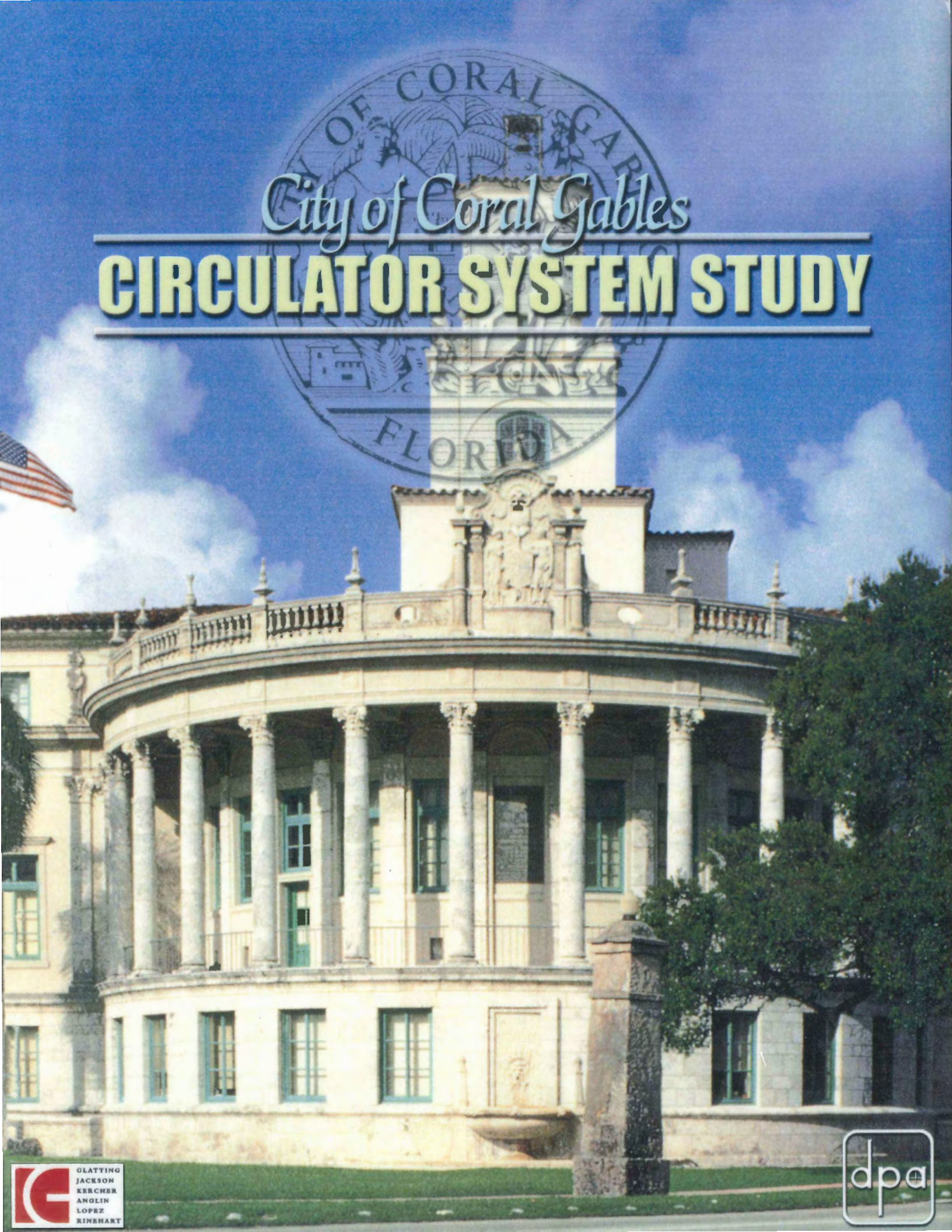
City of Coral Gables
CIRCULATOR SYSTEM STUDY
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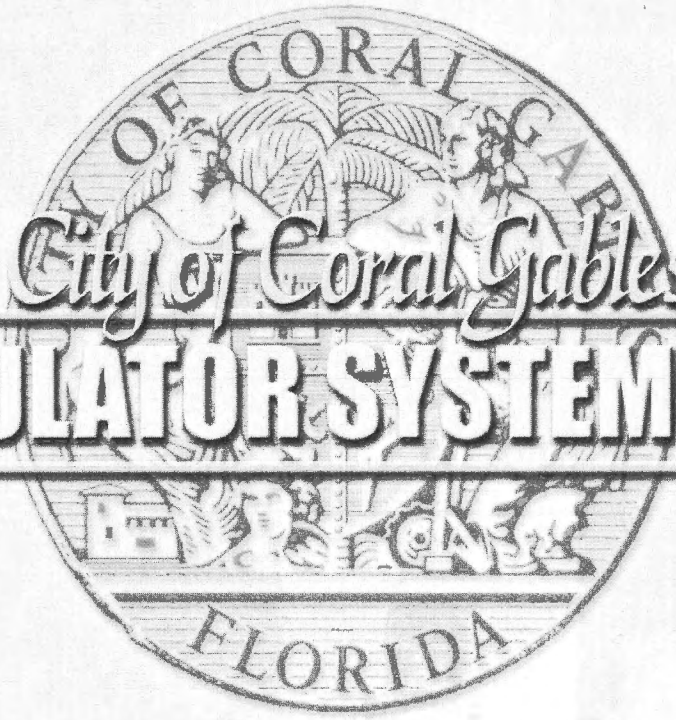

City of Coral Gables
CIRCULATOR SYSTEM STUDY

prepared by:

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in association with

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May 2001

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EXECUTIVE SUMMARY

The City of Coral Gables has requested a feasibility study of a proposed transit circulator along the Ponce de Leon Boulevard corridor which would provide connectivity to the Downtown/Miracle Mile area, SW 8 Street, and the Metrorail. There is an interest in encouraging non-auto travel, particularly for local employees within the Central Business District (CBD) of the City. General planning objectives for this area include creating a more pedestrian friendly environment and alleviating the existing traffic congestion and parking deficiencies within the CBD.

The City's Downtown Parking Study identified deficiencies that will only worsen in the future. Downtown employees now occupying parking spaces at or near their offices would be able to use the circulator to travel to restaurants, other offices, and retail stores without using their automobiles.

The main characteristics of the proposed circulator system are as follows:

- The main spine of the circulator service would be the "Full Route" running along Ponce de Leon Boulevard from the Douglas Road Metrorail station in the south to Douglas Entrance (SW 8 Street) in the north.
- In order to make Metrorail an attractive commute option, full route frequencies of approximately 10-12 minutes should be maintained during peak periods. Off-peak headways on this full route will be approximately 12-15 minutes.
- The full route would be supplemented with high frequency (5-minute) service in the segment between Ponce De Leon Circle and Madeira Avenue.
- Electric-hybrid vehicles are recommended for this circulator ranging from 22-feet to 30-feet in size. A fleet of five vehicles is recommended, as four vehicles are needed to provide high-frequency lunchtime service.
- Other routes and/or route extensions may be considered in the future once the basic recommended system is well established. These may include extended service to the Riviera District, a new route to service the high-density residential areas west of City Hall, and service linking remote/satellite parking facilities to the CBD.

A circulator of this relatively short length requires closely-spaced, conveniently located stops in order to attract a high number of riders. The central portion of the high-intensity area would require the closest spacing of stops since the majority of boardings and deboardings would take place in this area. Closely-spaced stops would maximize the convenience of the service as well as spread out (and hence make more efficient) the boarding process.

The costs of the total circulator system were estimated. A vehicle size of 25 feet is assumed because it could well handle projected loads while still exhibiting the flexibility of a smaller vehicle. A fleet size of five vehicles is assumed. The initial cost for a hybrid-electric system is approximately $1,510,000, which includes $1,400,000 for the vehicles, $50,000 for shelters, signs, etc., and $60,000 for road reconstruction.

Operating costs assume arrangements to use a nearby storage and maintenance facility: $150,000 per year. Additionally, vehicles operating costs would be $450,000 annually. A planning-level estimate of $600,000 for total annual operating cost would be appropriate.

The available funding sources for these types of projects are numerous for both capital and operating expenses. A mixed scenario of funding will assist the City with this circulator system. Typically this would be a combination of federal, state, county, and local sources. The city is now ready to pursue specific funding commitments. It may be advisable to assign a key individual to lead this effort and coordinate implementation as the system's "Local Champion or Torch Carrier".

1.0 INTRODUCTION

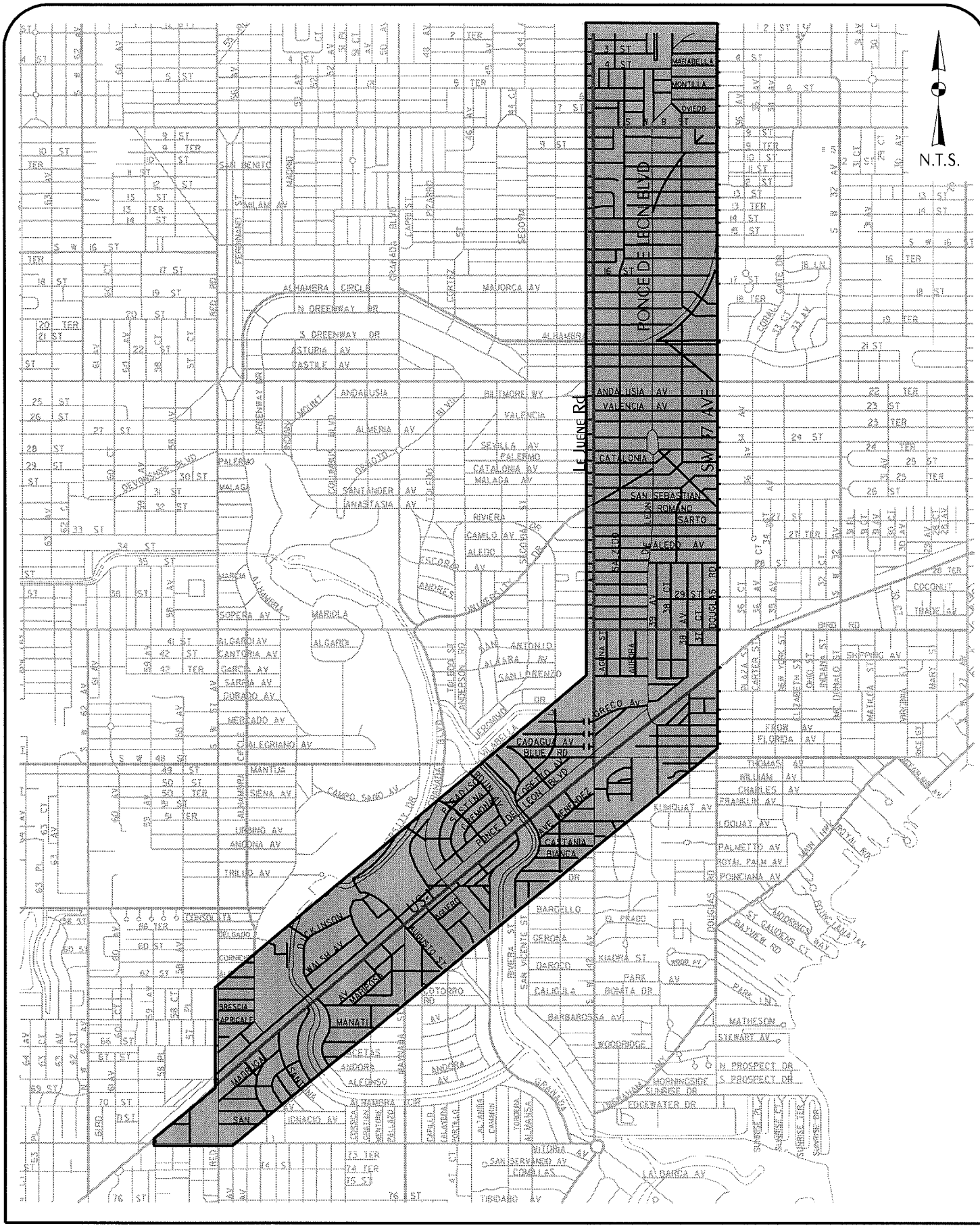
1.1 Project Background

The City of Coral Gables has requested a feasibility study of a proposed transit circulator along the Ponce de Leon Boulevard corridor which would provide connectivity to the Downtown/Miracle Mile area, SW 8 Street, and the Metrorail (see Exhibit 1 for location map). There is an interest in encouraging non-auto travel, particularly for local employees within the Central Business District (CBD) of the City. General planning objectives for this area include creating a more pedestrian friendly environment, and alleviating the existing traffic congestion and parking deficiencies within the CBD.

The interest is predicated on local observations and needs that have been confirmed by previous studies. This interest has been fueled by the overwhelming success of numerous transit circulators throughout the United Stated and Florida. A few notable examples are: Palo Alto, California; Chattanooga, Tennessee; and locally, South Miami Beach. In general, the success of these systems is due to their ability to address specific community needs, desires, and concerns.

1.2 Study Objective

The objective of this study was to perform a feasibility study of the implementation of a transit circulator system in the Downtown Coral Gables area. In general, a feasibility study: identifies or confirms the demand or level of interest in such a service; establishes the service parameters to fulfill the need; estimates the capital and operating costs; and identifies potential funding sources to assess the potential ridership, the expected general costs, and other impacts of implementing a circulator system in and around Downtown Coral Gables. The study also provides recommendations regarding the circulator services.



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dpa	PROJECT: CITY OF CORAL GABLES CIRCULATOR SYSTEM STUDY	TITLE: LOCATION MAP	EXHIBIT No. 1

1.3 Study Methodology

The data collection and analysis presented in this report were in accordance with the scope of work determined for this study by the City of Coral Gables, Department of Public Works. Recommendations of the study Advisory Committee were incorporated within this study (see Appendix A for Committee members).

2.0 STUDY AREA

2.1 Existing Transit Service

Information regarding existing transit services within the City of Coral Gables was obtained from Miami-Dade Transit Agency (MDTA). The north-south routes through the City are 37, 42, 52, 56, and J. The east-west routes are 8, 24, 40, and 72. Five routes connect the CBD to the Douglas Road Metrorail station: 37, 40, 42, 72, and J. Two routes connect the CBD to the University Metrorail station: 52 and 56. Headways are generally 30 or 60 minutes. Route 8 has a headway of 10-20 minutes during peak hours, Route 24 is 15 minutes, and Route J is 20 minutes. MDTA does not maintain stop-specific ridership information for its routes. Very minor changes in route alignments through the City have occurred over the past 5 years. The existing routes are shown in Exhibit 2. General route information is included in Appendix B.

2.2 CBD Needs and Potential Market

Extensive data collection was completed during this feasibility study. Recent traffic impact studies and the City's Parking Study Report (March 2000) were reviewed (see Appendix C). The traffic studies reviewed included new developments at 121 Alhambra Plaza, 245 Andalusia Avenue, and the First Union Center on Ponce de Leon Boulevard between Andalusia Avenue and Valencia Avenue. Alternatives to traffic circulation within the downtown area have been proposed and/or recently implemented. The purpose for these changes is to make the downtown area a more pedestrian friendly environment. Miracle Mile was narrowed from a 6-lane roadway to a 4-lane roadway with a median and left turn bays. The same cross-section is being planned for Ponce de Leon Boulevard between Alcazar Avenue and Ponce Circle.

