

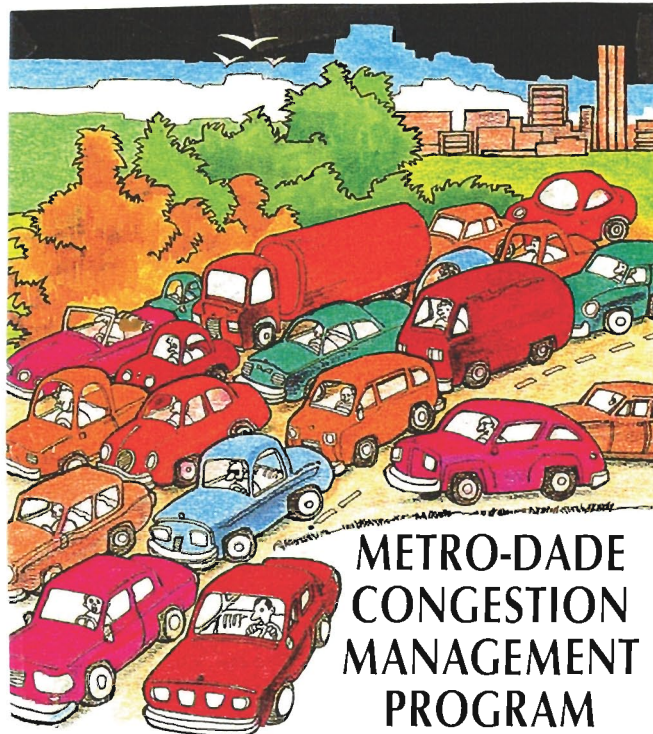


Metropolitan Dade County

Metropolitan Planning
Organization

**DADE COUNTY
CONTINUING DEVELOPMENT OF TMAs**

**SOUTH BEACH
BICYCLE AND PEDESTRIAN STUDY**



Prepared By:

Barton-Aschman Associates, Inc.

January 1995

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PREFACE

Congestion Management has become the latest term to enter the transportation profession's lexicon. It connotes the realization by the field's professionals that it is no longer recommended to continue building all of the infrastructure necessary to meet the demands of the American motoring public of owning a private automobile, paying little for its operation, and having the ability to use it, unimpeded, whenever they choose. Because of this, curbing the demand for the limited transportation infrastructure is now being seriously considered by all levels of government, through the use of Transportation Management techniques. These are grouped into Transportation System Management (TSM), focusing on physical facilities, and Transportation Demand Management (TDM) focusing on people behavior.

Transportation Management is generally defined as a systematic process of modifying the demand placed on the roadway system by vehicles, to achieve the goal of reducing, alleviating or managing the number of automobiles using the system, particularly during the peak hours. Demand reduction is generally focused on the private, single-occupant automobile and achieved through a variety of methods whose goal is to increase vehicle occupancy and reschedule trips around the peak travel hours. Transportation Demand Management strategies are aimed at relieving vehicular congestion, enhancing air quality, and promoting energy conservation. These are important to the implementation of the concurrency component of Florida's Growth Management Act, the Federal Clean Air Act Amendments of 1990 and Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

To aid in the implementation of TDM Strategies in Dade County, in 1991, the Metro-Dade Metropolitan Planning Organization with the aid of Barton-Aschman Associates, Inc. developed the *Transportation Demand Management and Congestion Mitigation Study*. The purpose of this study was to investigate a wide range of TDM alternatives available to the County, and to develop the best way in which the County could implement state-of-the-art TDM techniques. This study which was adopted by the MPO governing board identified specific actions for adoption and implementation by the Metropolitan Dade County. The Plan provided a program of short-range and long-range measures to reduce the need for single occupant vehicles on Dade County's roadways. The focus of this *South Beach Bicycle and Pedestrian Study* is to inventory and identify low cost measures to improve the existing bicycle and pedestrian features along selected corridors in the South Beach area. These corridors are intended to be short distance and recreational type catering for tourists and short distance utilitarian trips.

