of the lot so as to accommodate the wider turning radii, greater axle loads, and allowable grades for buses. Loading areas and roadways that are to be used by buses must be constructed with heavy load-carrying pavement or accelerating deterioration will occur. Generally, pavement condition guarantees and offers to share maintenance expenses will mitigate concerns. However, in some cases an RTA offer to construct a concrete busway may be advisable. At activity centers with pavement already deteriorated and needing reconstruction, RTA may consider offering to share reconstruction costs if a long term agreement can be secured. The cost of busway construction and pavement reconstruction are minimal compared with the cost of RTA developing its own exclusive site.
- Increased traffic -- like the parking argument, this can be dealt with effectively by presenting evidence that Park-and-Ride activity take place at off-peak times relative to center traffic activity.
- New customers -- this is a particularly compelling argument in favor of allowing Park-and-Ride in retail centers. The Park-and-Ride facilities planned here will generate upwards of 1,000 daily passenger movements. Survey work elsewhere has demonstrated that this Park-and-Ride activity translates into increased sales for most

retail centers/malls where repetitive shopping occurs. Further, the *typical* Park-and-Ride customer is a discretionary commuter with a high disposable income and makes more purchases on an annual basis [demonstrate with route specific surveying]. Also mention that the parked vehicles are good candidates for successful flyer marketing and that there is a possibility of undertaking some individual or joint merchandizing activity with the Park-and-Ride customers. In situations where there are two or more competing retail centers in close proximity that meet the other site criteria, it is sometimes possible to play one against the other by indicating that RTA will present to all sites and work with the most responsive.

- Employee transportation -- finding and retaining good employees is often a problem for suburban activity centers, especially retail centers. A key job market for these low paying service positions is the center city area. A higher than average portion of these workers use transit. The activity centers will need convincing that working with RTA to develop Park-and-Ride will bring benefits in the personnel area -- better access to the key job market, better worker punctuality, and reduced employee parking needs. The Christmas shuttle service from remote parking lots for employees should be raised again.
- Public Benefits -- the social benefits of providing Park-and-Ride service can be persuasive for cases where the owner is another public entity.
- Security Problems -- it is not unusual for owners to perceive that reverse commute service, while bringing employees, may also bring *undesirables*. This reason can present a major difficulty in securing permission to use the site for Park-and-Ride. While it is probably sound strategy to wait for the owner to raise the issue, it is vital that RTA have considered it and be prepared to respond. The restriction of service hours to meet commuter and site employee needs is often acceptable. The midday/evening commuter return trip may need to be addressed with local service options. Restrictions to allow only site employees to ride are not acceptable, as they would violate UMTA regulations.

Discretionary issues, such as permission to install a bus shelter and site signs, are best left to the second round of discussions -- after the owner has bought off on the overall Park-and-Ride concept. Outside of the obvious cost avoidance benefits of joint use facilities, there are several other benefits to RTA of this type of facility development. As discussed above, there is likely significant potential reverse commute ridership travelling to the activity center, especially if there is commercial office or retail activity. In addition, perceived and actual security for persons and vehicles will be higher at a joint use site and RTA will benefit from more involvement with third parties from a public advocacy and awareness standpoint, particularly if some joint marketing activities can be undertaken.

RTA should seek to negotiate agreements with property owners specifying a specific term during which RTA may operate a Park-and-Ride facility. If RTA invests in the facility

making permanent improvements, a long term, non-cancelable agreement [even with sale of the site] should be executed. If RTA considers the site as temporary, is undertaking minimal capital improvement [signing, striping, and a shelter], and is developing a permanent site, a short term lease with a 120/180 day cancellation by either party is probably desirable. Such short term agreements generally take the form of a *Hold Harmless* agreement whereby RTA uses a lot at no charge to the Authority, but indemnifies the property owner from claims that arise due to RTA use of their facility as a Park-and-Ride. Alternatively, such an agreement may take the form of a lease with RTA paying a rental fee for use of the site. In either situation, the area involved and the spaces used are to be clearly delineated with signing and striping as agreed to by the property owner.