The City's parking study looked at both private and public parking facilities in and around the CBD. A parking deficiency has clearly been identified. It is anticipated that the deficiency will only worsen in the future, especially in the Miracle Mile area. Downtown employees now occupying parking spaces at or near their offices would be able to use the circulator to travel to restaurants,

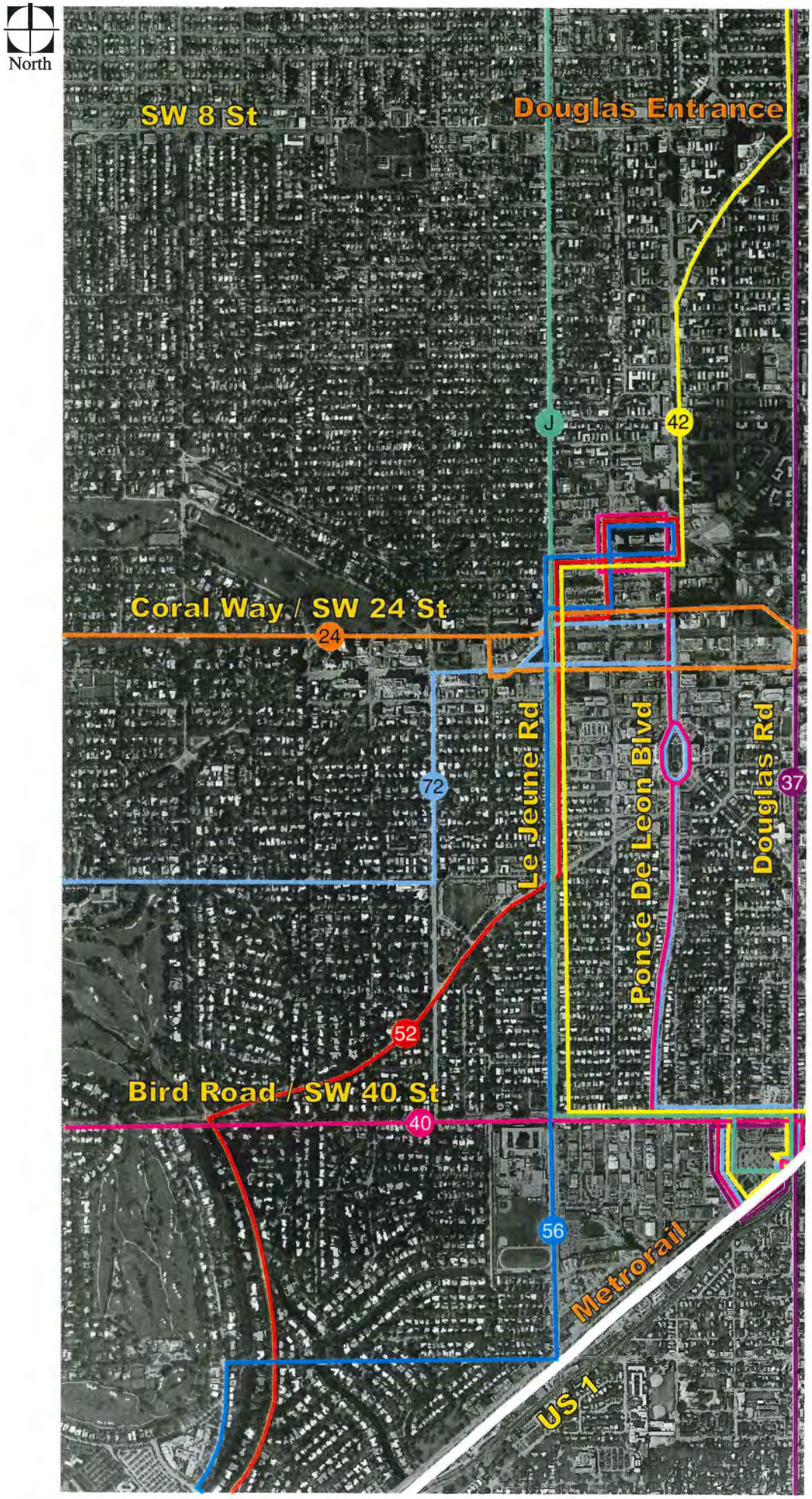

Exhibit 2: Existing MDTA Routes

other offices, and retail stores without using their automobiles, thus helping alleviate traffic and parking deficiencies at or near the CBD/Miracle Mile area. Several groups in the area have expressed an interest and/or the need for such a system.

The interest in a circulator for the CBD area had been previously gauged by two surveys commissioned by the city. The surveys, conducted in 1994 and 1996 by Behavioral Science Research, in fact confirmed a high level of interest for a circulator system. At that time, and even on subsequent surveys, such service was referred to as a "trolley". This is the name that residents of the area relate to when talking about the system.

In general, the previous surveys found:

- "... there is ample evidence supporting the establishment of and intra-CBD trolley/shuttle service."
- "substantially increase the use of Metrorail by CBD office employees."
- " ..... reduce ..... the number of cars coming into the CBD each day ....."
- " ..... reduce the competition for on-street metered parking in the CBD ....."

Major activity centers and employers within the City were identified in order to get an overall picture of the locations/concentration of downtown employees. Eighteen major employers along the proposed circulator corridor were surveyed about their employees' transit needs. The typical hours of operation were between 7:00 AM and 5:00 PM. It was estimated that the circulator would have greater use during the day than for commuting to/from work. One-third of the employers do not provide free parking for their employees. Up to 30% of employees must rely on street parking during work hours. The survey and its summary of results are included in Appendix D.

In addition to the employer surveys, downtown pedestrians were also surveyed. A questionnaire was prepared to identify a pedestrian's opinion about a new circulator service and their perception about using it. Surveys were conducted by bilingual interviewers on Miracle Mile during lunchtime (11:00 AM - 1:00 PM) and dinnertime (6:30 PM - 8:30 PM), and on the Alhambra Circle area

during lunchtime only. The pedestrians surveyed were chosen randomly. A total of 264 pedestrians were surveyed. The primary purpose of most pedestrian trips was for lunch or dinner (37%), followed by recreation (19%). Nearly 60% of those surveyed stated that the circulator could be used for their activity. Over 90% of pedestrians would be willing to walk five blocks or less to a circulator stop.

3.0 OPERATING OPTIONS

3.1 Existing Circulators

Existing circulators within Miami-Dade County were reviewed for this study (see Appendix E). Additionally, other selected cities outside of Florida were found to have circulator systems with desirable characteristics. The focus of each review was on operational / system characteristics, equipment, maintenance, costs, and funding (see Exhibit 3 for a tabular summary and Section 5.0 for funding details).

One transit circulator reviewed was the City of North Miami Beach mini-bus service. Information collected from local employers was included as part of the planning process of the transit service. This privately maintained circulator primarily serves the elderly citizens in the area. The routes are activity specific (i.e., shopping, doctors' offices, etc.), therefore, routes vary daily but closely follow existing MDTA routes. Routes for special events at the McDonald Center and the Victory Auditorium exist on a reservation basis. This transit service is free to its riders. Originally, federal money was granted through the FDOT to partially fund this service, and the County matched these federal funds. Now, the City completely funds this service.

Another transit circulator within the County is the City of Miami Beach Electrowave. Information collected from local employers was also included as part of the planning process of this transit service. The Electrowave circulator serves all citizens in the area. The routes and hours of operation were determined based on the peak periods of areas of heavy vehicle and pedestrian traffic. Electrowave routes and stops closely follow existing MDTA routes. A two-way route was implemented because a loop would be too long time-wise. This transit service was initially free to its riders but now it has a low-cost fare of 25 cents per trip. City, state and federal monies are being used fund this service. Federal funds included the Congestion Mitigation/Air Quality Program (CMAQ) and some local funding is obtained through advertising and concurrency mitigation fees.

Exhibit 3
City of Coral Gables
Circulator System Study

Other Circulator Systems' Characteristics

	Miami Beach	Brickell	Chattanooga	Aventura	North Miami Beach
Type of Vehicle	Electric	Gas / Diesel	Electric	Gas / Diesel	Gas / Diesel
Days/Hours of Operation	Everyday 8 AM - 4 AM, varies	Mon-Sat 6:30 AM - 6:30 PM	Everyday 6 AM - 10 PM, varies	Mon-Sat 8:45 AM - 5:30 PM	Mon-Fri 8 AM - 6 PM
Headways	10-12 min	15 min	5 min	1-1.5 hours	3-4 hours
Fares	$0.25/trip	$0.25/trip	free	free	free
Annual Operating Cost/Vehicle	$175,000	$200,000 (est)	$200,000	$69,250 *	$109,000
Funding	public	public	public	public	public
Operator	public	public	public	private	private
Ridership	1.25 million/year	n/a	1 million/year	49,000 in 2001 153,000 since Jan. 1999	15,000/year

* 4-vehicle shuttle system is contracted out to Coach Bus Service for a total of $277,000 per year.

A third transit circulator included for this study is the City of Aventura Municipal Transit System. Surveys were distributed to various residential areas to collect information for the planning stages of this service. Also, two public hearings were held to solicit comments. Three routes with 60 minute headways were established for north, central, and south parts of the City. The three routes overlap at the Aventura Mall for easy transfer. This was a logical point for transfers to/from the Miami-Dade and Broward County transit systems as well. The City contracts out its transit service to reduce initial capital costs and assure flexibility in increasing or decreasing service when appropriate. The City completely funds this service.

The newest transit circulator within the County is in the Brickell area of downtown Miami. Information was gathered from the Downtown Development Authority, business people, and the residents of the area, all of which support the circulator. With the local input, the loop-route was established from the Brickell Metromover/Metrorail station to Coral Way, Brickell Key, along Bayshore Drive and back to the station. The system will run for a one-year trial period before changes and/or expansion of service occurs. Currently, the circulator runs daily, except Sunday, and has a 15-minute headway. The County is providing one regular (non-electric) bus and paying a part of the operating costs through the Job Access program.

A successful circulator system in another part of the United States is in the city of Palo Alto, California. This free shuttle has two routes. The first serves residential areas, libraries, community centers, and commercial districts as well as connecting to the mass transit system. The second route operates during the peak commute hours and coordinates with the rail transit system. It also serves the local high school. A portion of the funding for the system was through area Air Quality grants. Local corporate sponsorships are encouraged.

Another shuttle transit service is located in Chattanooga, Tennessee. This free system is operated by the local public transit authority. It has been running since May 1992, and the fleet now consists of 18 electric buses with an average of 4 to 8 vehicles in operation at one time. Currently, the circulator runs daily except for Thanksgiving and Christmas. A 5-minute frequency is maintained

along the three mile route through downtown. The annual cost for the system is $1.2 million. Some federal grants were obtained for this service, including the "Access to Jobs" program.

3.2 Special Needs

Miami-Dade County was contacted for information regarding transit for those with special needs and for the elderly. The County offers reduced fares to both of these groups. It also has a separate reduced fare pass for only the elderly called the Golden Pass. On average, reduced fare riders comprise approximately 9.5% of total transit riders and, in addition, the Golden Pass riders account for approximately 10% of total ridership. It is assumed that these special needs characteristics for the City's circulator should most probably reflect those of Miami-Dade County as a whole.

The proposed circulator service will be required to comply with the Americans with Disabilities Act (ADA). The system will need to accommodate wheelchairs. Pedestrian facilities leading to the circulator stops may need to be evaluated for ADA compliance (i.e. sidewalks, curb cuts, traffic signal push buttons, etc.).

3.3 Routes/Alignments

Exhibits 4 through 7 illustrate route options, their conceptualization, and potential future extension, overlaid on a base aerial of the Coral Gables area. Under this scenario, the main spine of the service would be the "Full Route" running from the Douglas Road Metrorail station in the south to Douglas Entrance (SW 8 Street) in the north along Ponce de Leon Boulevard (see Exhibit 4). This route would provide continuous service between Coral Gables employment areas, which are primarily concentrated within one or two blocks (i.e., less than ¼-mile) of Ponce de Leon Boulevard. This ¼-mile distance represents a walk of approximately 5 to 7 minutes, and is an accepted industry standard for comfortable walking distance to a connecting transit service.

A closer look at the aerial photograph highlights the distribution of employment and commercial activity throughout the corridor. In effect, four distinct commercial areas can be identified (see Exhibit 5). The corridor (and the City) is centered upon the largest and most concentrated of these

Exhibit 4: Full Route

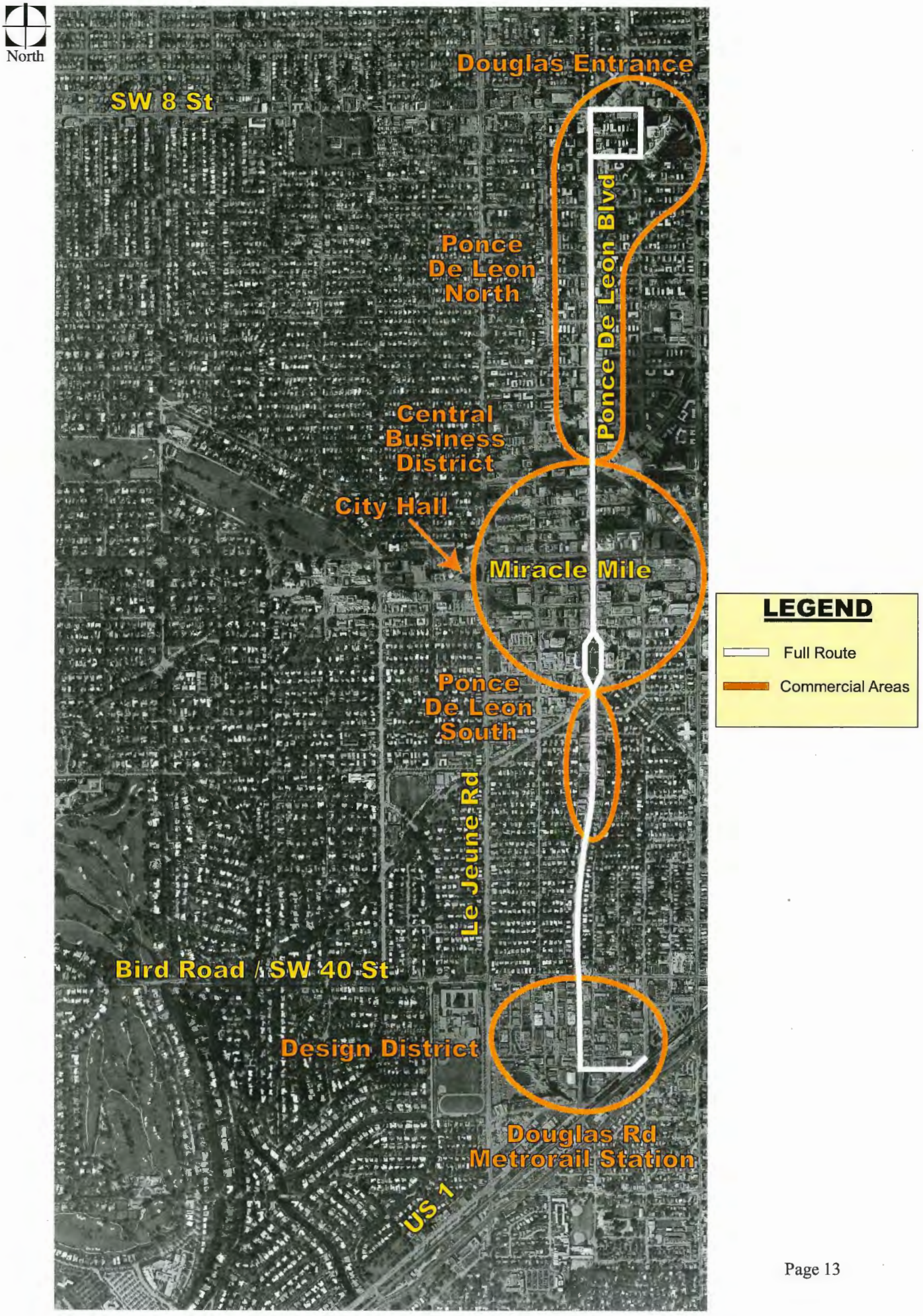

Exhibit 5: Commercial Areas

areas, the CBD, which is focused at the intersection of Ponce de Leon Boulevard and Miracle Mile. Throughout this area, commercial development extends a full two blocks deep from Ponce de Leon Boulevard and consists of numerous high-rise towers in addition to traditional one- and two-story commercial space. It is within this area that the highest concentration of restaurants is found within Coral Gables.

North and south of the central business district (as defined here) along Ponce de Leon are two supporting employment areas where the commercial development ranges, generally, from one building to one block deep. The fourth distinct commercial district in Coral Gables is the under-construction Design District adjacent to the Douglas Road Metrorail station, which is destined to become a second major focus for the City.

These district boundaries help to identify the market for the "High-Frequency Lunchtime Route" illustrated in Exhibit 6. This leg would allow very high-frequency service in the area of highest concentration of employees, retail-establishments and restaurants. High frequencies are extremely important for lunchtime travel because anyone using the service during lunchtime must allot travel time for trips both *to* and *from* their lunch destinations, making them very sensitive to frequency of service. With the southern terminus for the lunch route at Ponce de Leon Circle and the northern terminus in the area of Madeira Avenue, many portions of the South Ponce de Leon District and the North Ponce de Leon District would be well within walking distance of the high-frequency lunch service, while still being directly served by vehicles running the full route at approximately 12-minute frequencies (see Section 3.4.3).