1.0 INTRODUCTION

Bicycling and walking are modes of transportation that provide numerous benefits to society, including: improved air quality, decreased fuel consumption, and healthier citizens. Bicycling and walking are available to most individuals, including many of the transportation disadvantaged. Bicyclists and pedestrians are frequently overlooked when roads are being designed and constructed. The changing needs for our society and the emphasis on environmental issues require that new and innovative ways to move people be considered. Emphasis of the bicycle/pedestrian travel modes in the **Intermodal Surface Transportation Efficiency Act (ISTEA)** of 1991 underlines these needs. The policy objective of ISTEA is to *"develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy and will move people and goods in an energy efficient manner."*

- **Current Usage and Constraints to Usage**

Available data from the U.S. Census Journey to Work Survey and the Nationwide Personal Transportation Survey (NPTS) suggest low levels of bicycling and walking nationwide. This is indicated for work trips as well as those for school, shopping, recreation, and personal purposes. In 1990, the Census data estimated that 4.5 million persons commuted to work by walking and just under half a million persons by bicycling. The NPTS, by examining all work trips, showed levels of about 0.4 percent for bicycling and four percent for walking. Many individual communities, however, have achieved higher levels of bicycling and walking, such as Boulder, Colorado; Seattle, Washington; and Eugene, Oregon.

The challenge is to increase the number of bicycle and walking trips for all trip purposes. Available data indicate that nearly two out of three trips are less than five miles long. These trips provide many opportunities for conversion from auto to bicycle or walking.

Four out of five trips are less than ten miles long. These longer trips also provide potential for bicycling and walking when combined with other transportation modes.⁽¹⁾

Although many reasons are given for not bicycling and walking, a number of public opinion surveys and research studies indicate that the public **wants** to bicycle and walk more. A recent Harris Poll concluded that a ten-fold increase in adult bicyclists, from three to 35 million, would result in better facilities were available

- **How to Increase Usage**

Literature on this subject identifies various measures which can be used to increase levels of bicycling and walking. Facilities can be provided which are scenic, safe, well-designed, enjoyable, and oriented to points of interest. People would travel on a particular path if they knew it was attractive and safe. Providing amenities such as benches, bicycle racks or lockers would also encourage walking and bicycling. Compact land-use patterns encourage bicycling and walking where travel distances are short and travel on bicycle or on foot is more practical. Disincentives to using motor vehicles such as lack of parking, can also promote bicycling and walking.

In an area such as South Beach, promotional programs, such as, media campaigns, and bicycling and walking tours can also encourage cycling and walking. These techniques can be used in conjunction with health, fitness, and exercise programs. Bicycling and walking also fit in well with environmental concerns.

The *South Beach Bicycle and Pedestrian Study* was undertaken as part of the Dade County MPOs commitment in providing assistance to TMO/TMAs. The South Beach Transportation Management Association (SoBe TMA) is in the process of forming. The traditional grid roadway system, high percentage of recreational trips, parking demand, short trip distances, extensive transit services and low income employment needs of the South Beach area, are ideal for promoting programs to encourage cycling and walking. This report only addresses the recreational, bicycle and

pedestrian needs of the South Beach area. Because the South Beach area has an extensive network of sidewalks, particular attention was given to the bicycle facility needs in the South Beach area.

