

DADE COUNTY PARK & RIDE LOT PLAN

WPI No. 6810187

State Job No. 87000-1845

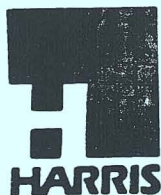
JUSTIFICATION REPORT

NORTHEAST DADE COUNTY BISCAYNE BOULEVARD CORRIDOR PARK AND RIDE LOTS

Prepared for the

FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT 6



By

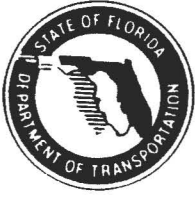
FREDERIC R. HARRIS, INC.

MIAMI LAKES, FLORIDA

In Association With

Avino and Associates, Inc.

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I. INTRODUCTION

This Justification Report is provided to assist in the implementation of the **Dade County Park and Ride Lot Plan**. The Park and Ride Lot Plan provided a generic analysis of potential park and ride lot locations identifying site(s)/system(s) with the best potential for immediate and short range implementation and documenting future park and ride lot locations for integration into the long range planning process.

This Report is based on the development of park and ride lots as an adjunct to existing "MAX" and express bus service in the Northeast Dade County area. The report provides sufficient data and explanation to show the need and purpose of this proposal. The analysis includes: a presentation of alternatives with associated costs and benefits; the relation of the proposal to other plans and existing projects in the area; the impacts on the local transportation system; and the needs required by the improvement. In addition conceptual design plans have been prepared as a general outline of site needs.

The Report is formatted into four (4) sections. Following the Introduction is Section II: Plans, Projects and Proposals which provides a background discussion of the corridor proposed for park and ride implementation followed by a discussion of future plans. Section III includes the analysis of alternative lot and corridor treatments and estimations of costs. A benefit/cost analysis based on system implementation is also provided in this section. The Final Section summarizes Report findings.

Note, the analyses provided in this document are more specific than those provided in the Park and Ride Lot Plan. Where the Park and Ride Lot Plan performed impact, cost/benefit and effectiveness analyses for the purposes of comparing all of the potential sites, this document is directed to determining the specific impacts of the proposed Park and Ride Lot treatments to the Northeast Dade County: Biscayne Boulevard Corridor.

II. PLANS, PROJECTS and PROPOSALS

Introduction

The NE Dade County: Biscayne Boulevard study area generally includes the US 1 corridor between the Broward County Line and Flagler Street (Downtown Miami). Figure 1 shows the corridor, however, analyses within this report are not limited to the confines of the Biscayne Boulevard right of way. The study may be expanded to include I-95, Tri-Rail, NE 6th Avenue, West Dixie Highway, A1A, etc.

Existing Transportation System

The corridor is well served by the local bus transportation network with direct access to the Metromover light rail system. Figure 2 shows an excerpt from the Dade County Transit Map provided by Metro-Dade Transit Agency indicating the availability of bus routes on all arterials and major collectors. Note, the map does not show the Biscayne MAX service and indicates the north extension of the Metromover is available. The Metromover extension to the Omni area is now under construction and will not be completed until 1994.

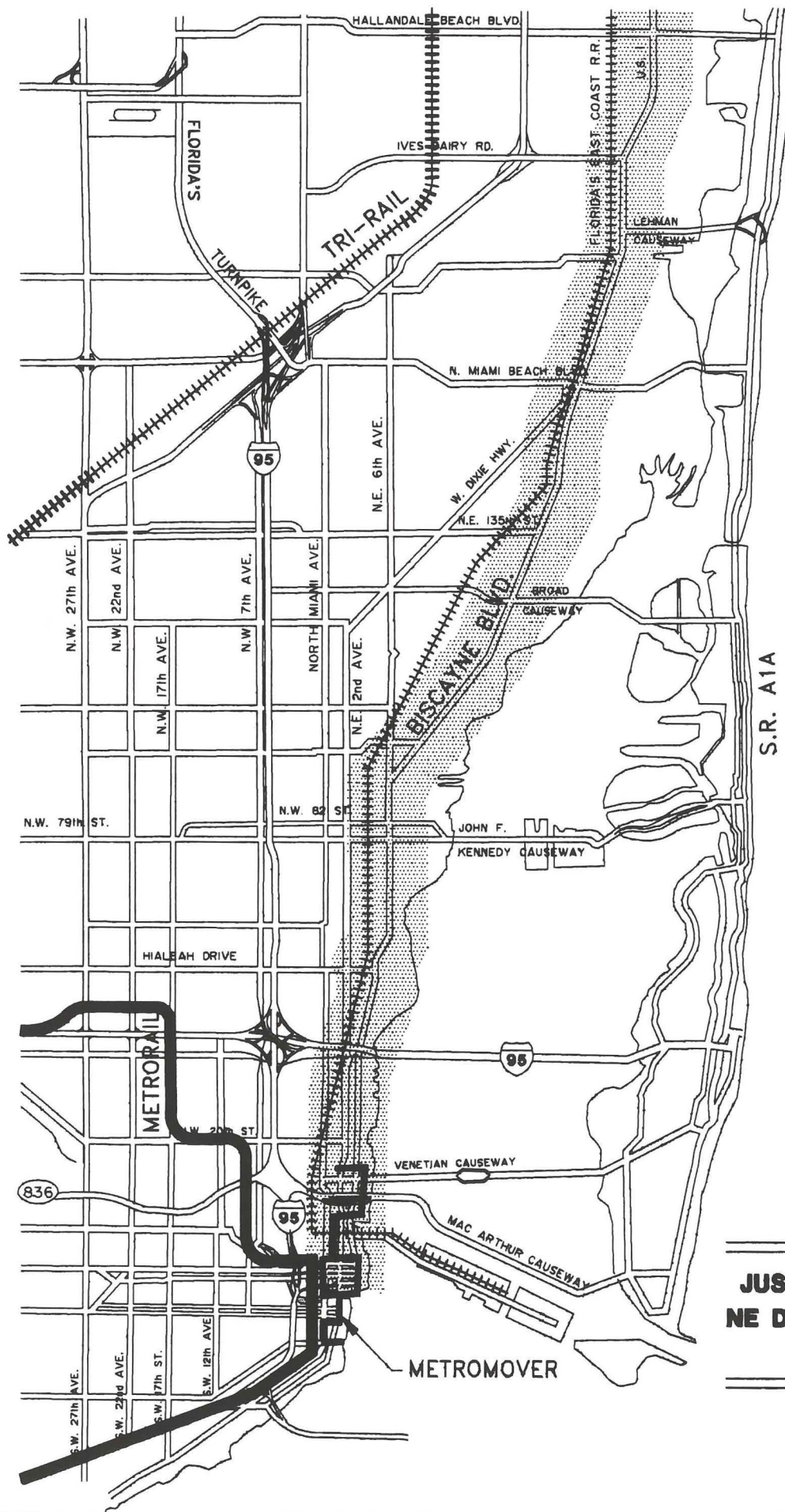
The Biscayne MAX route is a commuter oriented service providing limited-stop express service on Biscayne Boulevard between Downtown Miami and Aventura Mall. The service is provided during the AM and PM peak period rush hours and is limited to 13 stops on Biscayne Boulevard and a final stop at the Downtown bus terminal. Fare is \$1.25 and can traverse the Aventura to Downtown route (one-way) in approximately 50 to 60 minutes. Figure 3 shows a schematic of the Biscayne MAX route and stops.

Northeast Dade County is also served by the 95X express bus service. The route provides service from the Aventura Mall to the Golden Glades park and ride lot in 22 minutes where a transfer can be made to Tri-Rail for north- and southbound destinations. Bus service continues via the I-95 HOV lanes and is able to reach Downtown Miami from Golden Glades in 18 minutes.

Table 1 provides an inventory of the major roadway facilities analyzed in this report. The Table indicates that US 1, Ives Dairy Road and NE 125th Street are surface arterials. US 1 varies from 4 (four) lanes to 8 (eight) lanes divided throughout while Ives Dairy Road is a six lane divided arterial between US 1 and I-95 and NE 125th Street is 4 (four) lane undivided between US 1 and I-95. The Table indicates I-95 has varied general use expressway lanes (from 6 (six) to 10 (ten)), however, has continuous High Occupancy Vehicle (HOV) lanes from the Golden Glades interchange to SR 112.

Previous Transit Programs

There have been no past transit programs on the Northeast Biscayne Corridor other than standard local bus service and the current Biscayne MAX service. Dade County has had experience, however, in the application of travel demand management programs prior to the development of capital intensive improvements. These experiences are similar to this proposal because the northeast corridor is being considered for major transit improvements.



N.T.S.