Shown in Exhibit 7 are several potential future extensions of the system assuming success on the initial route. While the initial route would serve the primary purposes of providing a Metrorail connection and a lunchtime circulator for local employees, the highlighted extensions would serve different goals: to provide University personnel with convenient access to Downtown Coral Gables, particularly Miracle Mile; to provide convenient access to the Riviera District; and, to connect Miracle Mile, Riviera District, and surrounding attractions with main concentrations of the

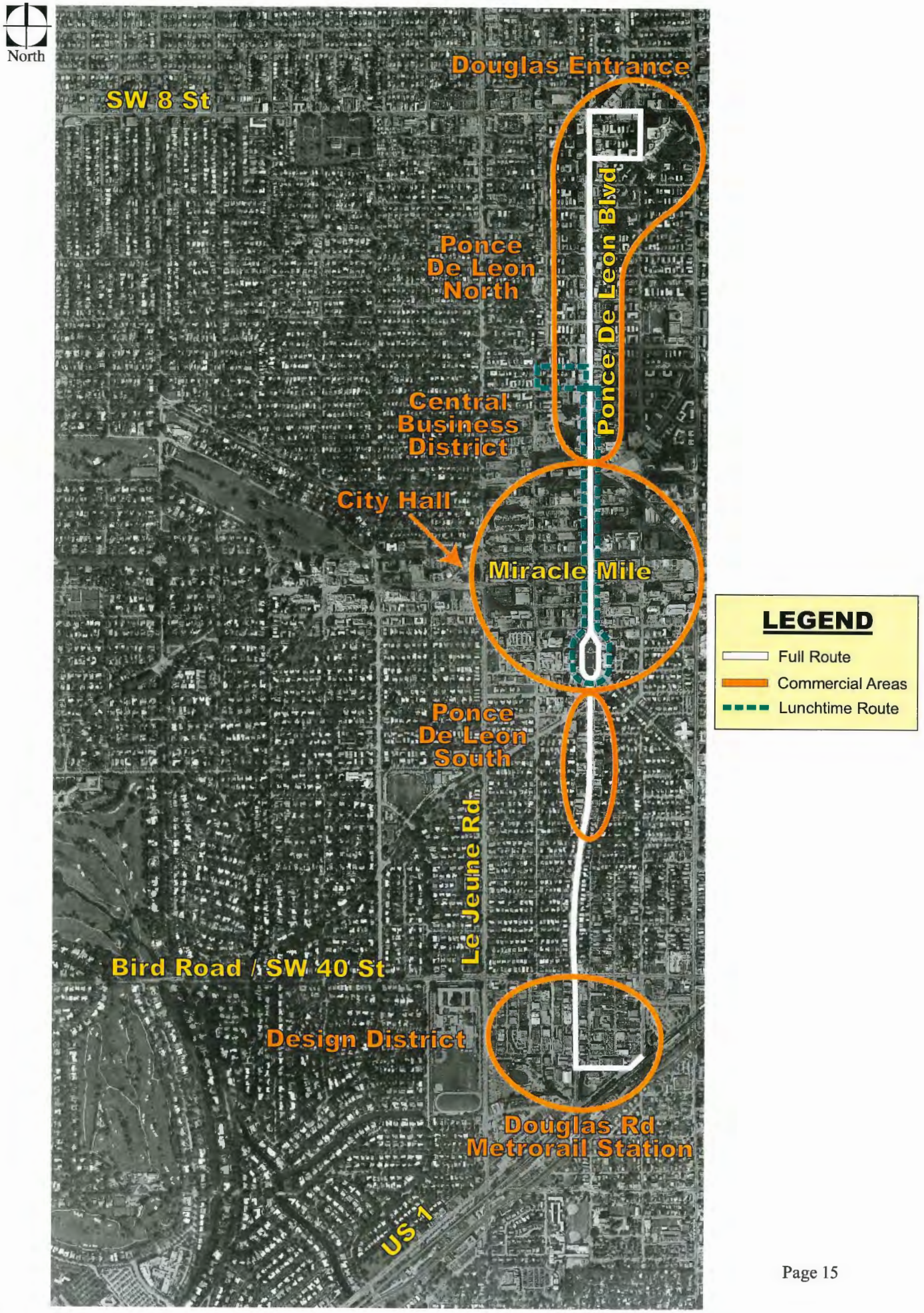

Exhibit 6: Lunchtime Route

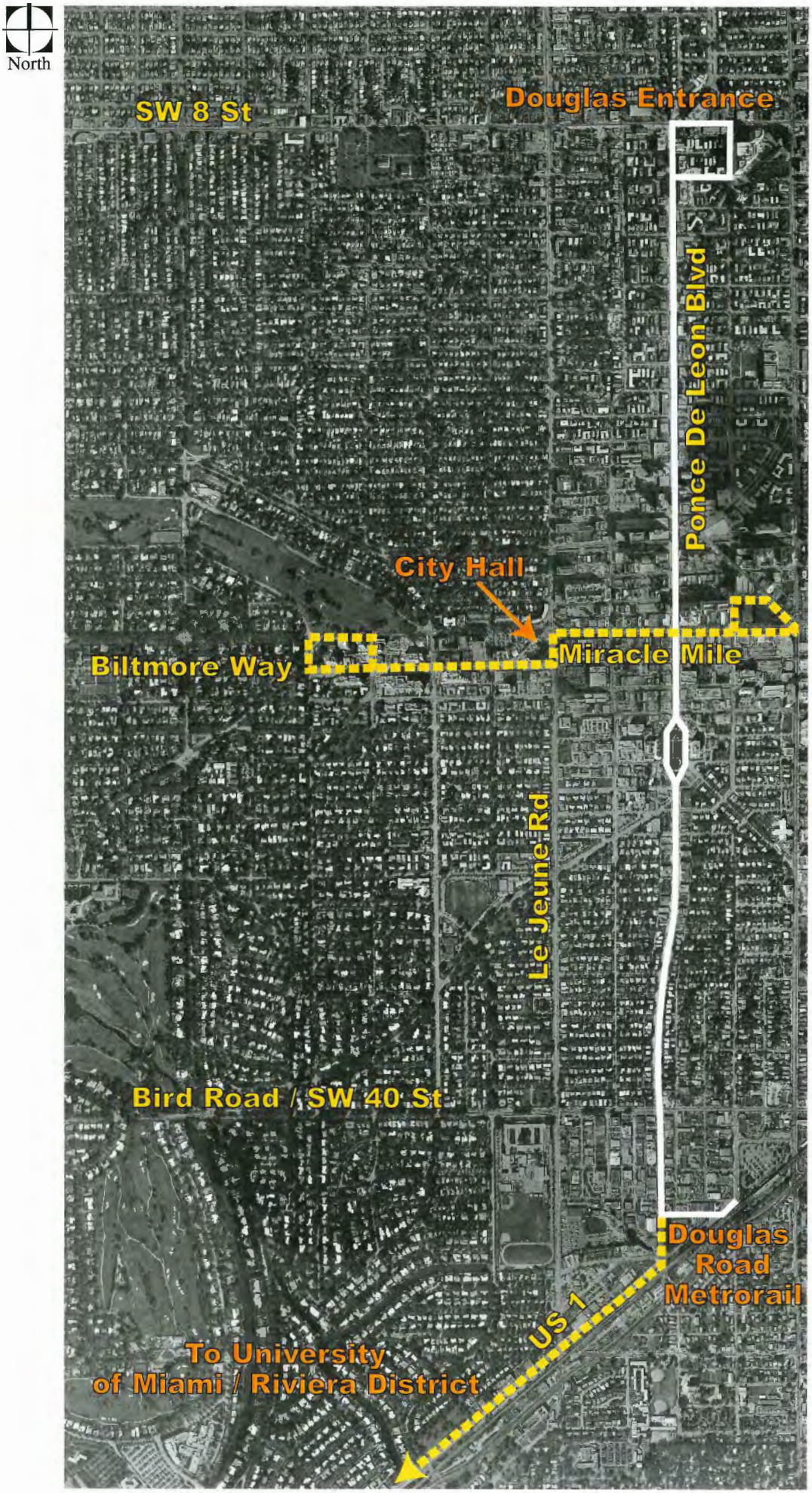

Exhibit 7: Potential Future Extensions

Coral Gables residential population, particularly the elderly. Yet another possible expansion of the system would be to link initial or future routes with remote/satellite parking facilities. This can effectively increase and/or supplement the parking supply in the CBD core.

3.4 Operating Options

One of the most important characteristics of a successful transit circulator is high service frequency. Time spent waiting for a bus has been identified as the most loathed portion of a transit journey, so it is important where possible to keep wait time to a minimum. The following conceptual operations plan is designed to maximize frequency during critical periods while not requiring an uneconomically large fleet of circulators to be running at all times.

3.4.1 Stop Locations

A circulator of this relatively short length requires closely-spaced, conveniently located stops in order to attract a high number of riders, since the distance that people are willing to walk to catch the circulator is usually shorter than the distance they wish to ride it. The central portion of the high-intensity area would require the closest spacing of stops since the majority of boardings and deboardings would take place in this area. Closely-spaced stops would maximize the convenience of the service as well as spread out (and hence make more efficient) the boarding process.

Areas north and (especially) south of the central business district, because they are less commercially developed, would experience fewer boardings and deboardings than the central district but would still require relatively closely-spaced stops to attract riders. However, in order to not impair travel time through these sectors, circulators would only stop at locations where there are people waiting or where they are signaled to stop by an onboard patron. A system of stops similar to, if not directly coinciding with, the present MDTA distribution of stops along Ponce de Leon Boulevard, would be conducive to efficient operations as long as circulators stop "on demand" rather than at every signed location. This system consists of stops spread approximately every 2 blocks for most of the run and every 1 to 1.5 blocks within the central business district.

Given that much of the area between the CBD and Metrorail consists of residential than offices or retail establishments, the demand for stops along this portion of Ponce de Leon Boulevard would be relatively low, creating a near "express" service from Metrorail to Miracle Mile. Nonetheless, in order to provide good service to the potential residential customers in this area, on-demand stops should still be located every several blocks.

3.4.2 Boarding Process

If the circulator is provided as a free service, boarding and deboarding would be very quick and efficient, as patrons would be able to board through either the front or back doors (if multi-door vehicles are used) without having to take time paying fares. Circulator systems of this type are generally the most well-patronized because they offer the promise of quicker service in addition to zero fares. In some cases, the time savings achieved by offering free service can offset the need to acquire an additional vehicle or hire an additional driver.

3.4.3 Peak Commute Period

In order to make Metrorail an attractive commute option, the Coral Gables circulator should provide reasonable connectivity with Metrorail trains. With Metrorail frequencies at one train every six minutes in each direction during peak periods, frequencies of approximately 10-12 minutes should be maintained to provide adequate service, meaning that each vehicle would serve the riders of two or three Metrorail trains. Frequencies of 12 minutes would allow the circulators to run at a set schedule coordinated with the arrival and departure of Metrorail trains.

According to travel time runs performed between March 8 and March 29, 2001 (see Appendix F), the peak runtimes from one end of the corridor to the other (Douglas Road Metrorail to Douglas Entrance and vice versa) range from 9 to 12 minutes (assuming an extra minute for turnarounds at the route's endpoints). For circulator operations with the distribution of stops and patrons as described in Section 3.4.1 and the efficient boarding process discussed in Section 3.4.2,

approximately one minute per mile must be added to the total runtimes to adequately take into account peak boardings and discharge. This makes for a conservative overall runtime estimate of 15 minutes each way per vehicle. In order to provide consistent 10-12 minute headways, three vehicles would be required to run the route during the peak periods.

3.4.4 Lunchtime

Most employees have one hour for lunch and may be unwilling to risk spending any more than a total of about ten minutes of it waiting for the circulator. Considering that circulator users would need to catch the circulator *twice* during their lunch periods, headways of 5 minutes or less would be required to provide highly desirable service.

The total run times for the circulator as sampled, again assuming extra time for the turnaround at each end but acknowledging a lesser layover (due to fewer boardings) at the southern terminus (Metrorail) than during the peak commute periods, and adding time for stops along the route, are approximately 12 minutes during the lunch hour. With four vehicles, a maximum frequency of 6 minutes could be attained assuming all vehicles continue to serve the full route. However, again acknowledging that Metrorail ridership is not as high as during the peak periods (as reflected by their 15-minute midday headways), it is clearly unnecessary to provide 6-minute frequency to the Metrorail station. As a result, it is very reasonable to run just two vehicles on the full route—providing 12-15 minute frequencies to Metrorail—and dedicate additional vehicles to a scaled-back lunchtime short route.

A logical configuration of such a short route is illustrated in Exhibit 6. Given the presumed high occurrence of boardings and deboardings during the lunch period in the CBD, and high lunchtime traffic levels, a conservative travel time estimate of six minutes should be assumed for this segment. Using two vehicles on this shortened route, coordinated with the two on the full route, consistent headways of four minutes on the critical lunchtime segment could be maintained (i.e., three vehicles in each direction per 12 minutes).

Because some southbound vehicles would terminate at Ponce de Leon Circle instead of Metrorail, it is imperative that the final destination of all vehicles is clearly posted on the vehicle and announced by the driver upon arrival at stops. However, because the routes overlap, a rider mistakenly using the short route can transfer to the long route as needed.

3.4.5 Off-Peak Midday and Evening

Travel demand is clearly not as high during off-peak weekday periods and weekends as they are during weekday peak commute and lunch periods. Metrorail's service is scaled back during these times to reflect this, with 15-minute weekday off-peak frequencies and 20-minute weekend frequencies.

As a result, service on the Coral Gables circulator during off-peak times on weekdays should be scaled back to closely match those on Metrorail. Given a 12-minute one-way route time during off-peak periods, allowing for stops and turnarounds, two vehicles could easily provide 15-minute headways to match those of Metrorail. With no major traffic tie-ups, a six-minute "break" and "catch up" period would be available after each circulator circuit, meaning that the circulators can be run according to a strict schedule, responding to the Metrorail schedule, with considerable leeway for absorbing delays. Weekend circulator service seems hardly justified given the lower levels of office employees present in the area, less traffic congestion and the amount of available parking for visitors. Weekend circulator service, therefore, (after consultation with the Advisory Committee) is not recommended.

Circulator schedules should thus be set with the goal of minimizing the wait time for the circulator (when arriving in Coral Gables) and for the train (when departing), without requiring the patron to "rush" to make the connection. A 3-minute stagger between train arrival and circulator departure and vice versa is generally ideal for the transit consumer, as the transfer is quick yet comfortable.

During most of the midday off-peak period, the arrival of the northbound and southbound trains at the Douglas Road station is separated by only two minutes; for example, the northbound train

arrives at 10:08 AM and the southbound at 10:10 AM. The next trains in each direction are 10:23 AM and 10:25 AM respectively. If the total circulator one-way run times could be kept at 12 minutes or less, thereby guaranteeing a six-minute layover at the Metrorail station, then the circulators could be timed to arrive at the station 2-3 minutes before the departure of the northbound train and leave 2-3 minutes after the arrival of the southbound train, which would entail minimal wait times for connections in either direction.

3.5 Vehicular/Staffing Requirements

As discussed in Sections 3.4.3 through 3.4.5, the service characteristics vary significantly by time of day, ranging from a requirement of two vehicles (and two drivers) during the off-peak periods to four vehicles (and four drivers) during the lunch rush. Exhibit 8 shows a conceptual staffing plan that organizes groups of drivers into shifts and provides the required overlap at the appropriate times to handle peak service requirements.

7 AM to 9 AM	9 AM to 11 AM	11 AM to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 7 PM	7 PM-9 PM FRIDAY ONLY
2 DRIVERS						
1 DRIVER		1 DRIVER				
				2 DRIVERS		

Exhibit 8: Sample Weekday Staffing Arrangement

Generally, it is customary to purchase one additional vehicle as a spare above what is needed during times of heaviest service. In this case, a fleet of five vehicles would be recommended, as four vehicles are needed to provide high-frequency lunchtime service. The primary reason for acquiring a spare vehicle is to allow the periodic overhaul of one vehicle at a time without disrupting service. A spare vehicle also allows further additional service during rare occasions such as special events or festivals as needed.

In order to save capital costs, a fleet of four vehicles could be sufficient if an agreement can be worked out with another local provider to allow the sharing of vehicles during heavy maintenance periods. Because the Miami Beach peak service period (nights and weekends) does not coincide with the Coral Gables weekday lunchtime peak, Miami Beach might be a logical partner for such an arrangement. Considering Miami Beach maintains a larger fleet than would Coral Gables, the leasing of vehicles for night or weekend use in Miami Beach for special events or to replace out-of-service vehicles could create an additional source of revenue for the Coral Gables system.

3.6 Vehicle Type

The main capital expenditure for the circulator system will be the purchase of vehicles. While economics is a major factor to consider in the selection of vehicles, also important is the capacity, noise level, pollution factor, and overall image. The following sections describe several vehicle characteristics and options that could provide appropriate service to the Coral Gables route.

3.6.1 General Vehicle Parameters

Since relatively high-frequency service will be maintained at all times the circulator is in use, full-size vehicles will not be required. Rather, vehicles ranging from 22-feet to 30-feet in size would be sufficient to handle peak loading requirements so long as high service frequencies are maintained. These vehicles can generally carry 20-25 seated passengers and another 15-20 standees.

One important reason to use short vehicles to provide the circulator service rather than their full-size counterparts is to ensure a good fit with the local context. Larger vehicles, especially when run at high frequencies, are often viewed as intrusions by those who do not use the service. As illustrated in Exhibit 9, short vehicles are just slightly larger than a standard SUV vehicle and are hence less likely to cause opposition to their presence. Shorter vehicles can also make tighter turns and traverse narrower lanes, both important on urban routes requiring frequent turnarounds.

Exhibit 9: Size Comparison

For maximum boarding and de-boarding efficiency, two-door vehicles are recommended to avoid funneling all patrons through the same entrance/exit. As described previously, the efficiency of this operation would be maximized if the service was provided free of charge, as patrons would be able to board through either door.

3.6.2 Power Sources

Several power sources are now commonly available for vehicles of this size. Electric vehicles, popularized in locales such as Chattanooga and Miami Beach, are now commonly produced and competitive in price to standard diesel-powered short vehicles. Pure electric vehicles require a slightly higher capital outlay than do electric-hybrid vehicles because they require a charger and a facility in which to store and operate it. Electric-hybrid vehicles have a generator onboard powered by a traditional fuel source such as gasoline, but nonetheless operate primarily on electric power.