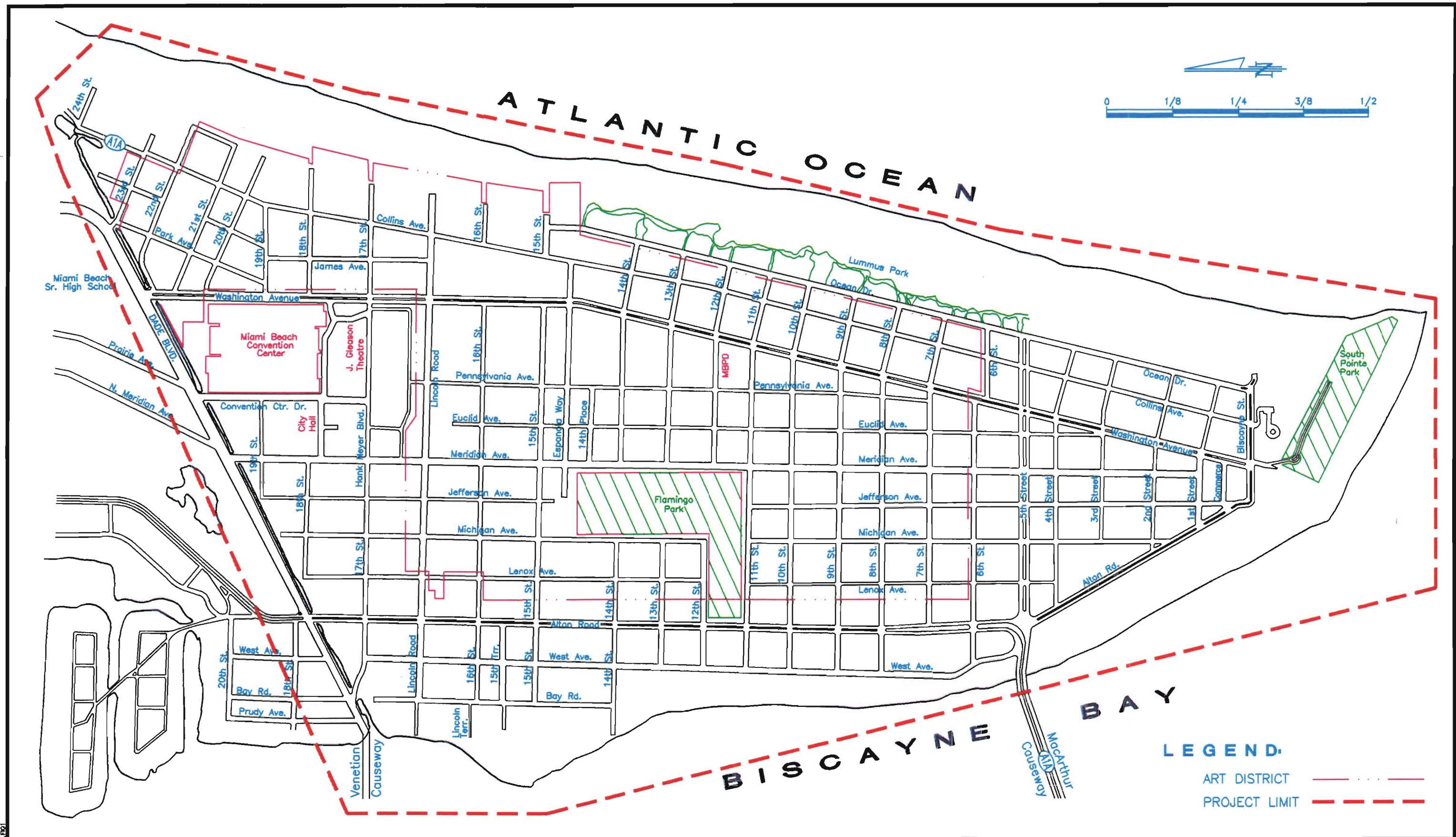
It is imperative that any recommendations identified in this report is consistent with the Countywide Bicycle Plan, the South Beach Parking Study, and the Lincoln Mall redevelopment Plan. Therefore, periodic meetings and informal discussions were held with the MPO, FDOT, City of Miami Beach, Miami Beach Chamber of Commerce, Gold Coast Commuter Services, and Miami Beach Bicycle Committee staff members to coordinate the findings and the progress of this study.

2.0 STUDY AREA

2.1 The South Beach

The SoBe TMA Area is bounded by 49th Street on the north, Government Center on the south, Biscayne Bay to the west, and the Atlantic Ocean to the east. It is the southern portion of the municipality under the jurisdiction of City of Miami Beach. It is a tourist destination as well as residential resort community. Since 1980, all of the demographic indicators have shown positive changes for this growing city. The average age of the population has decreased from 65.8 in 1980 to less than 50 years of age in 1990⁽²⁾. The demographic shift is more pronounced in the South Beach area due to its attractiveness to tourism, intense night life and the transient nature of the population. As shown on Figure 1, the northern boundary of the study area is limited to Dade Boulevard.