ATLANTIC OCEAN

LEGEND




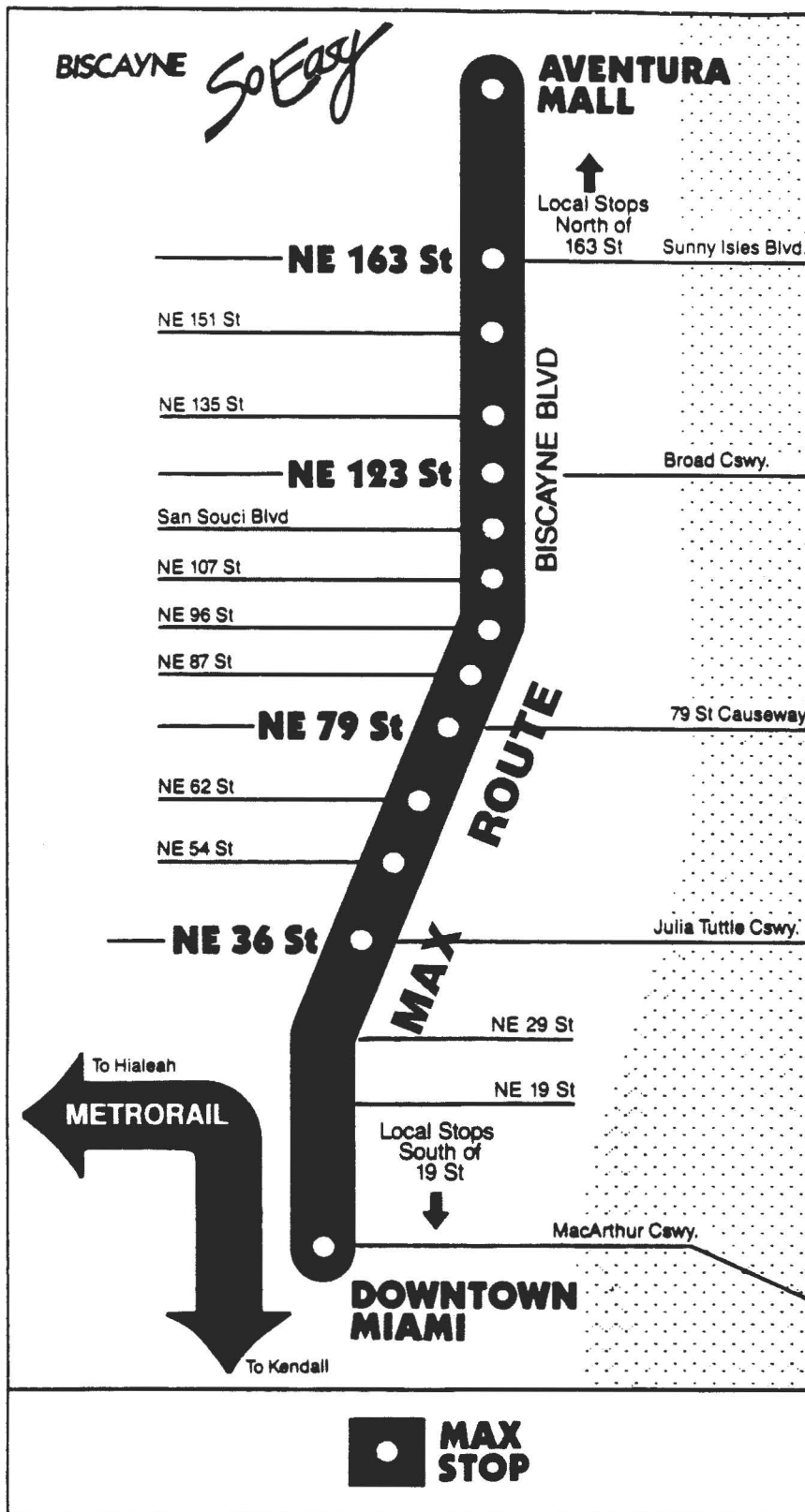
-  = Study Area
-  = Metrorail
-  = Metromover

FIGURE 1
STUDY AREA

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CORRIDOR**



**JUSTIFICATION REPORT:
NE DADE BISCAYNE BLVD.
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LEGEND



-  = MAX Route With Stops
-  = Metrorail

FIGURE 3
BISCAYNE MAX ROUTE

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Table 1 – Existing Roadway Design

Roadway	From	To	Length	Design
US 1	Lehman Csway	NE 163rd St	2.20	6LD
	NE 163rd St	NE 151st St	0.75	4LD
	NE 151st St	NE 135th St	1.00	4LD
	NE 135th St	NE 123rd St	0.80	6LD
	NE 123rd St	NE 6th Ave	2.60	4LD
	NE 6th Ave	NE 82nd St	0.50	4LD
	NE 82nd St	NE 79th St	0.20	4LD
	NE 79th St	NE 62nd St	1.00	4LD
	NE 62nd St	Bay Point Rd	1.10	4LD
	Bay Point Rd	SR 112	0.50	4LD
	SR 112	NE 29th St	0.50	4LD
	NE 29th St	NE 19th St	0.60	4LD
	NE 19th St	Venetian Cswy	0.45	4LD
	Venetian Cswy	SR 836	0.20	8LD
	MacArthur Cswy	Flagler St	0.90	8LD
NW 125th St	US 1	I-95	3.00	4LD
Ives Dairy Rd	US 1	I-95	1.25	6LD
I-95	Ives Dairy Rd	Miami Grdns Dr	1.80	6LX/2HOV
	Miami Grdns Dr	SR 826	1.30	6LX/2HOV
	SR 826	NW 151st St	1.00	8LX
	NW 151st St	NW 135th St	1.00	8LX/2HOV
	NW 135th St	NW 119th St	1.00	8LX/2HOV
	NW 119th St	NW 103rd St	1.00	8LX/2HOV
	NW 103rd St	NW 79th St	1.10	8LX/2HOV
	NW 79th St	NW 62nd St	1.00	8LX/2HOV
	NW 62nd St	SR 112	1.50	8LX/2HOV
	SR 112	SR 836	1.60	10LX
	SR 836	D-town Dist	1.00	8LX

Source: Frederic R. Harris, Inc.

The two projects include the Orange Streaker on NW 7th Avenue in northern Dade County and the Blue Dash on South Dixie Highway in South Dade. The Orange Streaker was implemented prior to the construction of HOV lanes on I-95 and operated as an exclusive bus lane within the NW 7th Avenue median. Once the HOV lanes were completed, the route was converted to the 95X as described earlier. The Blue Dash operated on South Dixie Highway prior to the construction of the Metrorail. The project provided a contra-flow bus lane in the AM and PM peak hours. The project was very expensive to operate because of the man hours involved in setting up and dismantling the lane for each peak period.

The County now operates a reversible lane system on NW 199th Street in northwest Dade County. The system is located on the south side of Joe Robbie Stadium, however, it is utilized only for special events at the stadium and does not relate to commuter applications.

Past park and ride lot experience in Dade County in general, however, has seen its successes and failures. There are four active park and ride sites, outside of the Metrorail system, which operate at relatively high levels of success. These include the Golden Glades Lot, Hammocks Town Center, West lakes Plaza, and Miami-Dade-South Campus. The **MDTA Park and Ride Lots Facilities Plan, 1989** indicates the success of these lots can be attributed to:

- Frequent Metrobus Service
- Availability of Off-Peak Service
- Competitive Cost in Comparison to Automobile
- Competitive Travel Time in Comparison to Automobile
- Clear Lot Identification, lighting and sheltered waiting areas
- High, visible security

There are also a number of park and ride lot facilities with and without Metrorail service that have failed and are currently inactive. The Dade County **Congestion Management Plan** indicates the inactive lots outside of the Metrorail system have failed because of low transit frequencies. The failure of the Metrorail facilities namely the Brownsville, Earlington Heights and Martin Luther King, Jr. facilities may be attributed to locations too close to major destinations.

Programmed and Planned Improvements

There are a number of transportation improvements scheduled for the Northeast Dade County area. Table 2 documents those improvements provided in the Metro-Dade Metropolitan Planning Organization's (MPO) Transportation Improvement Program (TIP). The Table indicates construction projects underway and planned for US 1 and I-95. The US 1 projects include widening from NE 135th Street to Miami Gardens Drive and the I-95 projects include additional HOV lane segments and the implementation of Incident Management and Intelligent Vehicle Highway Systems. Additional projects are shown for NE 151st Street, NE 135th Street and NW 95th Street.

Table 2 – Programmed Improvements

Roadway	From	To	Improvement	Constr FY
US 1	135th St	151st St	+2L(6LD)	'92-'93
	151st St	163rd St	+4L(8LD)	'93-'94
	163rd St	Miami Gardens Dr	+2L,4L(8LD)	'96-'97
NE 151st St	US 1	Main Rd	+2L(4LD)	'95-'96
NE 135th St	NW 27th Ave	I-95	+2L,+4L(8LD)	'92-'93
NW 95th St	NW 27th Ave	NW 7th Ave		N/A
I-95	At Ives Dairy Rd		+2L(6LD)	'92-93
	NW 129th St	NW 151st St	+2L(8LX/2HOV)	Complete
	US 1	West Palm Beach	Incident Mngmnt	PE '92-'93
	at Golden Glades Interchange Apprchs		IVHS	Underway
	NW 151st St	S of Miami Gardens Dr	HOV Flyover	Underway
			+2L(8LX/2HOV)	
Metromover	Brickell and Omni Legs		Extensions	Underway

Source: Frederic R. Harris, Inc.
Metro-Dade MPO

The I-95 project between NW 151st Street and Miami Gardens Drive will provide the "missing link" in the I-95 HOV system. The project will carry the lanes over the Golden Glades interchange, and coupled with the improvements underway between Broward Boulevard and I-595 in Ft. Lauderdale, will provide for a continuous HOV lane from Palm Beach County to Downtown Miami. The improvement through the Golden Glades interchange will encourage carpool use at the proposed Aventura site where the bottleneck at Golden Glades discourages existing use. The Incident and Freeway Management programs can be used to benefit park and ride modes by deferring motorists to the proposed Aventura lot to avoid congestion and/or incidents on I-95.

Table 2 also indicates improvement to the Metromover system. The Brickell and Omni extensions will impact the proposal where the Brickell extension increases the destination area of the proposed system by providing transit access to Brickell office area and the Omni extension provides a first opportunity for rail access. The proposed park and ride lot system should include a major transfer point at the Omni Station.