The advantages of either electric vehicle technology over traditional diesel power are threefold: lower pollutant emission; quieter operation; and smoother acceleration and deceleration. The first two advantages—cleaner emissions and quieter operation—are often very important in pedestrian-oriented town centers like Coral Gables. Most electric vehicles have virtually zero emissions, making their presence very acceptable to people walking and dining outside. Smoother acceleration and deceleration are important to the circulator's potential users, as a comfortable ride is often a key factor in the attractiveness of the service. This is particularly important in situations where

occasional standees will have to be accommodated. Exhibit 10 shows electric vehicles in operation in Chattanooga, Miami Beach, Santa Barbara, and Los Angeles, respectively.

Standard diesel circulators are slightly cheaper than electric vehicles and are also in widespread operation. Exhibit 11 shows a photo of a diesel-powered short bus operated by Miami-Dade County Transit, along with a size comparison of yet another style circulator and a standard transit bus.

A diesel-powered circulator is presently entering service in Brickell. Whether diesel-powered or electric, the appearance of the circulators can be designed to fit into a particular community context, either through thematic designs as in Miami Beach or through a standard recognizable paint scheme as in Chattanooga.

3.7 Ridership Estimates

Coral Gables consists of a large amount of office space, with a large percentage of which is centrally located in the downtown area. For the type of service being proposed, this proliferation of office space presents a very large target market. As discussed earlier, the targeted users for the initial service are the city's vast numbers of daytime weekday employees, due to the vast impacts that a successful program could have on relieving traffic and freeing lunchtime parking spaces for more-distant users.

According to Miami-Dade Transportation Model estimates for the year 2000, approximately 40,000 employees work within approximately ¼-mile in either direction from Ponce De Leon Boulevard (i.e., the central spine of the proposed transit service), or roughly between LeJeune Road to Douglas Road from SW 8 Street to Dixie Highway (traffic analysis zones 712 through 724). To the north and south of the CBD, these employees are clustered even closer to Ponce De Leon Boulevard as the commercial areas quickly taper off to residential areas. As ¼-mile is the industry-accepted standard for reasonable walking distance to a circulator service of this type, virtually the entire 40,000 employees are within the proposed service area.

Chattanooga

Miami Beach

Santa Barbara

Los Angeles

Exhibit 10: Electric Vehicles in Operation

MDTA Short Bus

MDTA Full Size & Circulator Buses

MDTA Circulator Bus

MDTA Full Size Bus

Exhibit 11: MDTA Vehicles in Operation

3.7.1 Peak Commute Market

Except for a tiny fraction of these 40,000 employees who work within walking distance of the Douglas Road Metrorail station, virtually the entire group is subject to the benefits of the peak commute service. Presently, Miami-Dade Transit operates five bus routes that connect to the Douglas Road Metrorail station and travel north-south through Coral Gables at least as far as Aragon Avenue. These buses, their main routes through town, and their approximate peak headways are as follows:

Route 37: Douglas Road, 20-30 minutes
Route 40: Ponce De Leon Avenue (to Alcazar Avenue only), 15 minutes
Route 42: LeJeune Road/Ponce De Leon Avenue, 45-60 minutes
Route 72: Ponce De Leon Avenue (to Aragon Avenue only), 20-30 minutes
Route J: LeJeune Road, 20-30 minutes

The proposed peak commute period service on the Coral Gables circulator is one bus every ten minutes. There are five main reasons why this service has the potential to attract riders to Metrorail who do not already use Miami-Dade buses to reach their destinations:

a. The consistent ten-minute frequencies proposed for the shuttle are more easily sustained than those for the above Miami-Dade transit routes because each of the above are part of much longer transit routes where the potential for delay is substantially greater than that for a "self-contained" Coral Gables route.
b. Each of the five existing bus routes is long and operated as its own entity, so a consistent spread of service between the Douglas Road Metrorail station and Coral Gables is not the highest scheduling priority.
c. The Coral Gables circulator would provide consistent continuous service through the centroid of the target employment areas. In effect, the routes that run along LeJeune Road and Douglas Road only conveniently serve (according to the industry standard of ¼-mile comfortable

walking distance) approximately one-half of the stated target area. The routes that terminate at Alcazar and Aragon Avenues also only serve a fraction of the total target market.

d. The circulator would pick up and drop off customers always at the same location at the Metrorail station rather than at multiple bus bays.
e. The image of the circulator would be entirely different than that of the transit buses. While, nationally, standard transit buses have achieved the unfortunate (and generally unjustified) reputation of being unreliable, noisy, and dirty (less so in Miami than in other markets), the circulator would be promoted as something entirely different from day one. The image to be pursued would be one of a quiet, clean, smooth-running "shuttle" that is smaller than its standard transit counterpart and allows for efficient boarding and deboarding.

Because the Metrorail trip already incurs a cost, the additional minor incremental cost of a transfer, or the lack thereof, is unlikely to make a large difference in ridership (unlike the proposed lunch service, which will be discussed in the next section). However, the reliability, consistency, directness of service, and positive image that is attainable with a new circulator could indeed attract new riders to transit.

The majority of transit patrons who currently ride the buses along LeJeune Road and Douglas Road likely do so because their ultimate destinations are located within these corridors or because they are "captive" rather than "choice" riders. Presumably most users of the current buses time their arrival on the train to coincide with the schedule of their bus. Under these circumstances, the consequences to these riders of missing their usual train could be a significantly long wait for the next bus or a long walk to/from another route. The circulator service would be designed to *not* require patrons to memorize the schedule or take the same train every morning.

With a target area of 40,000 employees, even a very conservative attraction rate of 0.2% would draw 80 new transit users. The benefits would be 160 fewer peak-period automobile trips per day and 80 fewer long-term parking spaces needed within the city. While more riders could potentially be attracted, this conservative figure is used because the Metrorail/circulator combination would not generally offer a trip that is *faster* than driving, except from considerably long distances where

cumulative traffic congestion could outweigh the time it takes to access Metrorail and transfer to the circulator. Most of the choice commuters who would likely be attracted to the service would be those that live near a Metrorail station and who are, for one reason or another, turned off by the existing bus connection alternatives into Coral Gables from the Douglas Road Metrorail station.

3.7.2 Lunchtime Peak

Unlike the commute periods, the lunchtime shuttle could offer considerable time savings to users, as the process of seeking and finding a short-term parking space in the vicinity of the lunch destination is often a very time-consuming process. The circulator, operated at four-minute headways through the highest concentrations of businesses, would offer a quick trip through the centroid of the restaurant district, eliminating uncertainty from the lunch trip.

As such, the ridership estimates for the lunchtime circulator, for which there is currently no frequent MDTA bus alternative, will be higher than those for the peak commute periods. In Exhibit 6, it can be seen that within the high-frequency circulator's range is the major area of concentration of restaurants and businesses, basically serving the CBD, the southern portion of the Ponce De Leon North District, and the northernmost portions of the less-dense Ponce De Leon South District. According to Miami-Dade Transportation Model estimates for the year 2000, this area comprises approximately 29,000 employees (traffic analysis zones 716 through 722).

Considering that employees in the very central portions of this service area (2-3 blocks from Miracle Mile) are unlikely to use the shuttle because they have quick walking access to numerous dining establishments, approximately half of these 29,000 employees should be subtracted (due to the high concentrations at the very core) to identify a reasonable figure for target market, or approximately 14,000 employees.

Because these 14,000 employees are located in the areas where the circulator could provide notable travel time savings versus driving (and vying for a short-term parking space), there is great potential for a very high percentage of these "target" employees to use the service. Considering that many

employees bring lunch, many skip lunch, and many refuse to use transit of *any* kind, an estimate of a 3% to 5% attraction rate from this prime target population would be sufficiently conservative for an initial service plan. Using the low end of the range (3%) yields an estimated 420 lunchtime users, or 840 lunchtime *rides* (since users from the target area will almost always ride the circulator both to and from lunch). Assuming 4-minute headways through the most critical two hours of the lunch period (i.e., 11:30 AM to 1:30 PM), this would represent an average loading per vehicle of 28, which is comfortable for the user and very successful for the operator.

It must also be taken into account that the full route would continue to run at twelve-minute headways, connecting the rest of the shuttle corridor to the CBD, and also offering service to the Village of Merrick Park, consisting of a concentration of restaurants. While twelve-minute headways are not attractive enough for the typical harried spontaneous lunchgoer, they could be successful in attracting the more casual user for a lunch trip or more frequent users who are familiar with the operating schedule of the full-route buses.

The parking spaces currently used by these 420 or so targeted potential riders are very valuable to the merchants in the Miracle Mile area and can be put to more efficient use if the shuttle can accommodate short-distance users. In other words, these spaces can be used by people wishing to travel to the Miracle Mile area from longer distances, from the edges of Coral Gables and from beyond the city's borders. These include people who are presently turned off by the difficulty of finding parking spaces in downtown Coral Gables and hence travel to places closer to them or places with more available parking.

In essence, the Coral Gables circulator will allow the city to provide more available parking for these potential visitors without having to actually construct new parking spaces. As a result, the businesses in the Miracle Mile area can cater to a larger market without having to bear the expense of additional parking facilities, and without having to threaten the prized atmosphere of the district by creating an overabundance of parking and its associated traffic.

3.7.3 Annualized Ridership Estimates

The specifically targeted populations generate an estimated 1,000 "base boardings" (840 lunch peak boardings and 160 peak commute boardings). On top of these would be supplementary classifications of riders, including:

a. Visitors to Coral Gables, who could be attracted to the service if advertised in tourism literature;
b. Coral Gables employees who could be attracted to the circulator/Metrorail in the middle of the day, especially for meetings in downtown Miami;
c. Downtown Miami employees who have business in Coral Gables during the course of the day;
d. Lunchtime users outside the service area of the high-frequency route but still served by the full route at twelve-minute headways;
e. Coral Gables employees who have business in other parts of Coral Gables during the course of the day;
f. Shoppers destined for Miracle Mile or the Village of Merrick Park, or shuttling between them (a convenient connection between these two destinations could help make Coral Gables a more complete daylong destination for shoppers and families);
g. Residents who live in close proximity to the service corridor.

Because they are not being specifically targeted, it is difficult to assess how many of these "bonus riders" would be attracted until the service is actually started. For now, it is sufficient to acknowledge that their numbers would be small in comparison to those of the targeted base riders, but large enough to justify the consistency of service and to fill the gaps between peak uses.

So, using the calculated base boardings as an estimate of daily ridership, recognizing that the bonus riders add an additional safety margin into the prediction, a conservative annual ridership figure of 250,000 boardings is attained, allowing for holidays and other slow periods. This is a ridership level that is very competitive for systems of this size and purpose and, if attained, would classify the circulator as an overwhelming success.

For comparative purposes, successful systems such as the Chattanooga system run eight vehicles and have one million riders per year, and the South Beach Electrowave runs 11 vehicles and get 1.25 million riders average.

3.8 Fare Structure

Two alternatives were analyzed regarding fare structure for the proposed circulator service – a 25-cent fare and free. The benefits of having a minimal fare are the deterrence of having unwanted patrons on the vehicles and having additional revenue for the system. On the other hand, having a minimal fare would entail additional administrative expenses for collection and accounting that would reduce the net fare revenues. An example worth mentioning is the South Beach Electrowave. The city estimates that the Shuttle service ridership fell by 40% upon changing the system from no-fare to 25 cents. Higher fares would result in even more drastic impacts on ridership and would likely undermine the basic justification and feasibility of the system. Miami Beach had to absorb the cost of modifying the buses with fareboxes, additionally, there were increased operating costs ($30,000 per year) required by the collection, accounting, and security required by a revenue generating operation. In the case of the Coral Gables circulator, a 25-cent fare would generate $62,500. While such revenue can help defray some of the operational costs of the system, it would be only a small fraction (+/- 10%) of the total operational costs. Other circulator studies have estimated that the potential fare revenues would defray only 5% to 8% of the operating costs.

Having a fare may also affect the operation of the system. If the circulator is delayed even a few seconds at each stop, the overall travel times for the route would increase and become less reliable. To compensate, more vehicles would be needed to maintain the desired headways.

The benefits of having a free circulator system are also apparent. Patronage would most probably be higher, reflecting the City's desire for a successful system. Also, there would be less potential for operational delays along the route. The desired headways would therefore be easier to maintain. Finally, the expected revenue from a reasonable fare of 25 cents would be very limited when compared to the total operational costs.

After comparing the alternatives, and consulting with the study advisory committee, it was determined that a free system would be most beneficial to the City.

4.0 COSTS

The circulator project will entail significant capital and operating costs. Whereas the operating costs could vary considerably based on several factors (see Section 4.2), the capital costs are fairly consistent with those of similar operations throughout the country. The following section looks at capital costs assuming several different scenarios, and the subsequent section estimates operating costs.

4.1 Capital Costs

Capital costs consist of the following:

a. Vehicles;
b. Charging/refueling equipment and maintenance facilities, depending upon the technology;
c. Circulator stop signs and shelters;
d. Roadway improvements needed for operation, including circulator pullouts and provisions for handicapped access.

Vehicle procurement is generally the largest of these costs. The cost ranges for vehicles of four separate technologies are given below. The lower end of the cost range represents the approximate cost of a 22-foot vehicle while to upper end represents that for a 30-foot vehicle.

Diesel:	$150,000 to $200,000
All-Electric:	$200,000 to $300,000
Hybrid-Electric:	$250,000 to $350,000
Fuel Cell:	$600,000 to $700,000

Diesel vehicles are the lowest in price because they are based on standard technology and are available from numerous suppliers.

All-electric vehicles operate on batteries that need to be recharged at least on a daily basis, but have no supplemental on-board fuel storage requirement. Therefore, they have a relatively low maintenance cost, smooth and consistent ride characteristics, and usually an "all-low-floor" configuration for easy and quick boarding and deboarding. The downside is that they need to be recharged on a consistent basis (generally every 50 to 100 miles of operation) and require the additional capital cost of recharge or "rapid recharge" equipment. This is typically $50,000 to $100,000 for a small fleet depending on the types of chargers desired.

Hybrid-electric vehicles operate on batteries charged automatically by a small motor powered by an on-board fuel source, typically gasoline or diesel fuel. The operating characteristics of hybrid-electric vehicles fall between those of diesel and all-electric vehicles, closer to those of all-electric vehicles. Smooth operation, negligible emissions, and low-floor designs are all typical of hybrid-electric vehicles. The operating ranges are three to four times greater (approximately 200 to 300 miles) than those of all-electric vehicles.

Fuel cell vehicles represent a state-of-the-art technology currently under development. They are available from only a few suppliers in limited designs but are included here for cost comparison purposes only. These vehicles are powered by a fuel cell unit fueled by hydrogen, converted from methanol or gasoline or stored in a compressed state. The operation is very clean with the only emission being warm steam. The disposal of batteries is not an issue. Fuel cell vehicles have a range comparable to that of hybrid-electric vehicles and are extremely fuel efficient. However, because they are not yet commonly produced, their higher prices put them well out of the range of what most transit providers can afford. In addition to the cost of the vehicles, facilities for storing and handling hydrogen fuel can cost on the upwards of $200,000 for a small fleet.

In terms of stations and stops, each vehicle technology would incur the same costs. For a system of about 10 stations including shelters, benches, signs, and lighting, plus other supplementary stops consisting only of signs, a cost of approximately $150,000 will be incurred. Most of the amenities of the system can be eliminated to reduce costs to $5,000 or less (i.e., using just signs to mark all stops), although the image of the system would suffer accordingly. Some intermediate solution

might be most applicable to Coral Gables - having four or five main stops consisting of the major amenities and the remainder consisting of signs only.

In the main congested areas, a parallel parking lane is available on Ponce de Leon Boulevard for the circulator to pull into. Each circulator pull-out would cost the community approximately four parking spaces. However, with low-floor vehicles, multiple doors, and a "free-of-charge" operation, the boarding and deboarding process would be very quick and not necessarily require that the circulator pull out of the traffic lane.

Handicapped and elderly access is a major consideration, however, and requires curbside boarding for best operation. But instead of requiring circulators to pull out to the curb, another reasonable option would be to pull the curb out to the vehicles, by constructing extended bulb-outs at the stop locations, at least in the central area. These would likely cost only one parking space per stop instead of three, but would incur an approximate construction cost of $10,000 per bulb-out. This approach would make irrelevant the question of how the circulators would reenter the traffic stream and hence maximize circulator performance.

Not considering the fuel cell alternative, the costs of the total circulator system for the various remaining technologies are listed below. A vehicle size of 25 feet is assumed because it could well handle projected loads while still exhibiting the flexibility of a smaller vehicle. A fleet size of five vehicles is assumed.

	Diesel	**All-Electric**	**Hybrid-Electric**
Vehicles	$850,000	$1,150,000	$1,400,000
Re-Fueling Infrastructure	-	$100,000	-
Shelters, Signs, etc.	$50,000	$50,000	$50,000
Road Reconstruction	$60,000	$60,000	$60,000
TOTAL	**$960,000**	**$1,360,000**	**$1,510,000**

With a small fleet of small vehicles, it is unlikely that a dedicated storage facility would need to be constructed. Rather, space for storage and routine maintenance could occur within a city-owned parking garage (perhaps the one to be built at the Douglas Road Metrorail station), and major periodic maintenance can take place at a Miami-Dade Transit facility if a cooperative agreement can be arranged. For these reasons, these costs are added into the calculations as annual operating costs rather than as up-front capital costs.