- b. Joint Development of Parking on Land Owned by a Third Party. This strategy basically seeks to find a third party partner in the process of developing their own land. RTA's approach would be to propose joint development with the third party providing the land and both parties sharing the cost of developing the parking area. Development at Park-and-Ride facilities can vary greatly in size from convenience retail to substantial, mixed-use facilities which may have retail, commercial office, and hotel components that share use of the parking structure. Candidate developments would include both those in Option A: shopping centers/malls, cinemas, large churches, sports stadiums and tracks, and recreation centers/parks; and other developments, such as commercial sites with excess land. Clearly, this strategy has a longer time frame than the *Joint Use* option above, but less than the *RTA Site* option discussed below, since land acquisition is avoided.

This strategy is very much like the *Joint Use* option above with many of the same concerns applicable; the only real difference being that the site is not yet developed. It is often a more effective time to secure a long term agreement: the developer still has to fund capital construction, acquire municipal and county permits, and convince tenants to lease space. In each of these areas RTA can be a beneficial development partner:

- Capital Construction Costs -- RTA can share the costs [joint use] or fully fund [dedicated] the construction of the permanent Park-and-Ride facilities. In cases where the lots will be joint use or where RTA service allows a reduction in required parking for permit approval, this represents real dollar savings for the developer. Pavement upgrades for bus movements on site may already be required under Code. In this situation RTA may wish to share in these costs in order to convince the developer to agree to RTA participation.
- Permit Approvals -- RTA can provide key assistance to developers in helping with permit approvals. Developments that provide benefits to local residents often receive more favorable treatment, including a relaxation of minimum parking requirements because of a mass transit presence on-site. This approach will be more effective where developers are having trouble with municipal/county approval or facing strong local opposition.

- Tenant Benefits -- for the same reasons as indicated above in *Joint Use*, RTA participation should be attractive to potential tenants: quality, convenient transit service for employees [reverse commute or diversion of local line haul service]; increased sales traffic from Park-and-Ride patrons; sharing of expenses for ongoing maintenance of the parking areas.
- Public Benefits -- where the developer is a public entity, the benefits of providing Park-and-Ride service can be compelling, especially where there are no costs or other disbenefits to the entity.

The benefits for RTA of this strategy are much like those for a permanent joint use agreement, as detailed above. One key benefit enjoyed with this strategy is the likely opportunity to provide input into the site design. This should result in a more optimal operating environment for Park-and-Ride service, including such considerations as a concession area for commuters, centralized boarding location, smaller efficient parking space sizing, and improved pedestrian access. This option, while incurring partial or full construction costs for the Park-and-Ride area, still avoids the expense and time delays of RTA land acquisition.

c. Development of RTA Acquired Sites. In the event that the preceding strategies are unsuccessful, the third and final alternative is for RTA to directly acquire land for Park-and-Ride. This last option is the most costly in terms of both expenses and time. RTA would still have the option of developing the site exclusively for Park-and-Ride or having it developed by a third party for joint use. Development strategies for RTA sites can follow two approaches:

1. Initial acquisition of land by RTA with subsequent joint development efforts if appropriate for site; or
2. Solicitation of proposals from third parties to develop sites for either exclusive or joint RTA use.

(1) RTA Acquisition. This strategy involves identification of candidate Park-and-Ride sites for acquisition. Efforts will entail locating various pieces of property for sale or long term lease that meet the location and site criteria established above. Candidate sites should also be evaluated relative to their joint development potential depending on several factors, including: location and whether the parcel has surplus space. While exclusive RTA Park-and-Ride facilities provide RTA with an independence to operate that some joint use situations do not, the cost advantages and public relations benefit of a highly visible joint use participant are worth considering. Further, RTA-acquired Park-and-Ride facilities can be designed to accommodate joint development opportunities without compromising transit operations. Potential joint development opportunities range from intensive development with joint use of parking spaces to third party development of surplus land or airspace to the development of a concession area solely for Park-and-Ride customers.