The Northeast Corridor is also part of the MPO **Dade County Transit Corridors Transitional Analysis**, where long range multi-modal corridor treatments are being analyzed. Alternative improvements include Busway, "Hybrid" LRT, "Regular" LRT and an extensions of the Metrorail. Potential stations within the northeast corridor include:

Downtown Miami
Overtown
NE 15th Street
NE 20th Street
NE 36th Street
NE 46th Street
NE 54th Street
NE 61st Street
NE 79th Street
NE 96th Street
NE 125th Street
NE 135th Street
NE 151st Street
NE 163rd Street
NE 185th Street
NE 199th Street

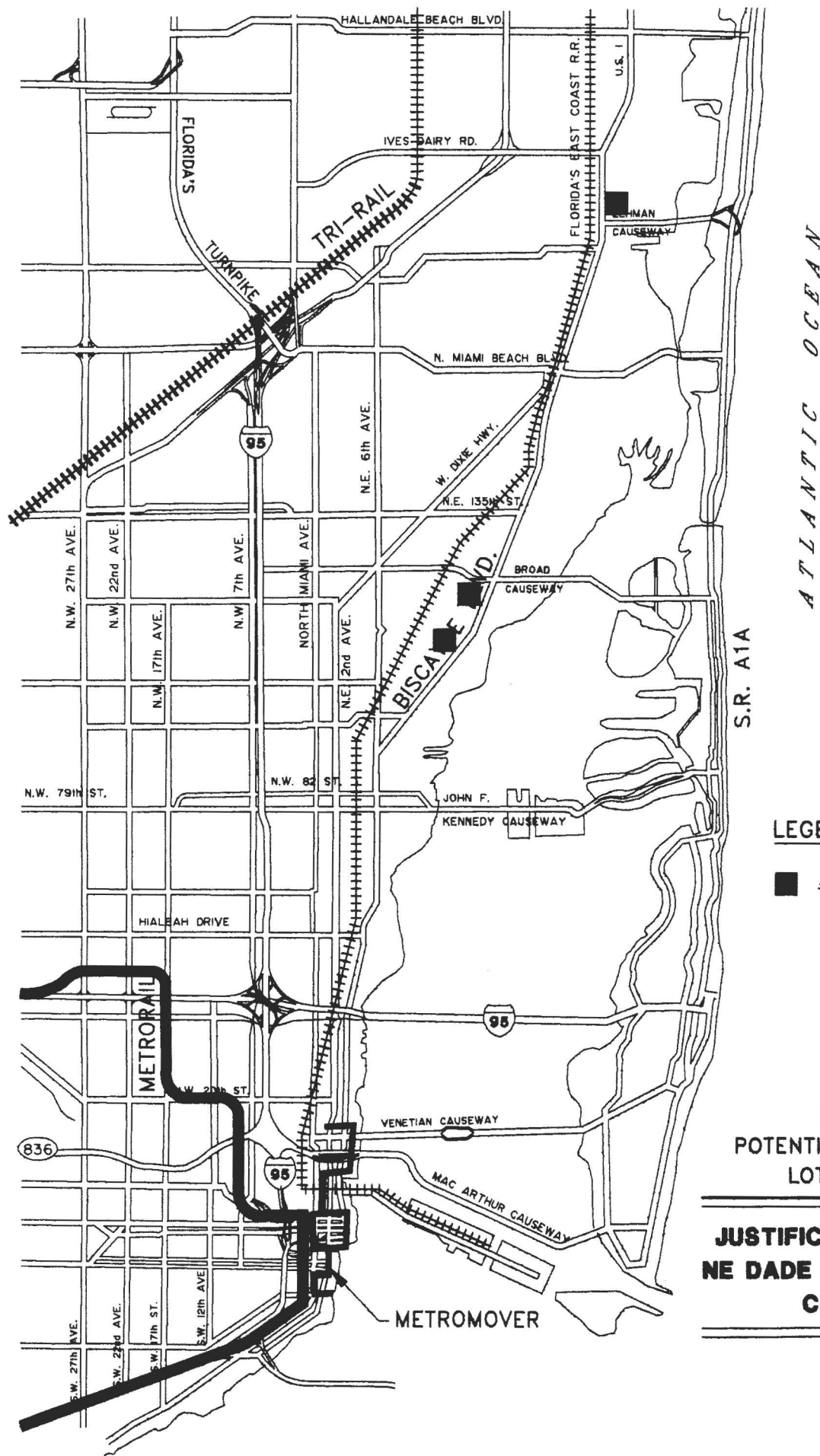
Depending on the recommended mode, some, or most, of these stations will be provided with a park and ride facility of some kind. However, these are long range considerations that will be justified based on the cost of the overall transportation improvement.

Site Location Analysis

Potential sites for the implementation of Park and Ride were identified based on the results of A Systems Level and Project Level Analysis documented in the Park and Ride Lot Plan. The results indicated the Aventura Mall and NE 123rd Street/US 1 areas could support park and ride lot facilities. For each of these areas, Real Estate Data, Inc. (REDI) aerial photographs and plat books were reviewed and field survey performed.

The review and surveys indicated there are no vacant sites in the Aventura Mall Location Area and the only feasible implementation of park and ride, short of purchase and redevelopment, is a joint use agreement with the Mall.

Analysis of the NE 123rd Street/US 1 Location Area revealed five sites including some sites with joint use potential and vacant sites for park and ride development. A Project Level Analysis was performed on the five sites and the evaluation indicated the two joint use sites offered the best potential for park and ride lot implementation. The evaluation indicated the sites had the same potential for implementation and were deemed better than the other sites because of the savings incurred in the development of a joint use site, site visibility and access. Figure 4 shows the location of the potential sites.



N.T.S.

ATLANTIC OCEAN

LEGEND

■ = Potential Park & Ride Lot

FIGURE 4
POTENTIAL PARK & RIDE
LOT LOCATIONS

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CORRIDOR**

III. PARK AND RIDE LOT SYSTEM TREATMENTS AND COSTS

Introduction

Conceptual design details of the recommended plan improvements are presented in this section of the report. The improvements include the development of joint use parking facilities, providing on-site transit service and Transportation Demand Management (TDM) options. The details are presented at a level which permits the Department to approach private landowners for lease negotiations and the subsequent design of system improvements.

Recommended park and ride lot treatments include:

1. The potential development of joint use sites at
 - Aventura Mall at US 1/Lehman Causeway
 - Office Depot, US 1/NE 121st St
 - and/or the K-Mart Shopping Center at US 1/NE 107th St
2. Use of existing BISCAYNE MAX and 95X transit service.
3. Potential traffic operations improvements
4. Development, encouragement and involvement in TDM programs and strategies

Park-and-Ride Facilities

All three (3) of the potential park-and-ride sites proposed for the northeast corridor are part of existing shopping centers and/or commercial properties. Capital costs for these sites are limited to bus shelters, passenger amenities, signage and pavement marking improvements. However, the success of this facility is contingent upon the availability of parking and a successful agreement with the shopping center management.

The proposal was based on securing parking to accommodate 2010 demand per the **Countywide Park and Ride Lot Planning Study**. The study indicates there is a need for 252 spaces at Aventura and 354 spaces in the vicinity of NE 123rd Street. A parking occupancy study was performed to determine existing utilization at each of the lot locations. Exhibits A, B, and C show the results. Note, the analysis at the Aventura Mall does not consider parking utilization on the entire site but rather parking on the southwest corner of the mall only.

Exhibit A indicates the Aventura Mall site is able to meet parking demand, however, Exhibits B and C show the combined available capacity of the Office Depot and K-Mart locations is 315 spaces which is inadequate to meet potential demand (354). The analysis also indicates there are very few spaces available at the Office Depot site and the site was subsequently dropped from consideration. A secondary review of other potential sites in the area indicated the sites either had poor access conditions or a low potential for implementation. The remainder of the analysis considers the leasing of the K-Mart site to accommodate the CBD demand (210 spaces) only.

Exhibit A
Parking Occupancy Study
Aventura Mall
Biscayne Blvd.

Total Spaces Available:

Survey Performed: November 10, 1992

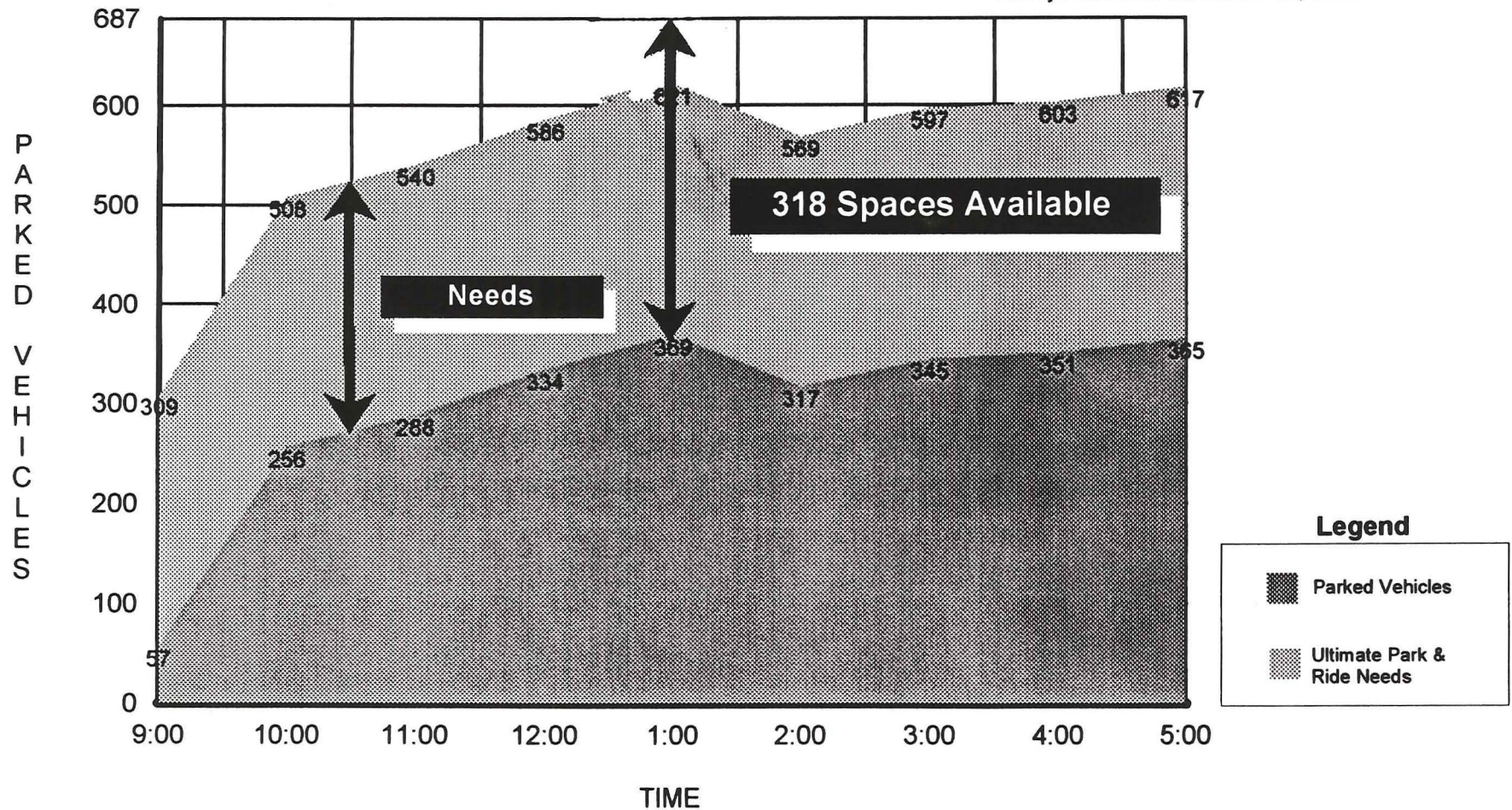
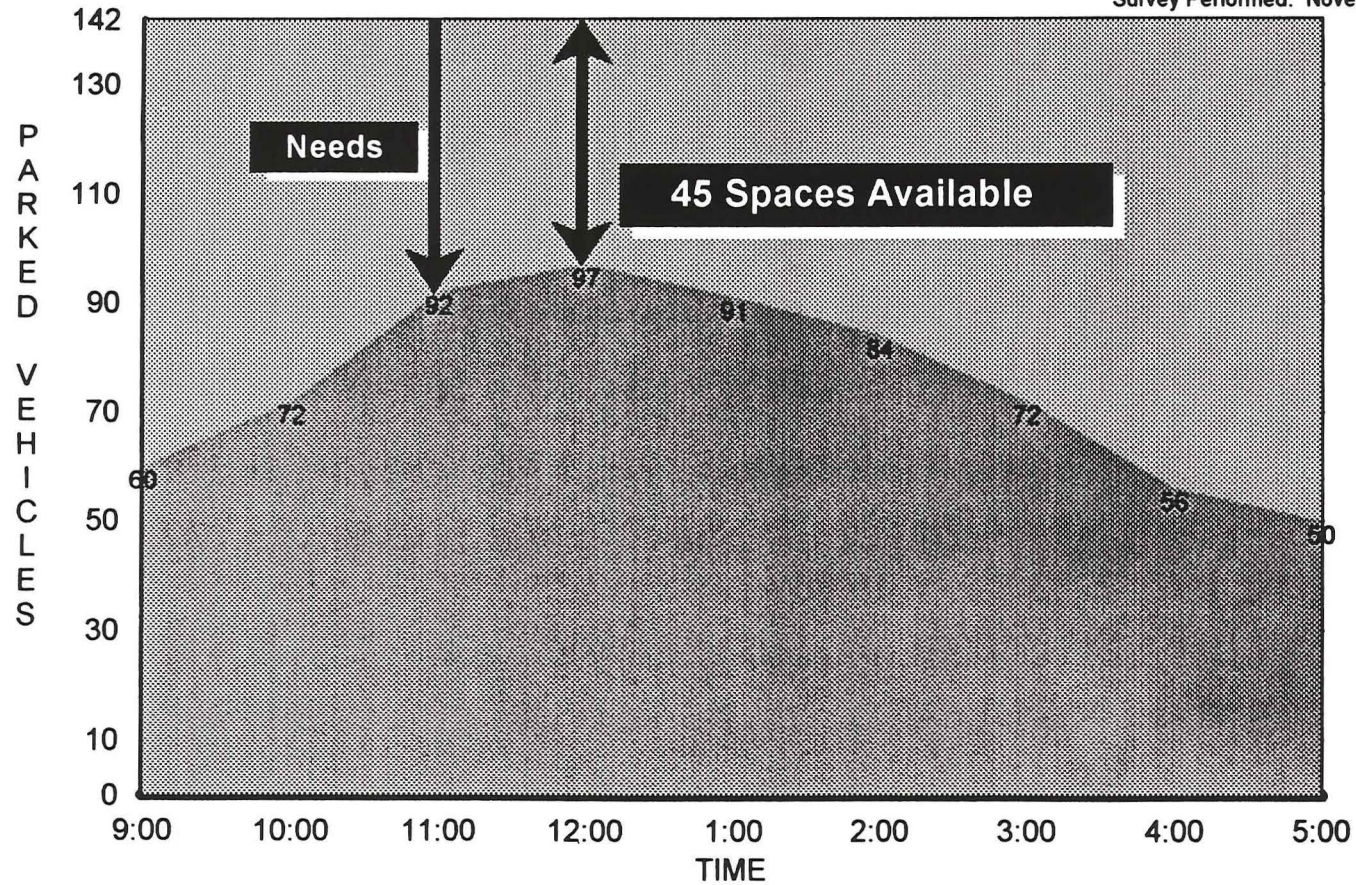


Exhibit B
Parking Occupancy Study
Office Depot Shopping Center
Biscayne Blvd. & NE 123rd St.

Total Spaces Available:

Survey Performed: November 10, 1992



Legend

Parked Vehicles

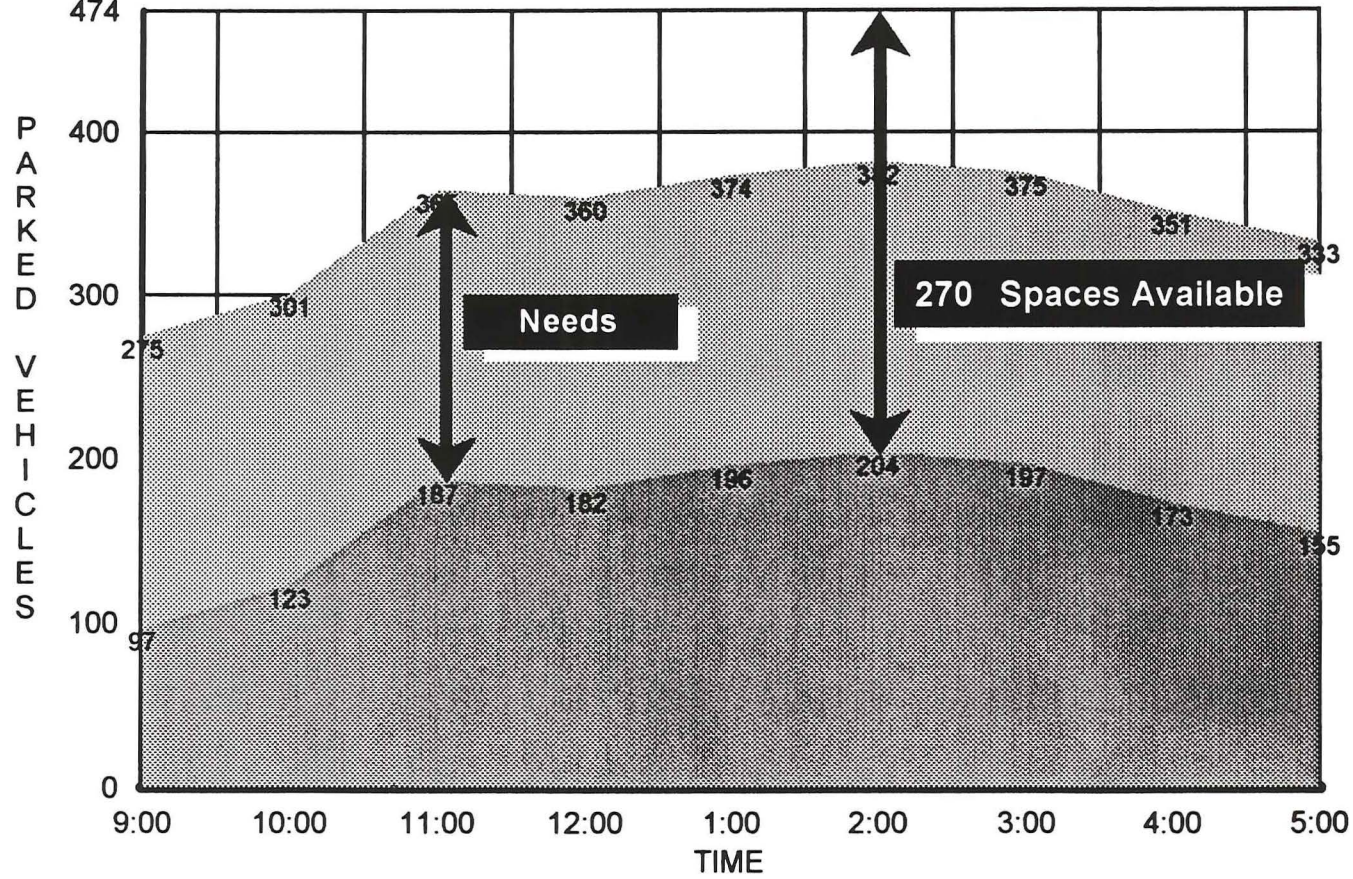
Ultimate Park & Ride Needs

Exhibit C
Parking Occupancy Study
K-Mart Shopping Center
Biscayne Blvd. & NE 107th St.

Total Spaces Available:

474

Survey Performed: November 10, 1992



Legend

 Parked Vehicles

 Ultimate Park & Ride Needs

The estimated costs (1992 dollars) of bus shelters, passenger amenities, signage and pavement markings for each site is provided below. Passenger amenities include two (2) bus shelters at the Aventura site, four (4) bus shelters at the K-Mart site, two (2) public phones, newspaper racks, bicycle facilities, benches and posted bus schedules/routes. Bus shelters are estimated at \$5,000 apiece (MDTA estimate) and amenities, on-site signage and pavement markings are based on estimates from the Justification Report developed for the Kendall Area Transit Park and Ride Lots prepared by Frederic R. Harris, Inc adjusted to 1992 dollars.

An analysis was also performed for the development of a landscape buffer for each site. The buffer was provided both to make the site more attractive to the commuter (i.e. security and appearance) and to entice the property owners into a lease agreement. The provision of the buffer will be considered optional until the final analysis.