During the winter season over 200,000 people call Miami Beach home, enjoying the many amenities and night life the Beach has to offer. It has experienced steady growth in tourism activity over the past five years. An unprecedented influx of foreign visitors, particularly from Europe and South America have been attracted to the Miami Beach area. Government officials, encouraged by the increase in tourism and the renewed interest in the South Beaches Art Deco District, have invested almost \$200 millions in public improvements in recent years⁽¹⁾. Almost half of which was spent on the expansion and renovation of the Miami Beach Convention Center. It is one of the 10 centers in the United States with over 1.1 million gross square feet of space. The facility is able to host conventions of 50,000 delegates. This expansion has recently necessitated the expansion of hotels and accommodation facilities to house the convention delegates in the South Beach Area.



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**SOUTH BEACH
STUDY AREA**

Figure
1

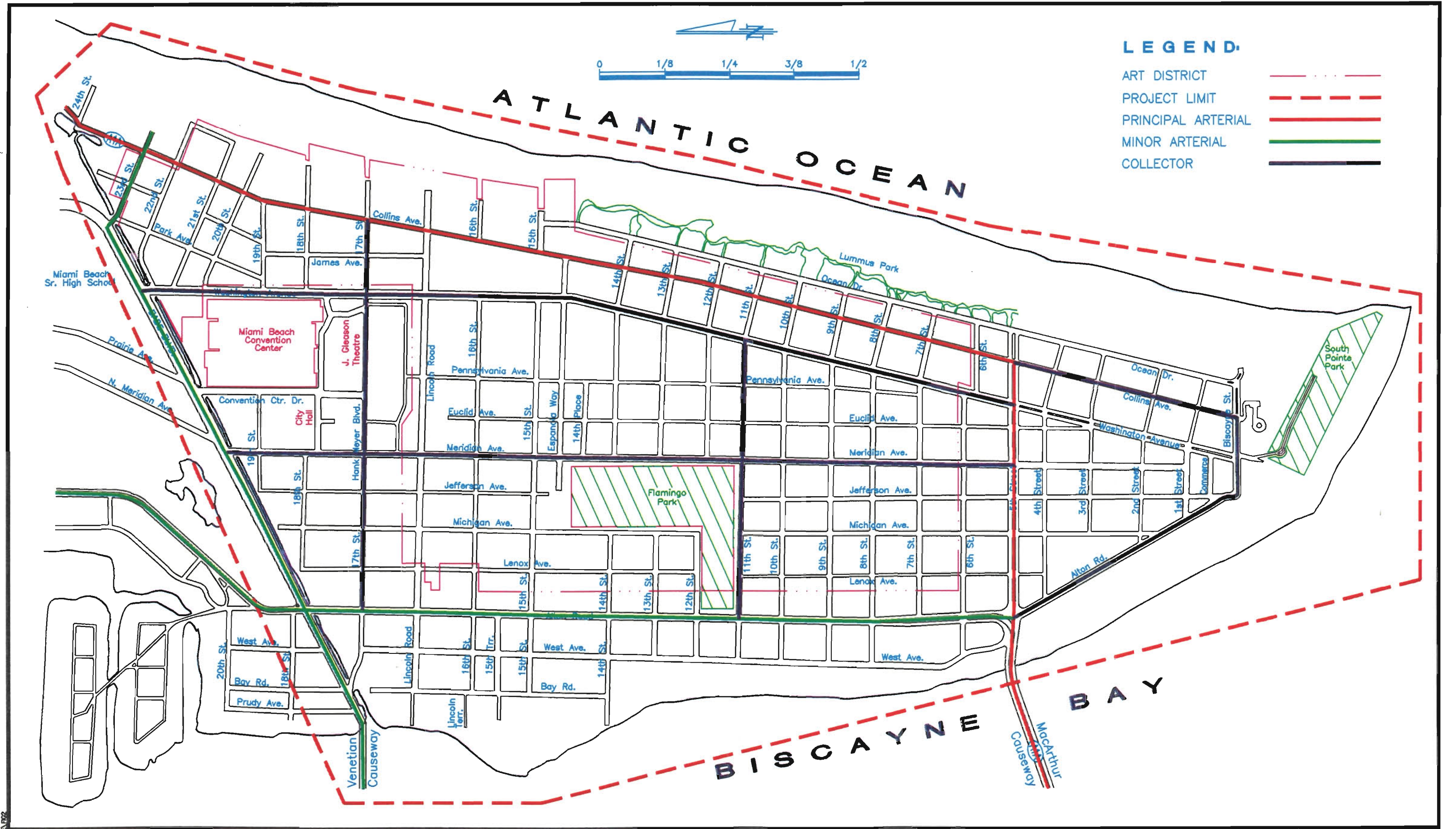
Ocean Drive which fronts the Atlantic Ocean in the South Beach Area is the focus and the showcase of Art Deco District. In order to complement the private developers effort to rehabilitate the South Beach area, Ocean Drive and the adjacent ocean front Lummus Park have been through significant public improvements. Completed in 1989, the two-phase project involved the widening of Ocean Drive's sidewalks to improve pedestrian flow and to allow for outdoor cafes, improved lighting and extensive street scape improvements. Lummus Park was replanted, the promenade repainted and new playground equipment installed.