Access to freeways and heavily trafficked arteries, the amount of Park-and-Ride parking space, expansion potential, and added value provided by high quality transit service - including possible future rail service - in some cases makes joint development on RTA-acquired sites more attractive to third parties. The confluence of these factors makes such a site valuable for the intensive development of a major *destination* activity center. Such an activity center would generate significant additional ridership as noted earlier in the reverse commute discussion. Further, the RTA-acquired property makes valuable land available to third parties for the price of also developing the site for Park-and-Ride. For developers previously frustrated by community resistance, such opportunities may be particularly attractive.

In cases where joint development of an activity center on the site is not feasible or salable to third parties, limited development of *convenience* amenities for commuters should be considered. Such retail establishments successfully draw their markets in other systems from both Park-and-Ride users and the local neighborhood. RTA should include an optional convenience area *shell* structure in the standard passenger amenity area of the site design. Typically concession services offered at transit facilities include:

- Newsstands/convenience stores
- Snacks/fast food/delicatessen
- Daycare
- Dry cleaning
- Video rental
- Intercity bus station [e.g., Greyhound/Trailways, Holland]
- Travel agency
- Photo finishing
- Auto cleaning/repair
- Pharmacies
- Florists

(2) Solicitation of Proposals. This approach calls for RTA to publicly solicit proposals from third parties to develop either exclusive or joint use Park-and-Ride facilities. The approach has been successful both where the transit authority seeks to have its own property developed and where the RFP calls for both land acquisition and development. Houston MTA has developed most of their Park-and-Ride facilities using just such an approach. It is advised that any solicitations be preceded by some research or public workshops to identify both potential response and to explain the program/criteria.

The prioritized development strategy described above provides RTA with a series of options for Park-and-Ride facility development that emphasize both shared cost/joint use and high visibility/easy-to-promote sites. This set of strategies also provides RTA with short-term solutions to meeting Park-and-Ride needs in a comprehensive, cost-effective fashion, while pursuing long-term, permanent alternatives.

5.4 SITE DESIGN GUIDELINES

The site design process is initiated during the evaluation of candidate sites that meet the basic site criteria. At this point a *conceptual design* study is undertaken as both a confirmation that the site is operationally feasible and to present some joint development options. Once the site is approved for development, preliminary and final design will move ahead. This design work should be done under the Authority's direction in cooperation with the appropriate design and traffic engineers of other agencies and third parties. RTA's Engineering and Construction Department (E&C) will be responsible for coordinating this work for the Authority.

Consideration is given to a number of design components including:

- a. Access for buses and private vehicles
- b. Internal circulation
- c. Parking layout for minimal search
- d. Pedestrian movement
- e. Pavement composites
- f. Passenger shelters and concession area
- g. Signage
- h. Security
- i. Lighting
- j. Landscaping
- k. Maintenance

Primary concerns during the design stage should include: safe and efficient traffic flow for all modes [bus, other vehicle, and pedestrian] both on and adjacent to the site; available parking should meet space requirements and have a simple search pattern, comfortable and attractive amenities for customers, full handicapped accessibility, and should not conflict with other joint use or joint development activities.

- a. Access. A major consideration in the location of a Park-and-Ride facility is the quality of ingress to and egress from the lot for both buses and automobiles. Access to the facility should be designed to minimize impacts on existing street traffic. When access is provided on an arterial street, it should be located to avoid traffic queues from nearby intersections or freeway interchanges. Field observance of traffic patterns at the site should be done prior to establishing an access point for candidate sites. Whenever possible, the facility should be located on the right side of a two way arterial for traffic inbound to the CBD in the morning. This will allow the majority of users to make a right turn into the lot, minimizing the disincentive of delays in crossing opposing traffic during the key AM peak period.

In designing new Park-and-Ride facilities [as opposed to gaining accommodation in existing joint use sites], separate one-way entrance and exit drives are worth considering to minimize crossing conflicts, although ingress/egress movements are generally one-way

during the AM and PM peak periods. Signalization of the arterial street at the exit drive should be provided if warranted by traffic. Park-and-Ride vehicle departures pulse around bus arrivals and, while benefiting greatly from a signal, should not represent a significant disruption to arterial traffic even during peak periods.