4.2 Operating Costs

As previously discussed, operating costs vary significantly with several factors. The most significant of these pertain to regional specifics, such as energy costs and labor costs. For this reason, the operating costs determined for this project are based upon a per-hour operating figure as calculated by the Center for Urban Transportation Research specifically for studies of circulators in the Miami area. This figure—$45 per hour—includes estimated labor costs, standard on-going maintenance, and occasional major maintenance. Other estimated costs, such as the "rental" costs described above and variations in the different technologies, are discussed after a general cost estimate is established.

Based on recommendations from the Study Advisory Committee there is a strong preference to set initial operating hours at 7 AM to 7 PM Monday through Thursday, and 7 AM to 9 PM on Fridays, a schedule which fully accommodates our main targeted markets of potential users. The number of vehicles required for each of the specific service periods occurring during the day are:

7 AM to 9 AM:	3 vehicles
9 AM to 11 AM:	2 vehicles
11 AM to 2 PM:	4 vehicles
2 PM to 4 PM:	2 vehicles
4 PM to 6 PM:	3 vehicles
6 PM to 7 PM:	2 vehicles
7 PM to 9 PM (Fridays only):	2 vehicles

Totaled, this service arrangement is equal to 172 vehicle-hours per week. Assuming a nearby storage and maintenance facility, deadhead time (i.e., travel to and from the facility before and after each vehicle shift) would amount to an additional 15 to 30 vehicle-hours per week, for a conservative total estimate of 200 vehicle-hours. Applying the $45 per hour figure yields a weekly cost of $9,000, or an annual cost of approximately $450,000 assuming that holidays are equivalent to weekends in that there will be no service initially.

The "rental arrangements"—i.e., arrangements for use of maintenance facilities and storage space (if not city-owned)—can vary widely in price based on the success of negotiations. They are likely to amount to one-quarter to one-third of the cost of day-to-day operations of the fleet, or approximately $100,000 to $150,000. Discussions with potential partners should be initiated before a grant application is registered in order to ensure an accurate estimate of total yearly operating costs.

For the most part, the operating costs of the various technologies will be very similar. Because of their limited range and need for frequent recharge, the all-electric vehicles are likely to have a slightly higher operating cost due to the extra time and extra travel involved to frequently access the recharging station. However, these costs will be partially offset by the less wear and tear on fewer total moving parts within the vehicles. In the context of the overall price, any increment will be very small, so a planning-level estimate of $600,000 for total annual operating cost for any of the three technologies would be appropriate.

Based on the projected annual ridership figure of 250,000, this annual cost translates into a cost of $2.40 per boarding, which is very competitive for systems of this type and would generate economic benefits that outweigh the costs. Although a detailed cost-benefit analysis is not part of this report, these benefits include: better use of existing short-term parking spaces, increasing the total number of potential patrons with convenient access to Coral Gables businesses; decrease in traffic levels during the peak periods; preservation of Coral Gables' character by enhancing

accessibility without constructing new parking spaces; and, decrease in air-pollution caused by automobiles.

The hiring of an outside contractor to provide these services could reduce the overall total operating cost. Although this may entail offsite (i.e., outside Coral Gables) storage and greater deadhead times—and perhaps limit flexibility in using custom-built vehicles—potential cost savings due to labor arrangements, economies of scale, and experience would be worth exploring. Potential providers should be approached with an outline of the proposed service characteristics for an estimate of the cost and a detailed listing of the services that would be included.

4.3 Recommended Strategy

Even though hybrid-electric vehicles have higher capital costs than diesel and all-electric vehicles, their use is recommended for several reasons:

a. Due to their longer operating ranges and use of standard fossil-fuels for constant recharging purposes, hybrid-electric vehicles are more flexible operationally than all-electric vehicles, meaning that the aggressive operating schedules established previously would be less likely to be disrupted by recharging requirements;
b. As also documented previously, hybrid-electric vehicles have numerous advantages over diesel buses, pertaining to noise, emissions, smoothness, and image, which are very important in a sensitive valued environment like Coral Gables;
c. The differences in price are not in operating costs but capital costs, which is a one-time outlay for which there are numerous opportunities for funding assistance;
d. The state of Florida has already performed a statewide bidding process for hybrid-electric vehicles. Advanced Vehicle Systems (AVS), which supplies the popular hybrid-electric vehicles for Chattanooga, Tennessee, has been declared the winner. As a result, Coral Gables would not have to research and perform its own formal bidding process, but could rather go straight to AVS under their arrangement with the state, saving time and additional cost.

In terms of flexibility, timeliness of implementation, and ability to achieve the stated goals of the system, the hybrid-electric vehicle is the most promising technology. Conservative estimates of $1.5 million for capital costs and $600,000 per year for operating costs can be assumed.

5.0 FUNDING SOURCES

The available funding sources for these types of projects are numerous for both capital and operating expenses. These sources can be broken up into the following groups:

a. State/Federal Targeted Assistance Programs
b. Federal Indirect Funding Sources
c. Local Initiatives

The "targeted" assistance programs are those for which transit improvements is one of the stated primary goals. The indirect funding sources are funds generally dedicated toward other objectives (such as community development or preservation) but for which transit improvements could be a major element. Local initiatives include the entire range of local funding options for local match and ongoing operating funds. Programs under each of these categories are listed and briefly described in Exhibit 12.

The of the most promising option for obtaining up-front capital costs is the program formerly known as the Florida "Fast Track" Program. This funding source is now known as the Transportation Outreach Program (FS 339.137), which can pay for up to 100% of the capital costs of the project. The goals of increasing Florida's business climate and economic competitiveness would certainly be within the range of objectives for the circulator project, which would build on Coral Gables' already successful attainment of international corporate headquarters by assisting the accommodation of more such businesses in the future. This funding source, however, should be carefully monitored because it is possible the next year may be its last.

EXHIBIT 12
City of Coral Gables
Circulator System Study

POTENTIAL FUNDING SOURCES

State/Federal Targeted Assistance Programs	purpose/description	type	max. amount	max. time
State				
Transp. Outreach Program (formerly "Fast Track")	improve state business climate	capital	100%	-
Public Transit Service Development Program	demonstrate new techniques	operating	50%	3 years
Transit Corridor Program	mobility goals along state corridors	cap., ops.	100% (cap.)	unlimited
Federal				
Surface Transportation Program (STP)	increase transit capital	capital	80%	-
FTA Urban Area Formula Transit Grants	transit in areas over 200,000 pop.	capital	10%	-
FTA Major Capital Grant Program	provide new/replacement buses	capital	100%	-
Congestion Mitigation/Air Quality Program (CMAQ)	reduce urban congestion/pollution	cap., ops.	100%	3 years
Access to Jobs and Reverse Commute Grant	connect welfare recipients to jobs	cap., ops.	50%	-
Federal Indirect Funding Sources	**purpose/description**	**type**	**max. amount**	**max. time**
Trans./Community System Preservation Program	preservation through transportation	capital	limited funding	-
Transportation Enhancement Program (TEP)	ped/bike circulation; beautification	capital	80%	-
Community Development Block Grants (CDBG)	economic development support	cap., ops.	na	-
Local Initiatives	**purpose/description**	**type**	**max. amount**	**max. time**
Special Taxing Districts	improve access to businesses	operating	100%	indefinite
Savings from Truncated MDTA Bus Routes	reoraganize MDTA bus routes	operating	minimal	indefinite
Private Contributors	local residents/community boosters	cap., ops.	100%	limited
Parking Revenues	connect parking to businesses	operating	100%	indefinite
Local Option Gas Tax	dedicate gas tax to alternatives	operating	small	indefinite
Impact/Mitigation Fees	developers pay for services	operating	small	indefinite
Circulator Revenues	customer charge	operating	10%	indefinite
Advertising	fees for ads in/on buses/shelters	operating	large	indefinite
Local Partners	organizations (utilities, tourism)	cap., ops.	less than 50%	indefinite
Leasing of Vehicles to Other Jurisdictions	lease vehicles when not needed	operating	10-20%	indefinite
Local Public Arts Program	provide funds/designs for shelters	capital	less than 50%	-
Private Partnerships	sponsor vehicles; provide shelters	cap., ops.	10-20%	indefinite

Source: Glatting Jackson; Miami Surface Shuttle Services, June 2000

The Federal Surface Transportation Program could likewise fund a large portion (up to 80%) of the capital cost of the project, though the process of obtaining these funds is largely political and could take several years. All transit capital projects are eligible for this program, the funds for which are distributed by Congressional earmark or to the local transit agency on a formula basis. Although the Federal share of this program is limited to 80%, the remaining 20% can be met through local *or state* resources.

Other major capital sources are the Florida Transit Corridor Program and the Federal Transit Administration (FTA) Major Capital Grant Program. However, the former is geared primarily toward state roadway corridors and the latter is very political, so neither should be counted on as a serious potential funding source. Additionally, the future of Congestion Mitigation and Air Quality (CMAQ) funds are uncertain in Florida's future.

In terms of operating expenses, the most promising assistance program is the Florida Public Transit Service Development Program. This program is aimed at the implementation of innovative technologies or services as a demonstration for possible application elsewhere. The type of high frequency service envisioned for the lunchtime and peak periods, together with the use of electric circulators that have dual doors for quick loading and unloading, would strongly argue that the circulator is an excellent candidate for the program. However, because this program (with very few exceptions) can only pay for 50% of the costs for a maximum of three years, local sources must be tapped to make up the difference.

Promising local sources of funding are the establishment of a special taxing district, the use of parking revenues for the project, advertising, local community partnerships, impact fees, and the part-time leasing of vehicles to other providers. A special taxing district is most likely to be effective in the longer term (i.e., beyond three years), after the benefits of the circulator—and the disadvantages of discontinuing service—can be fully observed and realized by local businesses. In the short term, it is unlikely that anything but a minor percentage of operating cost can be attained in this manner.

Parking revenues could be dedicated to the project especially if new facilities are constructed on the periphery of the route (intercept parking), and if the circulator is used by a large portion of the garage patrons. Advertising, both on the inside and outside of the vehicles, and at the shelters is a very promising revenue generator both in the near and long terms. Along these same lines, several cities with circulator-type services have had local major community partners agree to "sponsor" a vehicle, i.e., pay a large share of its operating cost in exchange for the advertising benefit of naming and/or painting the vehicle in its honor. Impact fees—involuntary contributions from the builders of new developments along the route—are a longer term potential funding source given the importance of sustained or enhanced service as parking infrastructure and traffic congestion continue to grow. Miami Beach, for example, collects traffic concurrency fees as part of their Mobility Plan for the Historic District (a Transportation Concurrency Exception Area). The Mobility Plan includes the Electrowave shuttle as part of their comprehensive plan to address traffic congestion in this area where the construction of roadway improvements is either unfeasible or undesirable given the city long range preservation goals and objectives.

Finally, since the number of vehicles needed fluctuates significantly with the time of day and day of week (including the fact that there will be no service on weekends in the near term), it is very possible that Coral Gables may be able to lease its vehicles to another local jurisdiction to help accommodate their peak requirements, particularly during heavy maintenance periods or special events. A specific example is Miami Beach, whose peak periods are completely the opposite of Coral Gables', i.e., nights and weekends rather than weekday afternoons. Leasing several vehicles to Miami Beach as needed during crunch periods can provide a substantial source of supplementary operating revenue to Coral Gables.

6.0 IMPLEMENTATION

Implementation of this circulator service can be divided into three phases. The first phase should be focused on specific costs and funding. A final cost estimate should include details such as wages and private contract negotiations for drivers and maintenance personnel. Funding should be applied for and secured based on the specific cost estimates. The second phase for implementing this system should be the final design and construction of needs roadway improvements. Included here would be the construction of sidewalks and curb ramps needed for ADA accessibility. Coordination with existing roadway projects is recommended. Also, signage and vehicle detailing should be completed during this phase. Finally, the third phase of implementation will be the actual operations of the system. Once the circulator begins running, it may take extra time and effort to get the "bugs" out during the first few weeks. After this time, the system should be fully implemented and operating smoothly. Future phases could be to extend the service to the University of Miami and/or add an east-west extension through the City. Future phases may also consider linking peripheral / satellite parking facilities to the CBD.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A feasibility study of a transit circulator along the Ponce de Leon Boulevard corridor in the City of Coral Gables has been completed. The system would provide connectivity to the Downtown/Miracle Mile area, SW 8 Street, and the Metrorail. The proposed circulator is expected to help alleviate some CBD traffic and parking deficiencies during the lunchtime hours.

The main spine of the circulator service would be the "Full Route" running from the Douglas Road Metrorail station in the south to Douglas Entrance (SW 8 Street) in the north along Ponce de Leon Boulevard. This route would provide continuous service between Coral Gables employment areas, which are primarily concentrated within one or two blocks (i.e., less than ¼-mile) of Ponce de Leon Boulevard.

In order to make Metrorail an attractive commute option, the Coral Gables circulator should provide reasonable connectivity with Metrorail trains. With Metrorail frequencies at one train every six minutes in each direction during peak periods, frequencies of approximately 10-12 minutes should be maintained to provide adequate service, meaning that each vehicle would generally serve the riders of one or two Metrorail trains. Off-peak headways on this full route will be approximately 12-15 minutes. During the lunch periods, headways of 5 minutes or less would be required to provide highly desirable service through the Miracle Mile area.

Several power sources are now commonly available for vehicles, but electric-hybrid vehicles are recommended for this system. They have a generator onboard powered by a traditional fuel source such as gasoline, but nonetheless operate primarily on electric power.

The costs of the total circulator system were estimated. A vehicle size of 25 feet is assumed because it could handle projected loads while still exhibiting the flexibility of a smaller vehicle. A fleet size of five vehicles is assumed. The initial cost for a hybrid-electric system is approximately $1,510,000, which includes $1,400,000 for the vehicles, $50,000 for shelters, signs, etc., and $60,000 for road reconstruction. Operating costs were also estimated. A planning-level estimate of

$600,000 for total annual operating cost would be appropriate for a conservative estimate of 200 vehicle-hours per week.

Because the outlook of obtaining most of the capital costs and a good portion of the short-term operating costs from state and federal sources is positive, and because the probability of success of the service based on the distribution of high-potential target markets is high, it can be concluded that the advancement of the circulator program would be a very worthwhile venture. Based on the ridership projections, the proposed high service quality, and the intermodal orientation of project, Coral Gables stands a good chance of securing funding for the project on a competitive basis.

The next steps for the city of Coral Gables are to: 1) start assembling a funding package, 2) begin detailed discussions with potential providers, and 3) plan and implement street improvements necessary to support the circulator system.

Other areas have found that one of the most effective ways to assemble a funding package is to designate an individual (a local elected official, city department head/manager or a recognized business leader) or a non-profit organization that is both interested and willing to be the "Local Champion or Torch Carrier" for the system. The mission of this individual or group is to lead the effort to find and secure the necessary funding to effect the proposed plan. Additionally, such person or group would simultaneously coordinate these funding efforts with any required technical, legal, contractual, and/or official city commission actions.

Discussions with potential operators include weighing the cost of contracting out the service based on the proposed operating plan; with a vehicle supplier; with Miami-Dade Transit, to arrange potential maintenance partnerships, to establish the interface with the Douglas Road Metrorail Station, and to examine opportunities for cooperation in jointly upgrading circulator stop facilities along the corridor; and with potential local partners for storage space, routine maintenance, and sponsorship.

Finally, the feasibility and desirability of installing bulb-outs at critical locations, so that circulators

do not have to leave the traffic stream during operation, should be discussed internally for their costs and potential time frame of installation, not to mention their auxiliary non-transit-related benefits to the community. These construction efforts should also be coordinated with the installation of signs for the circulator stops as well as any other desired system/stop amenities.