Espanola Way, the one-block Spanish Village is part of South Beaches' historic district, and has recently undergone \$185K in infrastructure and street improvements⁽¹⁾. These improvements involve those made on Ocean Drive, developing a sense of continuity between the two areas. Many businesses have moved into this area, catering to the young upwardly-mobile people moving to and visiting the City.

Lincoln Road, once known as the 5th Avenue of the South, is the oldest commercial district in South Beach Area. Containing the largest amount of retail and office space, Lincoln Road has evolved into a diverse, multi-purpose district. Lincoln Road is now home to the New World Symphony Orchestra, the Miami City Ballet and an emerging art colony complete with studios and galleries⁽¹⁾.

2.2 Roadway Network

An extensive network of city, county, and state roadways exist within the South Beach Area. Figure 2 shows the roadways network by their functional classification. Some of the most important roadways are:



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ROADWAY FUNCTIONAL
 CLASSIFICATION

Figure
 2

- ***Collins Avenue (State Road A1A)*** is a four-lane undivided principal arterial, traverses north/south along the eastern shores of the South Beach. It carries over 13,000 vehicles per day on the southern end and over 21,000 vehicles per day on the northern end of the South Beach Area.
- ***Fifth Street (State Road A1A/U.S. 41)*** is the east/west extension of Collins Avenue. It is a four-lane divided principal arterial connecting South Beach Area to the heart of Miami via the MacArthur Causeway (I-395).
- ***Alton Road (State Road 907)*** is a four-lane undivided minor arterial traverses north/south along the west side of South Beach Area. It contains most of the new retail development on South Beach Area. The Alton Road commercial district serves a strong residential base, with one of the largest concentration of high-rise condominiums located within walking distance.
- ***Dade Boulevard*** is a four-lane undivided minor arterial which makes up the north boundary of the South Beach Area. It is the extension of Venetian Causeway also connecting South Beach Area to the heart of Miami.
- ***Washington Avenue*** is a four-lane divided collector running parallel to Collins Avenue. It is a commercial corridor and recently undergone extensive revitalization. Key renovation projects along this corridor include the Courthouse Square, the Clay Hotel, and the Wolfsonian Foundation, a state-of-the-art, international museum and study center.
- ***Meridian Avenue*** is a four-lane undivided collector runs north/south through the middle of South Beach Area. It is mainly a residential corridor and passes along the east edge of Flamingo Park.