●Aventura Mall	Shelters (2)	\$10,000
	Amenities, Pavement & Marking, On-Site Signs	<u>\$29,000</u>
	Total	\$39,000
	Landscape Buffer (Opt)	<u>\$45,000</u>
	Total w/Landscape	\$84,000
●K-Mart	Shelters (4)	\$20,000
	Amenities, Pavement & Marking, On-Site Signs	<u>\$24,000</u>
	Total	\$34,000
	Landscape Buffer (Opt)	<u>\$38,000</u>
	Total w/Landscape	\$82,000

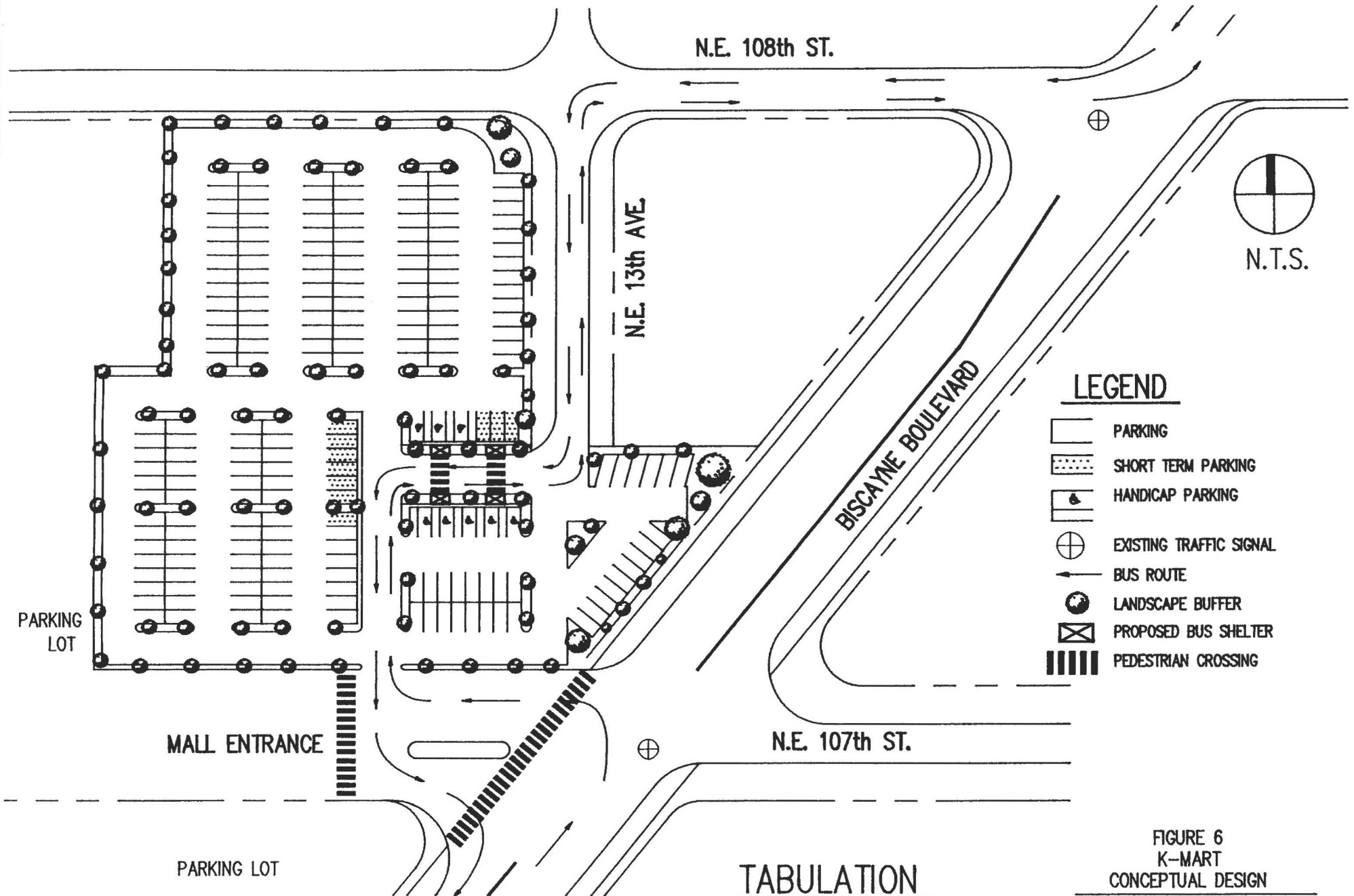
Utilization of the existing parking spaces could be accomplished by any one of the following methods:

- Free use of the parking spaces may be agreed upon between the shopping center management and FDOT. An incentive for the shopping center to allow free usage of the parking spaces might be increased business to the shopping mall's stores.
- Lease agreement where FDOT would enter into agreement with both property owners. The Department estimates an annual lease cost of 10-12% of site value. Based on cost information provided by the Department the lease cost of the Aventura site would be 300,000/year and 88,200/year at the K-mart site.
- Note, purchase of the sites is not considered feasible.

Assuming the Department will not obtain free use of the parking lots, the total costs of park and ride facility development (including the landscape buffer) and the lease agreement is:

- Aventura Mall: \$384,000 first year, \$300,000 each following year
- K-Mart: \$170,200 first year, \$88,200 each following year

Conceptual design plans for each location are provided on Figures 5 and 6.



TABULATION

TOTAL PARKING= 210 SPACES
 HANDICAP PARKING= 7 SPACES
 SHORT TERM PARKING= 10 SPACES

FIGURE 6
 K-MART
 CONCEPTUAL DESIGN
 JUSTIFICATION REPORT
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Security

Lot security is a critical element to the success of this proposal. A conceptual plan to provide a secure facility, attractive to the commuter, includes the installation of gates and a video system at the Aventura Mall and K-Mart sites and the leasing of a roving security staff. Signage indicating security and video are in use will also be provided. At each lot a remote gate system would be provided at all access points where vehicles would have to stop before entering or exiting the lot. Strategically placed video cameras would tape the vehicle, passenger and license plate. Additional cameras would be placed to obtain an overall view of the lots. The lots would also be protected by a roving security officer from 6:00 AM to 8:00 PM. The officer would travel between the two lots and inspect each site throughout the day. The cost to implement the video system and the annual cost of providing the security officer is based on the cost of a similar operation for KAT and is shown below.

Video Cameras (4/lot)	\$800/ each	\$6,400
Weatherization	\$1,000/ camera	\$8,000
VCR (1/lot)	\$1,100/ each	\$2,200
Quad Monitor (1/lot)	\$1,000/ each	\$2,000
Security Officer w/vehicle: Leased Mon-Fri 6AM to 8PM (Annual)	\$61,000/ year	\$61,000
Total Security System:		\$79,600

Transit Service

The proposed park and ride lot system would utilize existing Biscayne MAX and 95X service. A capacity analysis was performed to determine the number of new passengers and the Metro Dade Transit Agency was contacted to determine existing ridership on each system. An analysis of the demand estimation model indicated 10% of the parking demand is for carpoolers and the auto occupancy rate for transit users is 1.05 persons per vehicle. The parking demand estimates documented in the **Park and Ride Lot Plan** for each lot were adjusted to passengers and the results indicate the Biscayne MAX would need to accommodate a total of 352 new riders in 1997 with the potential for 440 by 2010. Discussions with MDTA staff indicates the Biscayne MAX route will be increased to 15 minute headways allowing for 12 morning round trips. A seating capacity of 55 riders indicates the minimum route capacity (assuming all riders are seated, and all boardings occur at Aventura and alight downtown) is 660. The existing average load for all trips is 270 indicating a minimum available capacity of 390 seats. This is sufficient to carry the projected ridership considering crush capacities and the unrealistic nature of the minimum capacity. Projected potential demand for the 95X route is 55 riders which can be accommodated based on existing capacity. These result indicates there are no costs associated with additional transit service.

Traffic Operations Improvements

Transportation Systems Management (TSM) techniques were analyzed for application to this corridor. TSM refers to methods and procedures aimed at optimizing the capacity of existing facilities and making better use of existing resources rather than planning or investing in major new construction and/or right of way. Traffic operations methods reviewed include the provision of HOV facilities, contra flow bus lanes, reversible lanes, signal pre-emption, signal optimization and access and signage improvements.

The analysis of exclusive *reversible* and/or *contra-flow bus lanes* on US 1 were reviewed for implementation and the results indicate ridership would increase minimally and the impacts to the roadway would be severe. The scenario includes an off-peak (NB) direction lane dedicated to the peak direction for express bus and HOV use. An analysis of the reservation of one lane in the AM off peak direction is provided on Table 3. The results indicate the said improvement would cause a change in V/C ratios in 1997 from a high of 1.09 to well over 2.0. The analysis of an HOV lane was dismissed early are provided on I-95 which is a parallel facility.

A reversible middle lane treatment and isolated signal prioritization were reviewed for utilization on congested traffic segments. The concept would allow for an additional lane and preferential signal phasing at/on congested signals/segments. A segment approach does not incur the costs of providing the treatments where traffic operates at an adequate level of service and will have high visibility where congestion is present. Table 3 indicates the segment between NE 79th Street and NE 6th Avenue will operate at overcapacity conditions in 1997. Aerial photographs were used to review this link potential priority lane and intersection treatments. The analysis indicates the segment between NE 85th Street and NE 78th Street has potential for this type of improvement.

The improvement would require the dedication of the center lane to the Biscayne MAX and other buses during peak hours. Appropriate Bus and Four Person Carpool signage would be provided as well as appropriate pavement markings. Traffic signals at NE 85th Street, NE 82nd Street, NE 81st Street, NE 79th Street and NE 78th Street would have to be retrofitted for proper peak hour phasing and signage. Figures 7 and 8 provide a conceptual plan and Table 4 indicates an approximate cost of \$200,000.

Signal pre-emption was not analyzed in detail. Discussions with FTA Office of Mobility Enhancement indicated this type of application has only been successful within exclusive busways which is beyond the scope of this report. Additionally, national experience indicates the impact to shared and cross street traffic offsets any benefits.