APPENDICES

A - Advisory Committee Members

B - MDTA Metrobus Routes in Coral Gables

C - References - Reports

D - Survey Summaries

E - References – Individuals/Agencies

F - Travel Time Runs

APPENDIX A

Advisory Committee Members

City of Coral Gables
Circulator System Study

Advisory Committee Members

	Name	Agency
1.	Catherine Swanson	City of Coral Gables, Development
2.	William Carlson	City of Coral Gables, Parking
3.	Eric Riel, Jr.	City of Coral Gables, Planning
4.	Robert Pearsall	MDTA
5.	Frank Baron	MPO
6.	Samuel D. LaRoue, Jr.	Disability Board
7.	Reverend Arnold Perry	Senior Citizen Advisory Board

APPENDIX B

MDTA Metrobus Routes in Coral Gables

METROBUS SERVICE IN CORAL GABLES

ROUTE	DESCRIPTION	WEEKDAY Peak HW (min.)	WEEKDAY Midday HW (min.)	Span of Service Weekday	Span of Service Saturday	Span of Service Sunday
8	Downtown Miami to FIU University Park campus via SW 8 Street.	10/20/30	15/30	5:00 am - 12:30 am	5:15 am - 11:45 pm (HW = 15)	5:15 am - 11:45 pm (HW = 20)
24	Downtown Miami to Coral Way and SW 137 Avenue via Coral Way.	15/30	15/30	5:00 am - 12:30 am	5:30 am - 12:30 am (HW = 30)	5:15 am - 10:45 pm (HW = 30)
37	South Miami to Hialeah primarily via Douglas Road and Palm Avenue.	30	30	4:45 am - 12:15 am	5:45 am - 11:45 pm (HW = 60)	6:00 am - 11:00 pm (HW = 60)
40	Downtown Coral Gables to SW 8 Street/132 Avenue primarily via Bird Road; branch to Bird Road/SW 147 Aveune during peak hours.	15/30	30	5:30 am - 11:00 pm	6:00 am - 9:00 pm (HW = 30)	5:45 am - 9:00 pm (HW = 60)
42	Coconut Grove to Golden Glades primarily via LeJeune Road.	60	60	4:45 am - 8:45 pm	6:00 am - 7:00 pm (HW = 60)	6:00 am - 7:45 pm (HW = 60)
48	South Miami to Civic Center serving Coconut Grove, Mercy Hospital and downtown Miami.	60	60	5:15 am - 8:30 pm	no service	no service
52	Downtown Coral Gables to Goulds serving South Miami, Dadeland Mall, South Miami-Dade Busway, South Miami Heights, Perrine and Cutler Ridge.	30/60	60	5:30 am - 11:30 pm	6:00 am - 11:00 pm (HW = 60)	6:00 am - 11:15 pm (HW = 60)
56	Downtown Coral Gables to MDCC Kendall campus primarily via Miller Drive; branch to Miller Drive/SW 152 Avenue during peak hours.	30/60	60	5:15 am - 8:30 pm	no service	no service
65	Douglas Road Station to the Falls and Dadeland South Station via Old Cutler Road and the Busway.	60 am / 75 pm	no service	6:50 am - 10:00 am (southbound) 1:15 pm - 5:45 pm (northbound)	no service	no service

METROBUS SERVICE IN CORAL GABLES

ROUTE	DESCRIPTION	WEEKDAY Peak HW (min.)	WEEKDAY Midday HW (min.)	Span of Service Weekday	Span of Service Saturday	Span of Service Sunday
72	Downtown Coral Gables to Miller Square primarily via Sunset Drive; branch to Kendall Drive/SW 157 Avenue during peak hours.	30/60	60	5:15 am - 9:00 pm	6:15 am - 8:00 pm (HW = 60) No service to Coral Gables.	6:15 am - 8:00 pm (HW = 60) No service to Coral Gables.
73	Miami Lakes to Dadeland South Station primarily via NW/SW 67 Avenue; branch to Miami Children's Hospital weekdays, rush hours only.	30/60	60	5:00 am - 10:45 pm	6:15 am - 8:15 pm (HW = 60) No service to Coral Gables.	9:15 am - 6:30 pm (HW = 60) No service to Coral Gables.
J	Douglas Road Station to Miami Beach primarily via LeJeune Road, NW 36 Street and Collins Avenue.	20	30	4:30 am - 12:45 am	5:30 am - 1:15 am (HW = 30)	5:00 am - 11:30 pm (HW = 60)

Source: Miami-Dade Transit Authority

Pearsall, Robert (MDT)
From: Alperstein, Steve (MDT)
Sent: Friday, March 02, 2001 4:17 PM
To: Pearsall, Robert (MDT)
Subject: Years/Changes/C.Gables

Routes 24 and 72 – Realigned service in 1995 from Miracle Mile to Aragon (westbound) and Andalusia (eastbound) between LeJeune and Douglas.

Route 72 – Extended route in 1995 from Coral Gables Bus Terminal to Douglas Road Station via Ponce de Leon Blvd.

Route 73 – Service discontinued in 1995 between SW 57 Avenue and downtown Coral Gables via Obispo Av. and Alhambra Circle. This branch of the route was realigned to Miami Children's Hospital.

Routes 40, 52, 56 - Coral Gables Bus Terminal closed in 1994, new end of line for these routes established at Alcazar and Salzedo. End of line for these routes moved to Giralda bus bay next to the Gables Grand in 1998. Due to complaints, end of line next to Gables Grand abandoned in 1999 and restored to Alcazar and Salzedo.

CORAL GABLES

CG-	1.0000	SW 37 AV/FONSECA AV	S-F: 6, 37.
CG-	2.0000	SW 37 AV/MONTILLA AV	S-F: 6, 37.
CG-	3.0000	SW 37 AV/SW 8 ST	S-F: 37.
CG-	4.0000	SW 37 AV/SANTILLANE AV	S-F: 37.
CG-	5.0000	SW 37 AV/SIDONIA AV	S-F: 37.
CG-	6.0000	SW 37 AV/MENORES AV	S-F: 37.
CG-	7.0000	SW 37 AV/ALHAMBRA CR	S-F: 37.
CG-	8.0000	SW 37 AV/MINORCA AV	S-F: 37.
CG-	9.0000	SW 37 AV/GIRALDA AV	S-F: 37.
CG-	10.0000	SW 37 AV/CORAL WAY	S-F: 37.
CG-	11.0000	SW 37 AV/SEVILLA AV	S-N: 37.
CG-	12.0000	SW 37 AV/MALAGA AV	S-N: 37.
CG-	13.0000	SW 37 AV/COCONUT GROVE DR	S-N: 37.
CG-	13.0300	SW 37 AV/E SUNRISE AV	N-F: 37.
CG-	13.0500	MERRICK WY/ARAGON AV	N-N: 24.
CG-	14.0100	PONCE DE LEON BD/CAMPINA CT	S-N: 42.

MDTA Bus Stops by District & Municipality
as of Nov. 7, 2000

CG-	14.0200	PONCE DE LEON BD/OVIEDO AV	S-N: 42.
CG-	14.0300	PONCE DE LEON BD/BOABADILLA ST	S-F: 42.
CG-	15.0000	PONCE DE LEON BD/ANTIQUERA AV	S-F: 42.
CG-	16.0000	PONCE DE LEON BD/SANTILLANE AV	S-N: 42.
CG-	17.0000	PONCE DE LEON BD/ANTILLA AV	S-N: 42.
CG-	18.0000	PONCE DE LEON BD/SALAMANCA AV	S-N: 42.
CG-	19.0000	PONCE DE LEON BD/MENDOZA AV	S-F: 42.
CG-	20.0000	PONCE DE LEON BD/MADEIRA AV	S-N: 42.
CG-	21.0000	PONCE DE LEON BD/NAVARRE AV	S-N: 42.
CG-	22.0000	PONCE DE LEON BD/ALHAMBRA CR	S-N: 42.
CG-	23.0000	PONCE DE LEON BD/ARAGON AV	S-N: 40, 42.
CG-	24.0000	PONCE DE LEON BD/SW 24 ST	S-N: 40.
CG-	25.0000	PONCE DE LEON BD/ANDALUSIA AV	S-N: 40.
CG-	26.0000	PONCE DE LEON BD/CATALONIA AV	S-N: 40, 72.
CG-	27.0000	PONCE DE LEON BD/SANTANDER AV	S-N: 40, 72.
CG-	28.0000	PONCE DE LEON BD/ROMANO AV	S-N: 40, 72.
CG-	29.0000	PONCE DE LEON BD/CAMILO AV	S-N: 40, 72.
CG-	30.0000	PONCE DE LEON BD/CADIMA AV	S-N: 40, 72.
CG-	31.0000	PONCE DE LEON BD/VISCAYA AV	S-N: 40, 72.
CG-	32.0000	PONCE DE LEON BD/CANDIA AV	S-N: 40, 72.
CG-	32.0100	PONCE DE LEON BD/BLUE RD	S-N: 56.
CG-	33.0100	PONCE DE LEON BD/STANFORD DR.	S-N: 52, 56.
CG-	34.0000	PONCE DE LEON BD/MERRICK ST	S-M: 48, 52, 56.
CG-	35.0000	PONCE DE LEON BD/DICKENSON DR	S-N: 48, 52, 56.
CG-	35.0100	PONCE DE LEON BD/ALHAMBRA CR	S-F: 48, 52, 56.
CG-	36.0000	PONCE DE LEON BD/SAN AMARO DR	S-N: 48, 52, 56.
CG-	36.0100	PONCE DE LEON BD/SW 57 AV	S-N: 48, 52.
CG-	37.0000	PONCE DE LEON BD/SW 57 AV	N-F: 48, 52.
CG-	38.0000	PONCE DE LEON BD/SAN AMARO DR	N-F: 48, 52, 56.
CG-	38.0050	PONCE DE LEON BD/S ALHAMBRA CR	N-N: 48, 52, 56.
CG-	38.0100	PONCE DE LEON BD/DICKINSON DR	N-F: 48, 52, 56.
CG-	40.0000	PONCE DE LEON BD/MERRICK ST	N-F: 48, 52, 56.
CG-	41.0000	PONCE DE LEON BD/STANFORD DR	N-N: 48, 52, 56.
CG-	42.0000	PONCE DE LEON BD/CANDIA AV	N-M: 40, 72.
CG-	43.0000	PONCE DE LEON BD/VISCAYA AV	N-M: 40, 72.
CG-	44.0000	PONCE DE LEON BD/CADIMA AV	N-F: 40, 72.
CG-	45.0000	PONCE DE LEON BD/CAMILO AV	N-F: 40, 72.
CG-	46.0000	PONCE DE LEON BD/ROMANO AV	N-F: 40, 72.
CG-	46.0100	PONCE DE LEON BD/SANTANDER AV	N-F: 40, 72.
CG-	47.0000	PONCE DE LEON BD/CATALONIA AV	N-F: 40, 72.
CG-	48.0000	PONCE DE LEON BD/ALMERIA AV	N-N: 40, 72.
CG-	49.0000	PONCE DE LEON BD/ANDALUSIA AV	N-F: 40, 72.

CG-	67.0000 SW 42 AV/CAMILO AV	S-N: 42, 56, J.
CG-	68.0000 SW 42 AV/ALEDO AV	S-F: 42, 56, J.
CG-	69.0000 SW 42 AV/FLUVIA AV	S-N: 42, 56, J.
CG-	70.0000 SW 42 AV/VELARDE AV	S-N: 56.
CG-	71.0000 SW 42 AV/SW 40 ST	S-F: 56.
CG-	72.0000 SW 42 AV/SAN LORENZO AV	S-F: 56.
CG-	73.0000 SW 42 AV/VILABELLA AV	S-F: 56.
CG-	74.0500 SW 42 AV/MENENDEZ AV	S-N: 48, 65.
CG-	75.0000 SW 42 AV/AMALFI AV	S-F: 48, 65.
CG-	76.0000 SW 42 AV/BIANCA AV	S-N: 48, 65.
CG-	77.0000 SW 42 AV/MILLER RD	S-N: 48, 65.
CG-	78.0000 SW 42 AV/BARGELLO AV	S-F: 48, 65.
CG-	79.0000 SW 42 AV/MARMORE AV	S-F: 48, 65.
CG-	80.0000 SW 42 AV/SAVONA AV	S-N: 48, 65.
CG-	81.0000 SW 42 AV/HARDEE RD	S-N: 48, 65.
CG-	84.0000 SW 72 ST/SW 42 AV	W-F: 37.
CG-	86.0000 SW 42 AV/US 1	N-N: 48, 65.
CG-	87.0000 SW 42 AV/GRANELLO AV	N-F: 56.
CG-	88.0000 SW 42 AV/SAN LORENZO AV	N-N: 56.
CG-	89.0000 SW 42 AV/SW 40 ST	N-N: 56.
CG-	90.0000 SW 42 AV/CANDIA AV	N-N: 42, 56, J.
CG-	91.0000 SW 42 AV/VISCAYA AV	N-N: 42, 56, J.
CG-	92.0000 SW 42 AV/CADIMA AV	N-N: 42, 56, J.
CG-	93.0000 SW 42 AV/CAMILO AV	N-N: 42, 56, J.
CG-	94.0000 SW 42 AV/UNIVERSITY DR	N-F: 42, 52, 56, J.
CG-	96.0000 SW 42 AV/CATALONIA AV	N-F: 42, 52, 56, J.
CG-	97.0000 SW 42 AV/ALMERIA AV	N-N: 42, 52, 56, J.
CG-	98.0000 SW 42 AV/ANDALUSIA AV	N-N: 42, 52, 56, J.
CG-	98.0100 SW 42 AV/CORAL WY	N-N: 42, 52, 56, 72, J.
CG-	99.0000 SW 42 AV/ARAGON AV	N-F: 42, 52, 56, J.
CG-	99.0100 SW 42 AV/ALCAZAR	N-F: J.
CG-	100.0000 SW 42 AV/NAVARRE AV	N-F: J.
CG-	131.0000 SEGOVIA ST/BILTMORE WY	S-F: 72.
CG-	132.0000 SEGOVIA ST/ALMERIA AV	S-N: 72.
CG-	133.0000 SEGOVIA ST/PALERMO AV	S-N: 72.
CG-	134.0000 SEGOVIA ST/MALAGA AV	S-N: 72.
CG-	135.0000 SEGOVIA ST/MALAGA AV	N-N: 72.
CG-	136.0000 SEGOVIA ST/PALERMO AV	N-N: 72.
CG-	137.0000 SEGOVIA ST/ALMERIA AV	N-N: 72.
CG-	138.0000 SEGOVIA ST/BILTMORE WY	N-N: 72.
CG-	145.0100 UNIVERSITY DR/RIVIERA DR	W-N: 52.
CG-	146.0000 UNIVERSITY DR/SEGOVIA ST	S-N: 52.
CG-	148.0000 UNIVERSITY DR/PALMARITO ST	S-F: 52.
CG-	148.0050 UNIVERSITY DR/ANDERSON RD	S-N: 52.
CG-	148.0100 UNIVERSITY DR/TOLEDO ST	S-M: 52.
CG-	148.0140 UNIVERSITY DR/CAMPO SANO	S-F: 56.
CG-	148.0150 UNIVERSITY DR/# 5000 (DOCTORS HOS)	S-N: 56.
	UNIVERSITY DR/PISANO AV	S-N: 56.

CG-	43.0000	PONCE DE LEON BD/VISCAYA AV	N-N: 40, 72.
CG-	44.0000	PONCE DE LEON BD/CADIMA AV	N-F: 40, 72.
CG-	45.0000	PONCE DE LEON BD/CAMILO AV	N-F: 40, 72.
CG-	46.0000	PONCE DE LEON BD/ROMANO AV	N-F: 40, 72.
CG-	46.0100	PONCE DE LEON BD/SANTANDER AV	N-F: 40, 72.
CG-	47.0000	PONCE DE LEON BD/CATALONIA AV	N-F: 40, 72.
CG-	48.0000	PONCE DE LEON BD/ALMERIA AV	N-N: 40, 72.
CG-	49.0000	PONCE DE LEON BD/ANDALUSIA AV	N-F: 40, 72.
CG-	50.0000	PONCE DE LEON BD/ALHAMBRA CR PZ	N-F: 42.
CG-	51.0000	PONCE DE LEON BD/NAVARRE AV	N-F: 42.
CG-	52.0000	PONCE DE LEON BD/MADEIRA AV	N-N: 42.
CG-	53.0000	PONCE DE LEON BD/MENDOZA AV	N-N: 42.
CG-	55.0000	PONCE DE LEON BD/SALAMANCA AV	N-N: 42.
CG-	56.0000	PONCE DE LEON BD/ANTILLA AV	N-N: 42.
CG-	57.0000	PONCE DE LEON BD/SANTILLANE AV	N-F: 42.
CG-	58.0000	PONCE DE LEON BD/SW 8 ST	N-N: 42.
CG-	58.0100	PONCE DE LEON BD/VERAGUA AV	N-F: 42.
CG-	59.0000	SW 42 AV/MADEIRA AV	S-N: J.
CG-	60.0000	SW 42 AV/NAVARRE AV	S-N: J.
CG-	60.0100	SW 42 AV/GIRALDA AV	S-N: J.

CG-	61.0000	SW 42 AV/CORAL WY	S-N: 42, 52, 56, 72, J.
CG-	62.0000	SW 42 AV/ANDALUSIA AV	S-F: 42, 52, 56, J.
CG-	63.0000	SW 42 AV/ALMERIA AV	S-N: 42, 52, 56, J.
CG-	64.0000	SW 42 AV/SEVILLA AV	S-F: 42, 52, 56, J.
CG-	65.0000	SW 42 AV/MALAGA AV	S-N: 42, 52, 56, J.
CG-	66.0000	SW 42 AV/UNIVERSITY DR	S-N: 42, 52, 56, J.
CG-	67.0000	SW 42 AV/CAMILO AV	S-N: 42, 56, J.
CG-	68.0000	SW 42 AV/ALEDO AV	S-F: 42, 56, J.
CG-	69.0000	SW 42 AV/FLUVIA AV	S-N: 42, 56, J.
CG-	70.0000	SW 42 AV/VELARDE AV	S-N: 56.
CG-	71.0000	SW 42 AV/SW 40 ST	S-F: 56.
CG-	72.0000	SW 42 AV/SAN LORENZO AV	S-F: 56.
CG-	73.0000	SW 42 AV/VILABELLA AV	S-F: 56.
CG-	74.0500	SW 42 AV/MENENDEZ AV	S-N: 48, 65.
CG-	75.0000	SW 42 AV/AMALFI AV	S-F: 48, 65.
CG-	76.0000	SW 42 AV/BIANCA AV	S-N: 48, 65.
CG-	77.0000	SW 42 AV/MILLER RD	S-N: 48, 65.
CG-	78.0000	SW 42 AV/BARGELLO AV	S-F: 48, 65.
CG-	79.0000	SW 42 AV/MARMORE AV	S-F: 48, 65.
CG-	80.0000	SW 42 AV/SAVONA AV	S-N: 48, 65.
CG-	81.0000	SW 42 AV/HARDEE RD	S-N: 48, 65.