If the facility is located on the left side of a two-way arterial [for inbound traffic to the CBD during the AM Peak], it is likely that a left turn lane will be required to provide storage for vehicles turning into the lot. If separate entrance and exit drives are provided, the separation between drives should be sufficient to assure that queued left turn vehicles do not block the exit drive, hindering buses and other vehicles attempting to turn left from the lot. The reverse should be considered for inbound-side sites as described above.

In the unlikely event that a candidate lot is located along one-way streets, it should be located between the two streets which comprise a one-way couplet with ingress and egress to and from both streets.

- b. Internal Circulation. Internal circulation will vary depending upon whether the site is joint use or exclusive Park-and-Ride with the key difference being the separation of bus and private vehicle movements.

For exclusive sites, major circulation drives within the lot for private vehicles should be located at the periphery of the parking area to minimize vehicle-pedestrian conflicts. Circulation for buses should be separated from other vehicular traffic and designed for easy penetration of the center of the lot to minimize pedestrian walks to the bus boarding area. Bus roadways should be wide two-way, two lane to permit passing of stopped buses. Sufficient space should be provided in the loading area to accommodate the maximum number of buses that will serve the facility under peak conditions. In cases where the facility is a combination Park-and-Ride/Transit Center, non-linear bus bay configurations [e.g., *sawtooth-style*] that allow independent entry and exit should be considered.

In joint-use lots such as shopping centers, the Park-and-Ride area should be located away from the activity center so as not to interfere with normal workday parking for existing business operation. Bus movements should be separated where possible from private vehicle movements, in particular staying on access roadways and avoiding parking lanes. This will also help control pavement deterioration problems by keeping buses on the heavy duty roadways. Further, bus left-turning movements within the facility should also be minimized.

- c. Parking Layout. Separate designated areas should be provided for long-term Park-and-Ride and short-term *Kiss-and-Ride*. During the PM peak period when there is the greatest demand for short-term parking [due to longer dwell times], dedicated spaces are typically augmented by a significant number of long term spaces vacated by the first

returning commuters -- these spaces are usually those closest to the bus boarding location. This reduces the absolute number of dedicated *Kiss-and-Ride* spaces that are required.

The alignment and size of long-term Park-and-Ride spaces will often vary with each site, dependent upon both geometry and joint use. In general, alignment should foster the most simple, effective search pattern for *sleepy, rushing* morning commuters. Parking space sizing is another consideration with smaller spaces using the site more effectively, but causing more difficulty for parkers. A balance is probably warranted, except where site geometry dictates a particular size. Frustration with finding a space and door damage can impact continued ridership. In joint use circumstances, alignment and space sizing are usually set and not open to change unless redevelopment or reconstruction is proposed. Finally, handicapped access and bicycle lockers should be included by locating them close to the bus boarding location.

- d. Pedestrian Movement. As indicated earlier, pedestrian movements should be separated from vehicle movement wherever possible. Special pavement treatment should be considered where pedestrian and vehicle conflicts are unavoidable. Treatment considerations should include both signage and striping² and speed mitigation devices. Simple speed bumps should be avoided if possible due to the negative reaction from vehicle owners; superior devices like raised walkways are more effective without the negative reaction.
- e. Pavement Structure. Heavy-duty pavement structures are required for bus operations. Where circumstances permit, such as new or redeveloped sites, pavement specifications must take into consideration both current and future bus use. Where existing joint use sites are selected for permanent Park-and-Ride, pavement improvements should be made where necessary prior to the initiation of operations. In cases where this is not possible, RTA needs to have the capability to respond quickly to deteriorating pavement through a paving contractor either preselected by RTA or available through the site owner.
- f. Passenger Shelters and Concession Area. The development of passenger shelters/concession areas is also dependent upon whether the site is to be developed or redeveloped or is an existing joint use location. In all cases, the boarding location must be visible throughout the Park-and-Ride area. Where possible this location should be central to the Park-and-Ride area in order to minimize walking distances for customers. While the standard RTA passenger shelter may suffice in some cases, consideration should be given to provision of an enhanced waiting area with such amenities as: public telephone(s), direct line to the dispatch office, detailed service information, and updated scheduled arrival data. In all cases, consideration should be given to providing electric power to the waiting area for immediate or future needs.