Signal optimization improvements were reviewed, however, the analysis indicates that Biscayne Boulevard is already synchronized and on the Dade County computer system. A Traffic Signal Listing provided by the Dade County Public Works Department indicates there are five (5) timing sections between NE 209th Street and Flagler Street including 65 traffic signals. The sections include:

Sect #	From	To
2	NE 1st St	NE 8th St
3	NE 10th St	NE 38th St (SR 112 WB)
36	NE 50th Ter	NE 82nd St
37	NE 88th Ter	NE 156th St
38	NE 172nd St	NE 209th St

Table 3 – 1997 AM Peak Hour Analysis of Contra-Flow/Reversible Lanes

Roadway	From	To	Total #of Lanes	1997 AM Peak Volume		Peak Hour Capacity		NB V/C	SB V/C	Impact of Contra/Revers on General Use Lanes in the Off-Peak Dir	
				NB	SB	NB	SB			NB (1) GU Lanes V/C	NB (2) GU Lanes V/C
US 1	Lehman Csway	NE 163rd St	8LD	1,682	2,141	2,190	2,880	0.77	0.74	1,770	0.95
	NE 163rd	NE 151st St	8LD	1,165	1,483	2,190	2,880	0.53	0.51	1,770	0.66
	NE 151st	NE 135st St	6LD	1,169	1,488	1,770	2,330	0.66	0.64	1,150	1.02
	NE 135st	NE 123rd St	6LD	1,070	1,362	1,770	2,330	0.60	0.58	1,150	0.93
	NE 123rd	NE 6th Ave	4LD	1,072	1,364	1,150	1,520	0.93	0.59	530	2.02
	NE 6th Ave	NE 79th St	4LD	1,259	1,603	1,150	1,520	1.09	1.05	530	2.38
	NE 79th St	Venetian Csway	4LD	1,135	1,445	1,150	1,520	0.99	0.95	530	2.14
	Venetian Csway	Flagler St	8LD	1,503	1,913	2,190	2,880	0.69	0.66	1,770	0.85

Source: Frederic R. Harris, Inc.

(1) – Revised General Use (GU) lanes to reflect a lane dedicated to the peak direction.

(2) – 1997 Peak hour, off-peak direction volume divided by revised capacity.

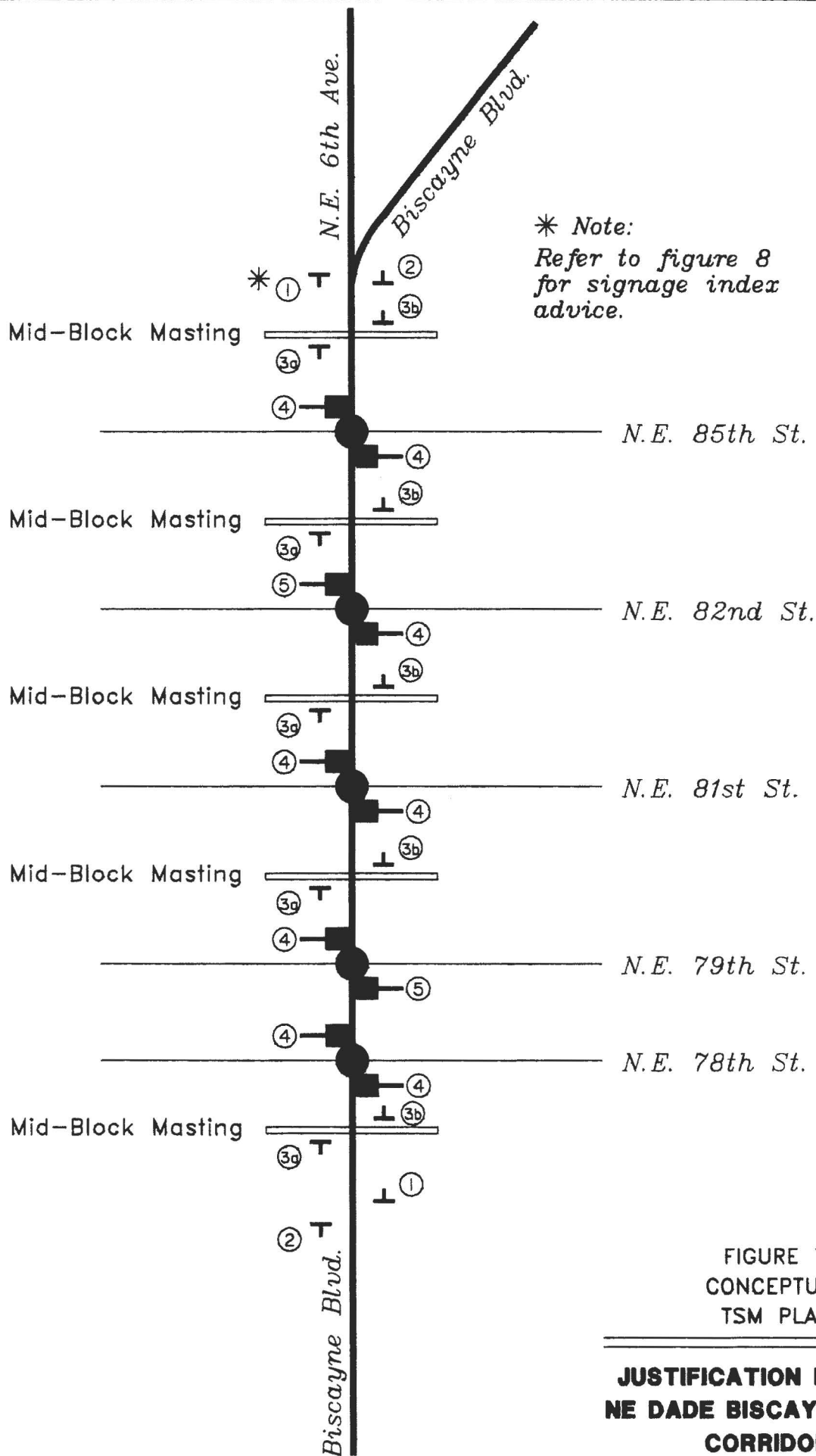
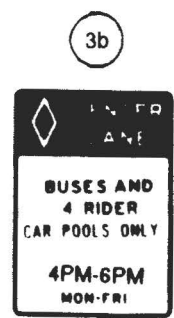
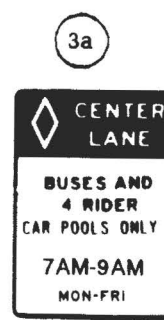
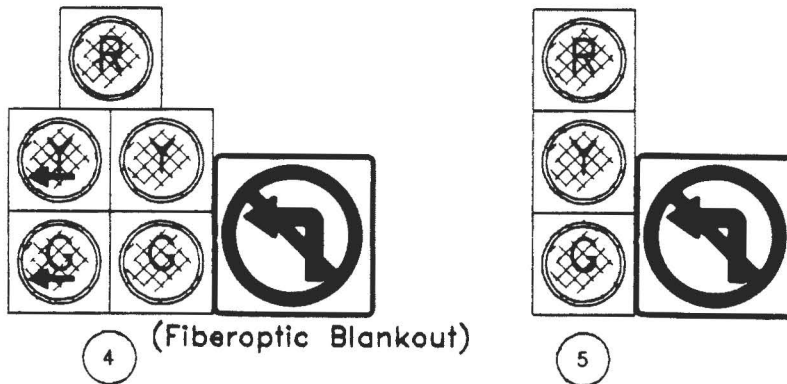


FIGURE 7
CONCEPTUAL
TSM PLAN

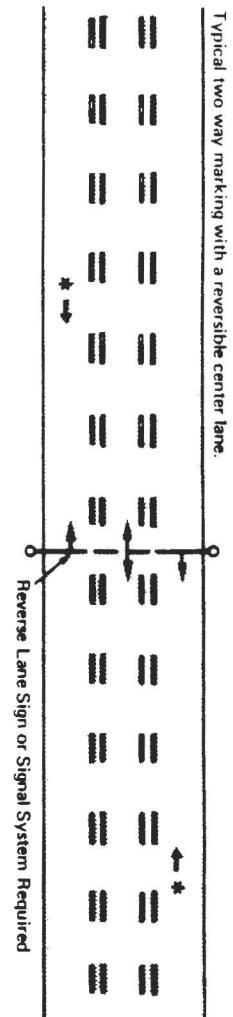
**JUSTIFICATION REPORT,
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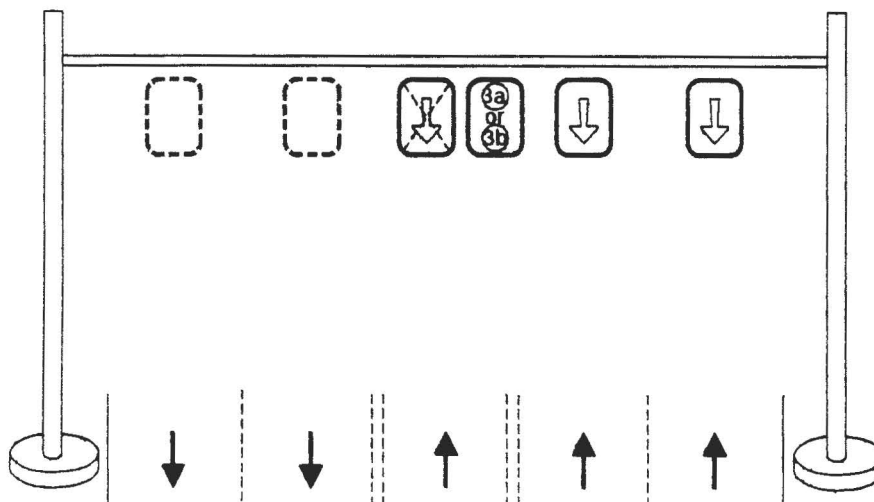
Signage



Middle Lane Signal Heads



Middle Lane Striping



Mid-Block Masting

FIGURE 8
TSM PLAN INDEX

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CORRIDOR**

Table 4 – TSM Cost Estimate

Item	Quantity	Cost	Subtotal
Striping (Double 10'–30' skip)	3,000'		\$1,200.00
Mid Block Masting			
w\Signage	5	\$35,000.00	\$175,000.00
Signal Head (5 Section)	8	\$500.00	\$4,000.00
Fiberoptic "Blankout"			
\No Left Turn	8	\$1,500.00	\$12,000.00
Signal Head (3 Section)	2	\$375.00	\$750.00
Sign 1 (Post Mounted)	2	\$325.00	\$650.00
Sign 2 (Post Mounted)	2	\$325.00	\$650.00
Sign 3a	5	\$125.00	\$625.00
Sign 3b	5	\$125.00	\$625.00
			\$195,500.00
TOTAL		say	\$200,000.00

Source: Frederic R. Harris, Inc.