MDTA Bus Stops by District & Municipality
as of Nov. 7, 2000

CG-	148.0300	UNIVERSITY DR/OP # 5000 (DOCS HOG)	N-M: 56.
CG-	148.0400	UNIVERSITY DR/BLUE RD	N-N: 56.
CG-	149.0000	UNIVERSITY DR/DURANGO ST	N-F: 52.
CG-	150.0000	UNIVERSITY DR/ANDERSON RD	N-F: 52.
CG-	151.0000	UNIVERSITY DR/PALMARITO ST	N-F: 52.
CG-	152.0500	UNIVERSITY DR/CADIMA ST	N-N: 52.
CG-	153.0000	UNIVERSITY DR/SARTO AV	N-N: 52.
CG-	160.0000	BILTMORE WY/HERNANDO ST	E-N: 24, 72.
CG-	161.0000	BILTMORE WY/HERNANDO ST	W-N: 72.
CG-	193.0000	GRANADA BD/ALTARA AV	S-N: 52.
CG-	194.0000	GRANADA BD/JERONIMO DR	S-N: 52.
CG-	195.0000	GRANADA BD/BLUE RD	S-N: 52.
CG-	196.0000	GRANADA BD/DONATELLO ST	S-N: 52.
CG-	196.0100	GRANADA BD/PISANO AV	S-F: 52.
CG-	197.0000	GRANADA BD/PONCE DE LEON BD	S-N: 52, 56.
CG-	198.0000	GRANADA BD/BENEVENTO AV	N-N: 52, 56.
CG-	198.0100	GRANADA BD/PISANO AV	N-N: 52.
CG-	199.0000	GRANADA BD/DONATELLO ST	N-N: 52.
CG-	200.0000	GRANADA BD/BLUE RD	N-N: 52.
CG-	201.0000	GRANADA BD/JERONIMO DR	N-N: 52.
CG-	202.0000	GRANADA BD/ALTARA AV	N-F: 52.
CG-	216.0000	MAYNADA ST/MADRUGA AV	S-N: 48.
CG-	217.0000	MAYNADA ST/MARIPOSA AV	S-N: 48.
CG-	226.0000	MAYNADA ST/MARIPOSA AV	N-N: 48.
CG-	227.0000	MAYNADA ST/AUGUSTO ST	N-N: 48.
CG-	235.0300	SAN AMARO DR/DELGADO AV	S-F: 56.
CG-	235.0400	SAN AMARO DR/ALBENGA AV	S-F: 56.
CG-	235.0500	SAN AMARO DR/BRESCIA AV	S-F: 56.
CG-	235.0600	SAN AMARO DR/BRESCIA AV	N-F: 56.
CG-	235.0700	SAN AMARO DR/ALBENGA AV	N-F: 56.
CG-	235.0800	SAN AMARO DR/DELGADO AV	N-F: 56.
CG-	238.0000	PISANO AV/GRANADA BD	E-N: 56.
CG-	239.0000	PISANO AV/GRANADA BD	W-F: 56.
CG-	247.0050	SW 57 AV/SW 72 ST	N-F: 72.
CG-	247.0100	SW 57 AV/VENERA AV	N-F: 72.
CG-	248.0000	SW 57 AV/BRESCIA AV	N-N: 72.
CG-	249.0000	SW 57 AV/LIGURIA AV	N-N: 72.
CG-	250.0000	SW 57 AV/MATARO AV	N-N: 72.
CG-	251.0000	SW 57 AV/ZORETA AV	N-N: 72.
CG-	252.0000	SW 57 AV/MILLER RD	N-N: 72.
CG-	253.0000	SW 57 AV/BARACOA AV	N-N: 72.
CG-	254.0000	SW 57 AV/ROBBIA AV	N-F: 72.

CG-	227.0000	MAYNADA ST/AUGUSTO ST	N-N: 48.
CG-	235.0300	SAN AMARO DR/DELGADO AV	S-F: 56.
CG-	235.0400	SAN AMARO DR/ALBENGA AV	S-F: 56.
CG-	235.0500	SAN AMARO DR/BRESCIA AV	S-F: 56.
CG-	235.0600	SAN AMARO DR/BRESCIA AV	N-F: 56.
CG-	235.0700	SAN AMARO DR/ALBENGA AV	N-F: 56.
CG-	235.0800	SAN AMARO DR/DELGADO AV	N-F: 56.
CG-	238.0000	PISANO AV/GRANADA BD	E-N: 56.
CG-	239.0000	PISANO AV/GRANADA BD	W-F: 56.
CG-	247.0050	SW 57 AV/SW 72 ST	N-F: 72.
CG-	247.0100	SW 57 AV/VENERA AV	N-F: 72.
CG-	248.0000	SW 57 AV/BRESCIA AV	N-N: 72.
CG-	249.0000	SW 57 AV/LIGURIA AV	N-N: 72.
CG-	250.0000	SW 57 AV/MATARO AV	N-N: 72.
CG	251.0000	SW 57 AV/ZORETA AV	N-N: 72.
CG-	252.0000	SW 57 AV/MILLER RD	N-N: 72.
CG-	253.0000	SW 57 AV/BARACOA AV	N-N: 72.
CG	254.0000	SW 57 AV/ROBBIA AV	N-F: 72.
CG-	255.0000	SW 57 AV/SIENA AV	N-N: 72.
CG-	256.0000	SW 57 AV/SW 48 ST	N-N: 72.
CG-	257.0000	SW 57 AV/MENDAVIA AV	N-N: 72.
CG-	258.0000	SW 57 AV/PALANCIA AV	N-N: 72.
CG-	259.0000	SW 57 AV/GARCIA AV	N-N: 72.
CG-	259.0100	SW 57 AV/ALGARDI AV	N-N: 72.
CG-	260.0000	SW 57 AV/SW 40 ST	N-F: 72.
CG-	261.0000	SW 57 AV/ALCALA AV	N-N: 72.
CG-	262.0000	SW 57 AV/MURCIA AV	N-F: 72.
CG-	263.0000	SW 57 AV/TREVINO AV	N-N: 72.
CG-	264.0000	SW 57 AV/SARAGOSSA AV	N-N: 72.
	265.0000	SW 57 AV/CATALONIA AV	N-N: 72.

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CG-	266.0000	SW 57 AV/SEVILLA AV	N-N: 72.
CG-	267.0000	SW 57 AV/SW 24 ST	N-F: 73.
CG-	268.0000	SW 57 AV/S GREENWAY DR	N-N: 73.
CG-	269.0000	SW 57 AV/OBISPO AV	N-N: 73.
CG-	501.0000	SW 8 ST/GALIANO ST	W-F: 8.
CG-	505.0000	SW 8 ST/COUNTRY CLUB PRADO	E-N: 8.
CG-	506.0000	SW 8 ST/LISBON ST	E-N: 8.
CG-	508.0000	SW 8 ST/GENOA ST	E-N: 8.
CG-	509.0000	SW 8 ST/WALLACE ST	E-N: 8.
CG-	510.0000	SW 8 ST/GRANADA BD	E-N: 8.
CG-	511.0000	SW 8 ST/MONTEREY ST	E-N: 8.
CG-	512.0000	SW 8 ST/SANTIAGO ST	E-F: 8.

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CG- 508.0000 SW 8 ST/GENOA ST                E-N:  8.
CG- 509.0000 SW 8 ST/WALLACE ST              E-N:  8.
CG- 510.0000 SW 8 ST/GRANADA BD              E-N:  8.
CG- 511.0000 SW 8 ST/MONTEREY ST             E-N:  8.
CG- 512.0000 SW 8 ST/SANTIAGO ST             E-F:  8.
CG- 512.0500 SW 8 ST/PONCE DE LEON BD        E-N:  8.
CG- 513.0000 SW 8 ST/GALIANO ST              E-F:  8.
CG- 538.0000 ALCAZAR AV/SALZEDO ST           W-N:  40, 52, 56.
CG- 549.0010 ALHAMBRA PZ/SW 42 AV            E-F:  42, 52, 56.
CG- 554.0000 ARAGON AV/PONCE DE LEON BD      W-F:  24, 72.
CG- 555.0000 ARAGON AV/SALZEDO ST            W-N:  24, 42, 72.
CG- 557.0000 SW 24 ST/N GREENWAY DR          E-N:  24.
CG- 557.0050 SW 24 ST/MADRID ST              E-N:  24.
CG- 557.0100 SW 24 ST/COLUMBUS BD            E-N:  24.
CG- 558.0000 SW 24 ST/CORDOVA ST             E-N:  24.
CG- 559.0000 SW 24 ST/GRANADA BD             E-N:  24.
CG- 559.0100 SW 24 ST/TOLEDO ST              E-N:  24.
CG- 560.0000 SW 24 ST/ANDERSON RD            E-F:  24.
CG- 561.0000 SW 24 ST/SEGOVIA ST             E-N:  24.
CG- 569.0000 SW 24 ST/SW 42 AV               W-F:  24.
CG- 569.0100 SW 24 ST/HERNANDO ST            W-F:  24.
CG- 570.0000 SW 24 ST/SEGOVIA ST             W-F:  24.
CG- 571.0000 SW 24 ST/S GREENWAY             W-N:  24.
CG- 572.0000 SW 24 ST/TOLEDO ST              W-N:  24.
CG- 573.0000 SW 24 ST/GRANADA BD             W-N:  24.
CG- 574.0000 SW 24 ST/CORDOVA ST             W-F:  24.
CG- 575.0000 SW 24 ST/COLUMBUS BD            W-N:  24.
CG- 575.0100 SW 24 ST/MADRID ST              W-N:  24.
CG- 576.0000 SW 24 ST/N GREENWAY DR          W-N:  24.
CG- 577.0000 ANDALUSIA AV/LE JEUNE RD        E-F:  24, 72.
CG- 577.0100 ANDALUSIA AV/SALZEDO ST         E-N:  24, 72.
CG- 577.0200 ANDALUSIA AV/PONCE DE LEON      E-F:  24.
CG- 577.0300 ANDALUSIA AV/GALIANO ST         E-F:  24.
CG- 579.0000 SEVILLA AV/ALHAMBRA CR          W-N:  72.
CG- 580.0000 SEVILLA AV/ALHAMBRA CR          E-N:  72.
CG- 581.0000 ANASTASIA AV/PALERMO AV         E-N:  72.
CG- 582.0000 ANASTASIA AV/MALAGA AV          E-N:  72.
CG- 583.0000 ANASTASIA AV/COLUMBUS BD        E-N:  72.
CG- 584.0000 ANASTASIA AV/CORDOVA ST         E-F:  72.
CG- 585.0000 ANASTASIA AV/GRANADA BD         E-N:  72.
CG- 586.0000 ANASTASIA AV/TOLEDO ST          E-N:  72.
CG- 587.0000 ANASTASIA AV/ANDERSON RD        E-N:  72.
CG- 588.0000 ANASTASIA AV/SEGOVIA ST         E-N:  72.
CG- 589.0000 ANASTASIA AV/SEGOVIA ST         W-F:  72.
CG- 590.0000 ANASTASIA AV/ANDERSON RD        W-N:  72.
CG- 591.0000 ANASTASIA AV/TOLEDO ST          W-N:  72.
CG- 592.0000 ANASTASIA AV/GRANADA BD         W-N:  72.
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CG-	593.0000	ANASTASIA AV/CORDOVA ST	W-N: 72.
CG-	594.0000	ANASTASIA AV/COLUMBUS BD	W-F: 72.
CG-	595.0000	ANASTASIA AV/MALAGA AV	W-F: 72.
CG-	596.0000	ANASTASIA AV/PALERMO AV	W-N: 72.
CG-	598.0000	SW 40 ST/SAN AMARO DR	E-N: 40.
CG-	599.0000	SW 40 ST/PINTA CT	E-N: 40.
CG-	600.0000	SW 40 ST/SANTA MARIA ST	E-N: 40.
CG-	601.0000	SW 40 ST/GRANADA BD	E-F: 40.
CG-	602.0000	SW 40 ST/MONSERRATE ST	E-F: 40.
CG-	604.0000	SW 40 ST/SEGOVIA ST	E-F: 40.
CG-	604.0100	SW 40 ST/SW 42 AV	E-N: 40.
CG-	604.0150	SW 40 ST/SW 42 AV	E-F: 40, 42, J.
CG-	604.0300	SW 40 ST/PONCE DE LEON BD	W-N: 40, 42, 72, J.
CG-	606.0000	SW 40 ST/SALZEDO ST	W-F: 40, 42, J.
CG-	607.0000	SW 40 ST/SW 42 AV	W-F: 40.
CG-	608.0000	SW 40 ST/SEGOVIA ST	W-N: 40.
CG-	609.0000	SW 40 ST/ANDERSON RD	W-N: 40.
CG-	610.0000	SW 40 ST/GRANADA BD	W-N: 40.
CG-	610.0500	SW 40 ST/GOLF COURSE DRIVEWAY	W-F: 40.
CG-	611.0100	SW 40 ST/SAN AMARO DR	W-N: 40.
CG-	611.0500	SW 40 ST/MARIOLA CT W	W-F: 40.
CG-	612.0000	SW 40 ST/ALHAMBRA CR	W-F: 40.
CG-	613.0000	GRAND AV/BROOKER ST	W-F: 48, 65.
CG-	614.0000	GRAND AV/JEFFERSON DR	W-F: 48, 65.
CG-	615.0000	GRAND AV/LINCOLN DR	W-N: 48, 65.
CG-	616.0000	GRAND AV/LINCOLN DR	E-N: 48, 65.
CG-	620.0000	BLUE RD/RIVIERA DR	W-N: 56.
CG-	621.0000	BLUE RD/VILABELLA AV	W-N: 56.
CG-	621.0100	BLUE RD/BILTMORE DR	W-N: 56.
CG-	622.0000	BLUE RD/GRANADA BD	W-N: 56.
CG-	629.0000	BLUE RD/GRANADA BD	E-N: 56.
CG-	630.0000	BLUE RD/BILTMORE DR	E-F: 56.
CG-	631.0000	SUAREZ ST/RIVIERA DR	E-N: 56.
CG-	632.0000	SUAREZ ST/PONCE DE LEON BD	E-N: 56.
CG-	638.0000	PISANO AV/CARRILLO ST	W-N: 56.
CG-	641.0000	MILLER RD/SW 57 AV	W-N: 56.
CG-	641.0100	MILLER RD/SAN AMARO DR	W-F: 56.
CG-	641.0200	MILLER RD/SAN AMARO DR	E-N: 56.
CG-	642.0000	MILLER RD/SW 57 AV	E-F: 56.
CG-	643.0000	HARDEE RD/MAGGIORE ST	W-F: 48.
CG-	644.0000	HARDEE RD/RIVIERA DR	W-N: 48.
CG-	645.0000	HARDEE RD/GRANADA BD	W-F: 48.

CG-	641.0100	MILLER RD/SAN AMARO DR	W-F: 56.
CG-	641.0200	MILLER RD/SAN AMARO DR	E-N: 56.
CG-	642.0000	MILLER RD/SW 57 AV	E-F: 56.
CG-	643.0000	HARDEE RD/MAGGIORE ST	W-F: 48.
CG-	644.0000	HARDEE RD/RIVIERA DR	W-N: 48.
CG-	645.0000	HARDEE RD/GRANADA BD	W-F: 48.
CG-	646.0000	HARDEE RD/CELLINI ST	W-F: 48.
CG-	647.0000	HARDEE RD/MAYNADA ST	W-N: 48.
CG-	647.0050	HARDEE RD/LEONARDO ST	E-N: 48.
CG-	647.0100	HARDEE RD/CELLINI ST	E-N: 48.
CG-	647.0200	HARDEE RD/GRANADA BD	E-N: 48.
CG-	648.0000	HARDEE RD/RIVIERA DR	E-F: 48.
CG-	649.0000	HARDEE RD/MAGGIORE ST	E-F: 48.
CG-	650.0000	HARDEE RD/SW 42 AV	E-N: 48.
CG-	650.0800	INGRAHAM HY/RIDGEWOOD RD	W-F: 37.
CG-	651.0000	INGRAHAM HY/BRIGHTON PL	W-N: 37.
CG-	651.0800	EDGEWATER DR/#200	E-F: 37.
CG-	652.0000	EDGEWATER DR/# 90	E-F: 37.