² Concerns have been raised in recent years as to whether unsignalized, but marked, crosswalks are safer than completely unmarked zones.

Concession areas are generally possible in only redeveloped/developed situations where space permits. As noted earlier, not only should concession space be allowed for in the design, but the actual construction of a building shell often attracts reluctant concessionaires. It is usual for the concessionaire(s) to be responsible for maintenance of the passenger waiting area, which often can include rest rooms. Further, the concession operation provides passive security for passengers simply by being there.

- g. Signage. Required signage includes site identification signs, trailblazer directional signs, and internal traffic and space use control signs. Signs identifying the site as a Park-and-Ride facility are a key element to creating public awareness. A highly visible, high quality sign not only promotes awareness, but also presents an image to potential users every day. From an advertising standpoint, the site sign is critical. The lack of site signage is certainly one of the major reasons that the existing informal joint use facilities are less successful. Signs guiding customers to the facility are also important. While most sites will be located directly on the major morning journey-to-work path for commuters, the facility will also draw customers from lower volume commute travel paths, especially when located near freeway interchanges. Well placed trailblazer signs provide both awareness of Park-and-Ride service and clear, easy-to-follow directions to the actual facility. Difficulty in finding Park-and-Ride facilities is often a key disincentive to potential users not on the primary commute travel path. It is imperative, however, that the signing be comprehensive with no missing turn directions. Incomplete trailblazing can be worse than providing no directional signage. Finally, clear signage designating traffic control [e.g., bus only lanes] and space usage [i.e., long-term versus short-term and handicapped] needs to be part of any site design.
- h. Security. As noted earlier in the site criteria, security is an important element in the commuter decision process to use Park-and-Ride service. While security is considered during the site selection process, the design process will still need to consider options to improve personal and vehicle security at most sites. Such options should include: perimeter control [fencing], enhanced lighting, site security personnel [RTA Police Department or owner's facility security], and on-site activities [joint use or concession operation].
- i. Lighting. As indicated above, lighting provides both a safety and security function at Park-and-Ride facilities. RTA needs to establish lighting guidelines that provide safe and secure vehicle and pedestrian movements. Design staff also need to consider that during much of the year all or part of the daily commute period takes place in darkness. As a result, the lighting [or backlighting] of signs will need consideration.
- j. Landscaping. In general, landscaping is undertaken to meet the requirements of both local ordinance, joint use/joint development property owners, or for noise abatement purposes with adjacent property. It has not been established that the presence or absence of landscaping influences Park-and-Ride customer decision-making. Where landscaping is required, consideration should be given to both attractiveness and the cost of ongoing maintenance.

k. Maintenance. The maintenance of the facility often becomes the most important consideration once the lot is operational. The condition and appearance of the facility must be maintained at the highest level to attract new customers, assure its continued use by existing riders, and preserve good relations with the site or adjacent property owners. As a result, ongoing maintenance costs need to be considered in the design process.

A variety of methods are available to provide ongoing maintenance:

- Site owner -- partly or fully funded by RTA
- Dedicated or part-time RTA staff
- RTA subcontract with a third party

Typical facility maintenance areas should include the following:

- Periodic inspection/quality assurance
- Landscaping/mowing
- Sweeping/trash removal
- Lighting
- Signage
- Passenger waiting/concession areas -- general cleaning/washing
- Snow and ice removal
- Security systems
- Pavement repair

Inspection of the site during the first few months of operation should provide a basis for determining the frequency of required maintenance activities in order to meet quality standards.

Standard Design Specifications. Physical layout and geometry will vary from site to site. However, standard technical specifications for the architectural and engineering elements of the facility design should be developed by the Engineering and Construction Department. These specifications can be adapted to each individual site in keeping with the constraints and limitations imposed by the type of use [joint versus exclusive] and the physical layout. These specifications should include the key design elements discussed in the preceding sections.