Access improvements were reviewed at each of the two sites. All site driveways are controlled by traffic signals and will allow for on-site bus access. The Aventura Mall site will be accessed from the signal at US 1/South Mall Access traffic signal and the K-Mart site will utilize the traffic signals at US 1/NE 107th Street and US 1/NE 108th Street (see Figure 5 page 16). There are no additional costs associated with access improvements.

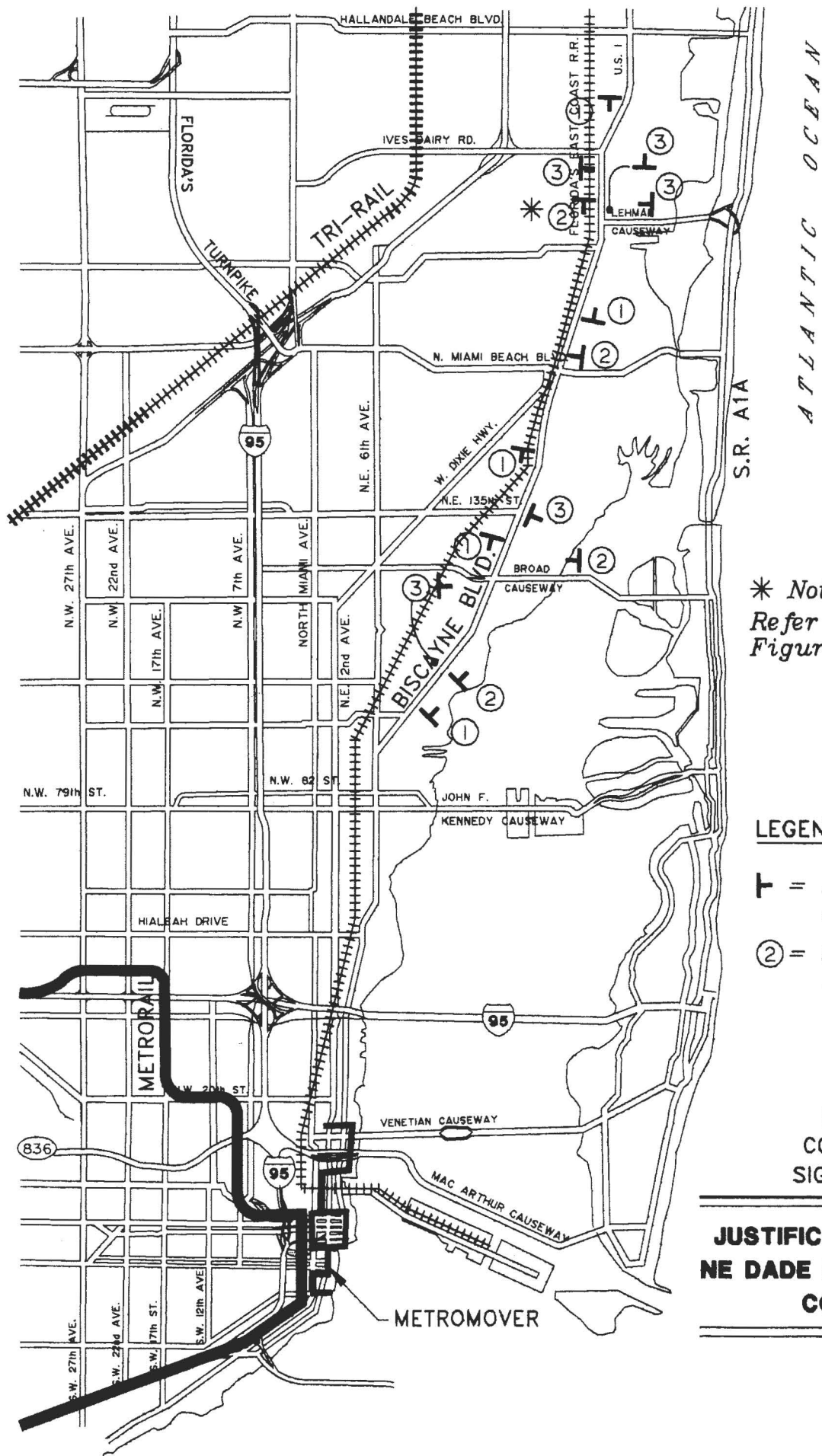
Signage improvements for the Biscayne Boulevard highway project include guide signs indicating the location of park-and-ride facilities and amenities. Figure 9 and 10 provide a conceptual corridor signage plan and index. The cost of this plan is estimated at \$4,500.

Congestion Management Plan

Dade County is currently funding a **Transportation Management and Congestion Mitigation Study** to develop a countywide Congestion Management Plan (CMP). A number of recommended approaches to congestion management are now being study including specific applications relating to park and ride facilities. The **Congestion Management Plan Background Report** prepared by Barton-Aschman Associates, Inc. provides a number of Transportation Demand Management (TDM) tools that have the potential of encouraging direct use of park and ride lots or indirect use of the lots as staging areas. The recommended TDM measures include:

- Carpool Programs
- Subsidized or Reduced Transit Costs
- Vanpool Programs in associate with Transportation Management Areas
- Increased Park and Ride Lot Use
- Flextime
- Employee Paid Parking
- Employee Travel Allowances
- Congestion Pricing
- Subscription Bus Service
- Telecommuting
- Incorporate TDM as DIC Alternative
- Negotiated TDM Developer Agreements
- Mixed Use Developments
- Parking Supply Limitations
- Pedestrian Amenities at Suburban Center
- Bicycle Facilities and Parking

In addition to these TDM measures, the CMP also recommends required complimentary actions for TDM's that will be beneficial to the success of the proposed park and ride lot system. Marketing of the TDM's is currently funded by the Department through the services of Gold Coast Commuter Services (GCCS). GCCS has developed a marketing scheme for general multi-modal commuting through the use of the "Joe the Chameleon" advertising campaign. This program should be utilized to market the proposed Biscayne MAX park and ride system. A sample of the advertising campaign is provided on Exhibit D.



* Note:
Refer to index on
Figure 10, page 26.

LEGEND

- T = Park & Ride
Signage
- ② = Sign Reference
Number

FIGURE 9
CONCEPTUAL
SIGNAGE PLAN

**JUSTIFICATION REPORT,
NE DADE BISCAYNE BLVD.
CORRIDOR**



1,2 & 3 SIGNAGE PROVIDED BY MUTCD.
SHOULD BE REVISED TO INICATE MULTIMODAL
PROVISIONS RATHER THAN CARPOOL ONLY.

FIGURE 10
CONCEPTUAL SIGNAGE
PLAN INDEX

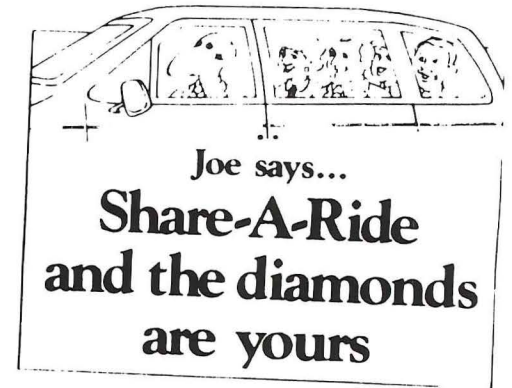
**JUSTIFICATION REPORT,
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EXHIBIT D



Gold Coast
Commuter Services

6261 N.W. 6th Way, Suite 100
Fort Lauderdale, FL 33309
Broward: 525-RIDE
Dade/Palm Beach: 1-800-234-RIDE
Fax: (305) 776-7592



TURN OVER A NEW LEAF
with **FREE** transportation planning.



Let Joe Chameleon
show you how to
TURN OVER
A NEW LEAF
with **FREE**
transportation planning.



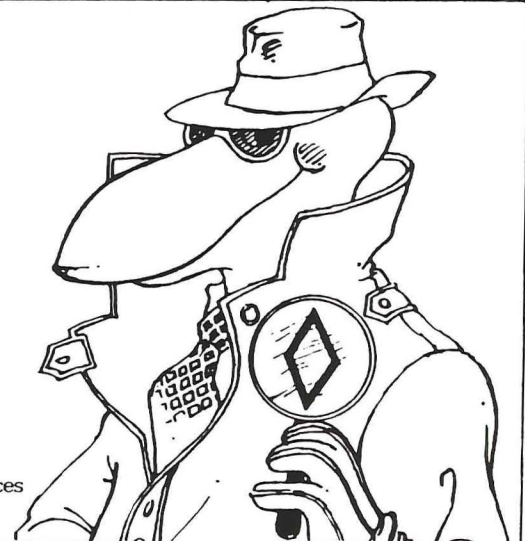
Joe says...

**Share-A-Ride and the
diamonds are yours**

1-800-234-RIDE



Gold Coast
Commuter Services



Other complimentary actions include the designation of Transportation Coordinators to implement and administer TDM's, the development of Transportation Management Areas and Trip Reduction Ordinances.

All of the CMP actions, recommendations and programs should be utilized to the fullest in the implementation and operation of the proposed system. The programs are a no cost item to this project.