MDTA Bus Stops by District & Municipality
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CG-	653.0000	EDGEWATER DR/DOUGLAS RD	E-N: 37.
CG-	655.0000	SW 72 ST/ALMANSA ST	E-F: 37.
CG-	656.0000	SW 72 ST/OLD CUTLER RD	E-N: 37.
CG-	657.0000	SW 72 ST/GRANADA BD	W-F: 37.
CG-	658.0000	SW 72 ST/ALMANSA ST	W-F: 37.
CG-	659.0000	SW 72 ST/MINDELLO ST	W-N: 37.
CG-	661.0000	SW 72 ST/BARQUERA ST	W-N: 37.
CG-	662.0000	SW 72 ST/MAYNADA ST	W-N: 37.
CG-	663.0000	SW 72 ST/MENTONE ST	W-F: 37.
CG-	664.0000	SW 72 ST/TRIONFO ST	W-N: 37.
CG-	665.0000	SW 72 ST/SW 53 AV	W-M: 37.
CG-	666.0000	SW 72 ST/NERVIA ST	W-N: 37.
CG-	667.0000	SW 72 ST/YUMURI ST	W-M: 37.
CG-	1001.0000	UNIVERSITY STA/5000 PONCE DE LEON @	N-M: 48, 52, 56.

APPENDIX C

References - Reports

Reference Reports:

1. "Miami Surface Shuttle Services: Feasibility Study for Transit Circulator Services in Downtown Miami, Brickell, Overtown, and Airport West", June 2000.

2. "City of Aventura Municipal Transit Study", June 1998.

3. "Design of Mini Bus Services", City of North Miami Beach, August 1996.

4. "Electric Transit Circulator Feasibility Study", Miami-Dade County, 2001.

5. "Feasibility of a Community Public Transit System Among Office Workers in Coral Gables", February 1996.

6. "A Community Travel Study Assessing the Factors Contributing to Traffic Congestion in the Coral Gables Central Business District", March 1994.

7. "Parking Study Report", City of Coral Gables, March 2000.

APPENDIX D

Survey Summaries

Exhibit D-1
City of Coral Gables
Circulator System Study

Employers Surveyed

	NAME	PHONE NO.	FAX NO.
A.	Miracle Mile area:		
1.	Omni Colonnade	(305)441-2600	(305)444-9706
2.	Lucent Technologies	(305)569-3600	(305)569-3766
3.	AT&T International	(305)774-2040	(305)774-2386
4.	Union Planters Bank	(305)774-5000	(305)774-5017
5.	Exxon-Mobil Inter-America		
6.	Sunglass Hut International/Watch Station	(305)461-6100	(305)461-6238
7.	Banco Mercantil Venezuela	(305)629-1300	(305)629-1400
8.	Hyatt Regency	(305)441-1234	(305)441-0520
9.	Carlson Wagonlit	(305)445-2999	(305)448-8290
10.	Coral Gables High School	(305)443-4871	(305)441-8094
11.	US Post Office	(305)443-2532	(305)441-0381
B.	Douglas Entrance area:		
1.	Spillis Candela	(305)444-4691	(305)447-3580
2.	American Airlines	(305)520-3080	(305)520-1526
C.	Riviera Section:		
1.	Terrace Inn (formerly Howard Johnson)	(305)662-8845	(305)662-5562
2.	EWM Realtors	(305)667-8871	(305)662-5646
3.	Baptist Health Systems	(305)273-2555	(305)273-2889
D.	University of Miami	(305)284-3798	(305)284-2854
E.	City Hall	(305)446-6800	(305)460-5080

Exhibit D-2
City of Coral Gables
Circulator System Study

Employer Survey

The City of Coral Gables is conducting a study to implement trolley service for the Ponce de Leon Boulevard corridor, from SW 8 Street to the University Metrorail Station. This survey will help to plan the proposed stops and schedules for the new trolley.

1. What are the hours of operation of your company (and shift changes, if any)?

2. a. Do you provide free parking to your employees?

   b. What percentage would you say rely on street parking?

3. a. What percentage of your employees do you think would use the proposed trolley to get to work, including employees that may use Metrorail for a portion of the trip?

   b. What percentage of your employees do you think would use the proposed trolley during the day to reach other destinations such as lunch, shopping, etc.?

It would be helpful if you could provide a breakdown of your employees by zip code (i.e., 25 live in 33134, . . .). How quickly would you be able to get us that information?

Exhibit D-3
City of Coral Gables
Circulator System Study

Employer Survey Results

		Percent of Employers
Hours of Operation	7 AM - 5 PM	100.0%
	5 PM - 7 PM	72.2%
	7 PM - 12 AM	33.3%
	12 AM - 7 AM	16.7%
Free parking to employees?	Yes	66.7%
	No	33.3%
Percentage of employees who rely on street parking	0 %	72.2%
	1-5 %	11.1%
	6-10 %	0.0%
	11-20 %	5.6%
	21-35 %	5.6%
	36-50 %	0.0%
	more than 50 %	5.6%
Percentage of employees who would use the trolley to get to work	0 %	38.9%
	1-5 %	33.3%
	6-10 %	11.1%
	11-20 %	0.0%
	21-35 %	11.1%
	36-50 %	0.0%
	more than 50 %	5.6%
Percentage of employees who would use the trolley during the day (ex: lunch, shop)	0 %	22.2%
	1-5 %	22.2%
	6-10 %	5.6%
	11-20 %	11.1%
	21-35 %	11.1%
	36-50 %	16.7%
	more than 50 %	11.1%

Exhibit D-4
City of Coral Gables
Circulator System Study

Pedestrian Survey

The City of Coral Gables is conducting a study to implement trolley service for the Ponce de Leon Boulevard corridor, from SW 8 Street to the University Metrorail Station. This survey will help to plan the proposed stops and schedules for the new trolley.

1. Are you walking between buildings or to and from a parking space?

2. What is the purpose of this walking trip? Work, shop, lunch, recreation, other_____

3. Could you use the trolley to do today's activity (shopping, going to work, etc.)?

4. How many blocks would you be willing to walk to a trolley stop?

Exhibit D-5
City of Coral Gables
Circulator System Study

Pedestrian Survey Results
Summary - All Locations

Walking between	Buildings	57.2%
	Parking space	40.5%
	other	2.3%
Purpose	work	13.6%
	shop	12.9%
	lunch/dinner	37.5%
	recreation	19.3%
	appointment	3.0%
	bank	3.0%
	errands	7.2%
	meet friends	1.5%
	other	1.9%
Can trolley be used for today's activity?	Yes	58.8%
	No	32.8%
	Maybe	8.4%
How many blocks would you be willing to walk to a trolley stop?	1-2	40.2%
	3-5	51.4%
	6-10	7.9%
	10 or more	0.5%

Exhibit D-6
City of Coral Gables
Circulator System Study

Pedestrian Survey Results
Miracle Mile at Lunchtime

Walking between	Buildings	60.8%
	Parking space	36.1%
	other	3.1%
Purpose	work	12.4%
	shop	18.6%
	lunch	41.2%
	recreation	18.6%
	appointment	2.1%
	bank	2.1%
	errands	3.1%
	meet friends	2.1%
	other	0.0%
Can trolley be used for today's activity?	Yes	57.9%
	No	34.7%
	Maybe	7.4%
How many blocks would you be willing to walk to a trolley stop?	1-2	40.0%
	3-5	51.8%
	6-10	7.1%
	10 or more	1.2%

Exhibit D-7
City of Coral Gables
Circulator System Study

Pedestrian Survey Results
Alhambra Circle at Lunchtime

Walking between	Buildings	68.2%
	Parking space	31.8%
	other	0.0%
Purpose	work	13.6%
	shop	1.1%
	lunch	43.2%
	recreation	11.4%
	appointment	3.4%
	bank	6.8%
	errands	18.2%
	meet friends	0.0%
	other	2.3%
Can trolley be used for today's activity?	Yes	58.0%
	No	30.7%
	Maybe	11.4%
How many blocks would you be willing to walk to a trolley stop?	1-2	51.5%
	3-5	36.8%
	6-10	11.8%
	10 or more	0.0%

Exhibit D-8
City of Coral Gables
Circulator System Study

Pedestrian Survey Results
Miracle Mile in the Evening

Walking between	Buildings	40.5%
	Parking space	55.7%
	other	3.8%
Purpose	work	15.2%
	shop	19.0%
	dinner	26.6%
	recreation	29.1%
	appointment	3.8%
	bank	0.0%
	errands	0.0%
	meet friends	2.5%
	other	3.8%
Can trolley be used for today's activity?	Yes	60.8%
	No	32.9%
	Maybe	6.3%
How many blocks would you be willing to walk to a trolley stop?	1-2	27.9%
	3-5	67.2%
	6-10	4.9%
	10 or more	0.0%

APPENDIX E

References – Individuals/Agencies

References:

1. Amelia Johnson, City of Miami Beach.
2. Sheila Winitzer, MDTA Planning.
3. Elaine Ramirez, MDTA Planning.
4. Bob Pearsall, MDTA Planning.
5. Kevin Klopp, Assistant City Manager, City of North Miami Beach.
6. Dan McCray, Community Development, City of South Miami.
7. Robert Sherman, Director of Community Services, City of Aventura.
8. Lisa Jay, Superintendent of Community Services, City of Aventura.
9. Adam Lukin, Downtown Development Authority, City of Miami.
10. Thomas Dugan, Executive Director, Chattanooga Area Regional Transportation Authority.

APPENDIX F

Travel Time Runs

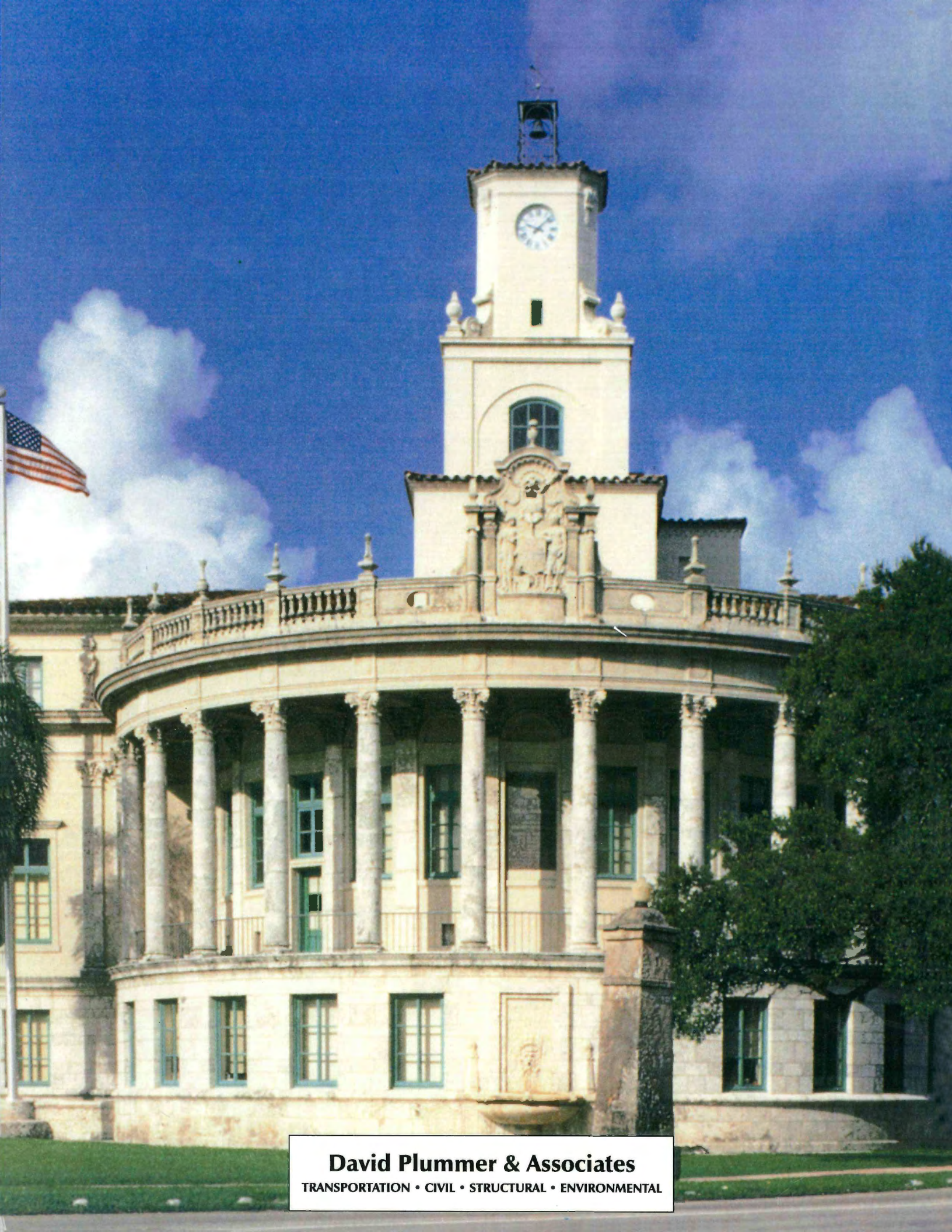
City of Coral Gables
Circulator System Study

Travel Time Runs

	03/08/2001		03/20/2001		03/27/2001		03/29/2001	
Street Name	**SB**	**SB**	**SB**	**SB**	**SB**	**SB**	**SB**	**SB**
8th Street	07:52:45	08:21:14	10:19:50	10:50:10	11:39:50	12:10:15	16:25:27	16:59:19
	SZ	SZ				TS 20 sec		
Alhambra	07:54:30	08:24:30	10:21:20	10:51:40	11:41:45	12:11:55	16:29:45	17:00:44
			TS 5 sec	TS 30 sec	TS 34 sec	TS 35 sec	TS 65 sec	TS 64 sec
Coral Way	07:55:04	08:25:30	10:22:45	10:52:45	11:43:00	12:14:20	16:30:33	17:01:50
			TS 25 sec		TS 27 sec			
University Drive	07:57:04	08:27:10	10:23:40	10:53:35	11:44:52	12:15:15	16:32:28	17:02:53
					TS 35 sec	TS 5 sec	TS 5 sec	TS 84 sec
Bird Road	07:58:15	08:28:20	10:25:37	10:54:45	11:47:00	12:16:00	16:33:45	17:04:30
			TS 51 sec	TS 31 sec		TS 10 sec		
Greco Avenue	07:59:45	08:29:30	10:26:22	10:56:00	11:47:50	12:18:15	16:34:30	17:05:16
				TS 7 sec			TS 75 sec	TS 110 sec
Le Jeune Road	07:59:55	08:30:10	10:27:30	10:56:50	11:48:30	12:18:40	16:35:00	17:06:58
			TS 20 sec		TS 10 sec	TS 28 sec		TS 60 sec
Granada		08:31:34	10:28:30	10:58:30	11:50:10	12:20:15	16:36:40	17:10:27
			TS 12 sec			TS 12 sec		
University Station	08:04:40	08:34:00	10:30:05	10:59:00	11:50:45	12:21:50	16:37:40	17:11:28
			TS 24 sec				TS 70 sec	TS 59 sec
Red Road	08:04:55	08:35:25	10:32:51	11:00:10	11:52:10	12:22:50	16:41:37	17:13:36

Street Name	**NB**	**NB**	**NB**	**NB**	**NB**	**NB**	**NB**	**NB**
Red Road	08:04:55	08:35:25	10:32:51	11:00:10	11:52:10	12:22:50	16:41:37	17:13:36
							TS 50 sec	TS 13 sec
San Amaro/Ponce	08:05:50	08:36:00	10:33:00	11:01:15	11:53:35	12:24:45	16:43:02	17:14:56
							TS 33 sec	TS 30 sec
University Station	08:07:05	08:38:35	10:34:15	11:02:40	11:54:25	12:25:30	16:44:40	17:16:04
			TS 18 sec			TS 28 sec	TS 5 sec	TS 12 sec
Granada		08:40:15	10:36:10	11:04:00	11:55:00	12:27:30	16:45:40	17:17:24
					TS 49 sec	TS 19 sec		TS 56 sec
LeJeune Road	08:10:15	08:45:45	10:37:07	11:04:30	11:57:50	12:28:40	16:46:00	17:19:34
			TS 13 sec				TS 60 sec	
Greco Avenue	08:12:30	08:47:15	10:38:15	11:05:00	11:59:10	12:29:00	16:48:35	17:20:13
			TS 5 sec	TS 21 sec			TS 60 sec	
Bird Road	08:13:12	08:48:20	10:39:15	11:06:05	11:59:40	12:29:55	16:50:19	17:21:47
			TS 21 sec					TS 37 sec
University Drive	08:15:15	08:50:00	10:41:20	11:07:00	12:01:20	12:31:35	16:51:32	17:22:33
			TS 30 sec		TS 40 sec			0
Coral Way	08:16:10	08:51:05	10:42:30	11:08:15	12:03:50	12:33:40	16:52:17	17:24:01
			TS 16 sec	TS 7 sec				TS 43 sec
Alhambra	08:16:40	08:52:10	10:44:15	11:09:38	12:04:25	12:34:10	16:53:23	17:25:16
	SZ	SZ	TS 35 sec	TS 42 sec			TS 30 sec	TS 86 sec
8th Street	08:19:04	08:54:14	10:45:30	11:11:07	12:06:55	12:35:45	16:54:26	17:27:33

SZ - school zone, speed limit = 15 MPH
TS - Traffic signal delay



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