Facilitating the access of transit at park and ride location by pedestrians and bicyclists. To accomplish this, the accessibility of each station's location and design must be carefully considered. Insuring the safety and accessibility of pedestrian and cyclists may require the improvement of facilities both within and near to park and ride lots. The minimum warrants specified in Section 4c of the Manual on Uniform Traffic Control Devices should be used to guide the placement of pedestrian markings and controls. Secure bicycle parking should be provided through the installation of permanently installed racks (preferably covered) or lockers. Five percent of the automobile parking capacity should be provided in bicycle parking units.

All lots will be developed to meet the requirements of the Americans with Disabilities Act.

Benefit Analysis

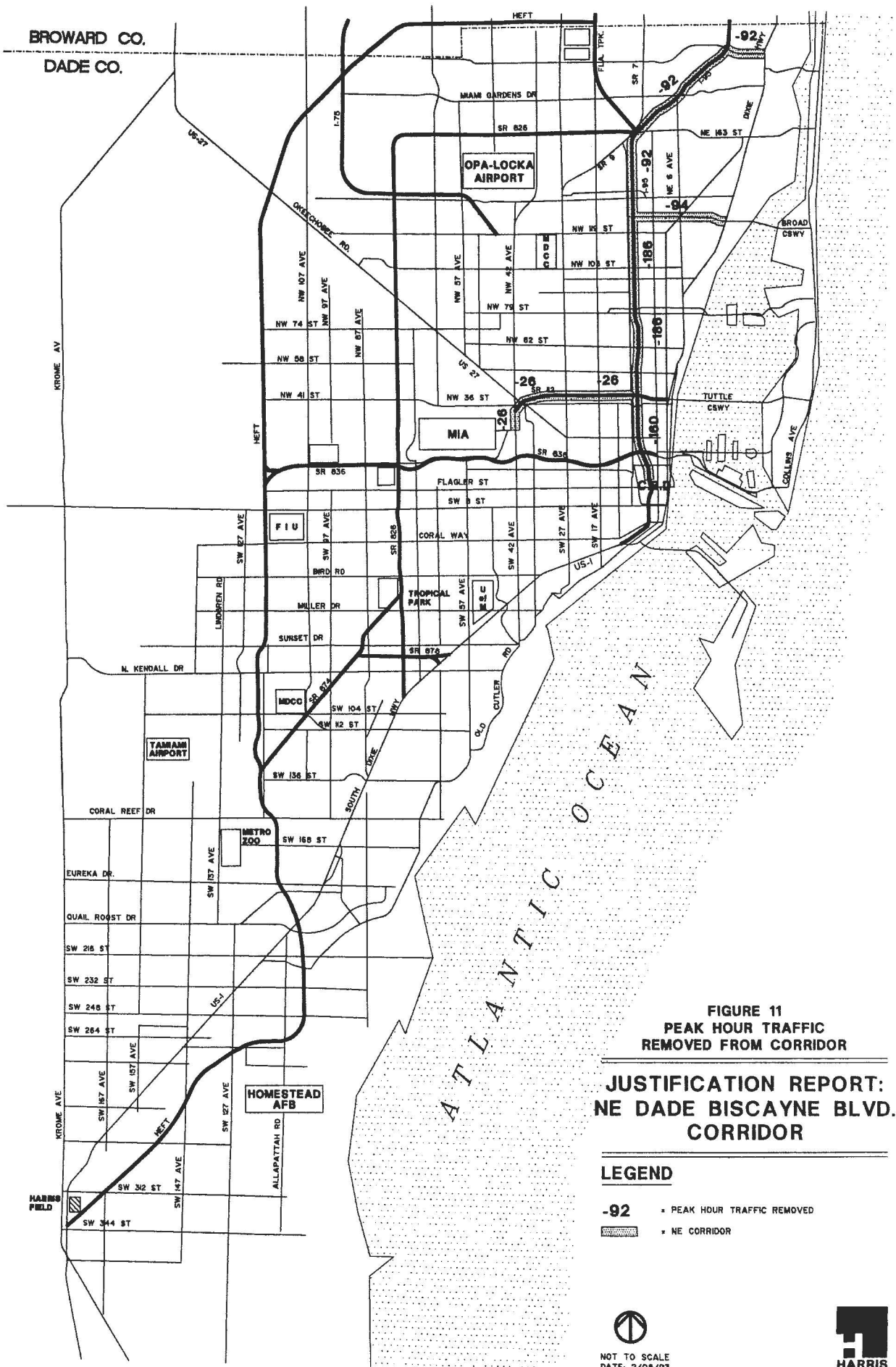
A revised analysis of benefits was performed based on the combined impact of the two proposed lot locations. Where the Dade County Park and Ride Lot Plan assessed all of the lots on individual merit, this analysis combines the impacts of the Aventura Mall and NE 123rd Avenue Location Areas. Figure 11 shows the peak hour traffic removed from the system during one hour of the AM peak period.

An analysis of impacts was performed for 1997 based on the volumes shown on Figure 11 and 1997 traffic conditions. The results indicate the proposal would:

Reduce Annual Vehicle Miles of Travel by:	2,261,220 miles
Reduce Annual Carbon Monoxide Emissions by:	15,640 pounds
Reduce Annual Hydrocarbon Emissions by:	1,480 pounds
Reduce Annual Vehicle Hours of Travel by:	127,058 hours
Reduce Annual Person Hours of Travel by;	129,760 hours

Benefits were also assessed based on financial concerns following the procedures provided in the **FDOT Park and Ride Lot Manual** and the **Dade County Park and Ride Lot Plan** the results indicate a systemwide annual benefit of \$1,803,902. A breakdown of the benefits includes:

	Annual Travel Time Savings	\$519,000
	Annual Vehicle Operating Costs	\$452,000
	Annual Accident Savings	\$1,078,902
less:	Annual User Increased Transit Cost	\$246,000
	TOTAL BENEFIT	\$1,803,902



A summary of all costs described in this report is provided below. Additional costs for preliminary engineering and site maintenance are also provided.

Site Development	\$84,000	Aventura Mall
	\$72,000	K-Mart Plaza
Preliminary Eng On-site	\$32,200	Both Sites
Site Maintenance	\$28,800	Annual
Lease	\$300,000	Aventura Mall Annual
	\$88,200	K-Mart Plaza Annual
Security (Equip. and Install.)	\$18,600	Both Sites
Security (Guards and Vehicle)	\$61,000	Annual
Traffic Operations	\$200,000	Both Sites
Signage	\$4,500	Both Sites
Preliminary Eng Off-site	\$40,000	Both Sites
TOTAL COST FIRST YEAR	\$929,300	
ANNUAL COSTS (Following 1st Year)	\$478,000	/year

Based on a 20 year life span, 7% discount rate and no residual value the Benefit/Cost Ratio is 3.46.

Revenues

Revenues include farebox revenue expanded ridership on the Biscayne MAX and additional transfers at the Omni Metromover Station. additional revenue will equal – \$246,000 annually. No income is assumed for parking at the Park & Ride lots, from advertising or concessions.

Implementation

The implementation schedule generally includes three timeframes.

- Pre-start activities
- Construction activities
- Post-start activities

Pre-start activities include coordination with landowners to secure a leasing agreement, final design of park-and-ride facilities; construction of traffic operations improvements; and marketing surveys and promotion. It is recommended the Department use in-house resources to provide the necessary services required to negotiate an agreement with the the Aventura and K-Mart Mall management for use of the proposed park & ride facility as well as other ROW acquisition requirements.

Additional functions would include appraisals of recommended park-and-ride sites, assistance during negotiations and/or litigation, and assistance during selection of alternate sites if the recommended sites are substantially higher than preliminary estimates provided by the Department.

The Department should discuss with Gold Coast Commuter Services promotion of the facilities. The development of brochures, surveys, signs, and radio advertisement spots. Door hangers (i.e. brochures and surveys) would be distributed to communities within the service area. marketing and promotion should also be assisted by MDTA.

Construction activities include development of park-and-ride facilities and traffic operation improvements. It is assumed that all permit approvals and plan reviews would have been obtained during the design or bid procurement phase.

Post-start activities include a continuance of the marketing campaign; monitoring of Biscayne MAX ridership; detection and resolution of problems; monitoring of the project's success; and planning of future expansion improvements.

Marketing

An active marketing campaign would need to continue for a minimum of 1–2 months after project start-up in order to maximize public awareness of the project. It is anticipated that subsequent to the initial marketing period, the best method of promotion would be through "word of month". Therefore, it is critical that performance standards be high and reliability be maintained – particularly during the formative stages of the project. Follow-up telephone and on-board surveys should be conducted to assess the project's success and to determine how the service could be improved or expanded.

Monitoring of Lot Usage

A continuing monitoring of HOV usage should be instituted with results summarized in a monthly report. The monthly report should be inclusive of the following information:

- Summary of project Status
- Express Bus Ridership Levels
- Vanpool Ridership Levels
- Park-and-Ride Facility Usage
- Problem Identification and Proposed Methods to Resolve Such Problems
- Schedule Adherence and Reliability
- Minutes of Meetings
- Cashflow Assessment

IV. SUMMARY

The results of the Justification Report indicate the proposed Biscayne MAX/Park and Ride lot system is a feasible Transportation Demand Management alternative in anticipation of future development of capital intensive transit improvements. The analysis indicates the system will carry as many as 164,000 new annual transit riders by 1997 and over 200,000 by 2010. Note, these figures are based on the development of a Park and Ride Lot system and TDM measures and do not include the development of capital intensive multi-modal projects.

The lots would be developed to include a landscape buffer and amenities that will make it attractive to commuters. The landscape buffer should not, however, obscure view of the facility from adjacent roadways. The site will be accessed through entrance gates with video cameras recording access activities. TSM measures will be used to speed bus traffic through a bottleneck identified between NE 6th Avenue and NE 79th Street.

An analysis of site costs indicates the project could be developed for approximately \$929,300 with annual maintenance costs of \$478,000/year. Based on these results the project should move forward to the programming and implementation stages.