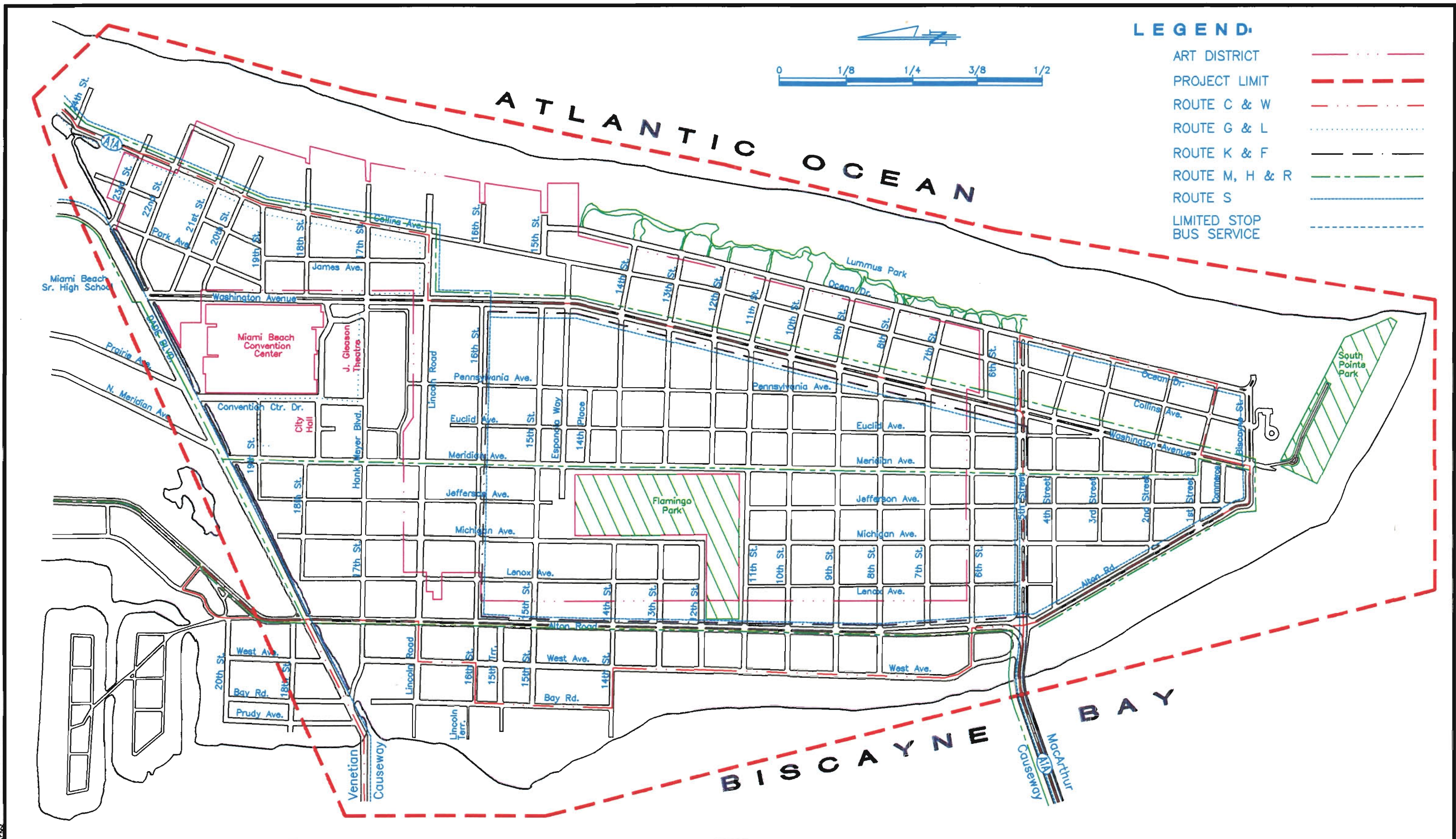
- **Eleventh Street** is a two-lane undivided collector runs east/west passing along the southern edge of Flamingo Park.
- **Seventeenth Street**, which is also known as Hank Mayer Boulevard, is a four-lane undivided east/west collector. It provide access to Jackie Gleason Theater and the Miami Beach Convention Center from Venetian Causeway.

2.3 Transit Network

The South Beach Area is served by an extensive network of Metrobus system. Following table and Figure 3 show all the metrobus routes and route numbers that cover the South Beach Area. The Florida Department of Transportation is currently studying the feasibility of providing a metrorail link that connects east and west Dade County through the Miami International Airport and extended to Miami Beach.

Route #	Route Description	Headway (mins)			
		Weekday		Sat.	Sun.
		Peak	Off-Peak	All Day	All Day
C	Downtown - Miami Beach	20	20	20	30
F	Civic Center - Miami Beach	30	40	60	60
G	Opa-Locka - Miami Beach	20	30	30	60
H	North MB - South MB	20	20	20	30
K	Downtown - Miami Beach	20	20	30	30
L	Hialeah - Miami Beach	8	10	12	—
M	Downtown - Miami Beach	30	30	30	30
R	Miami Beach	60	60	—	—
S	Aventura - Downtown	10	10	10	12
W	South Beach	24	24	24	24

Source: MDTA Route Map & Schedule



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**SOUTH BEACH
BUS ROUTES**

Figure
3

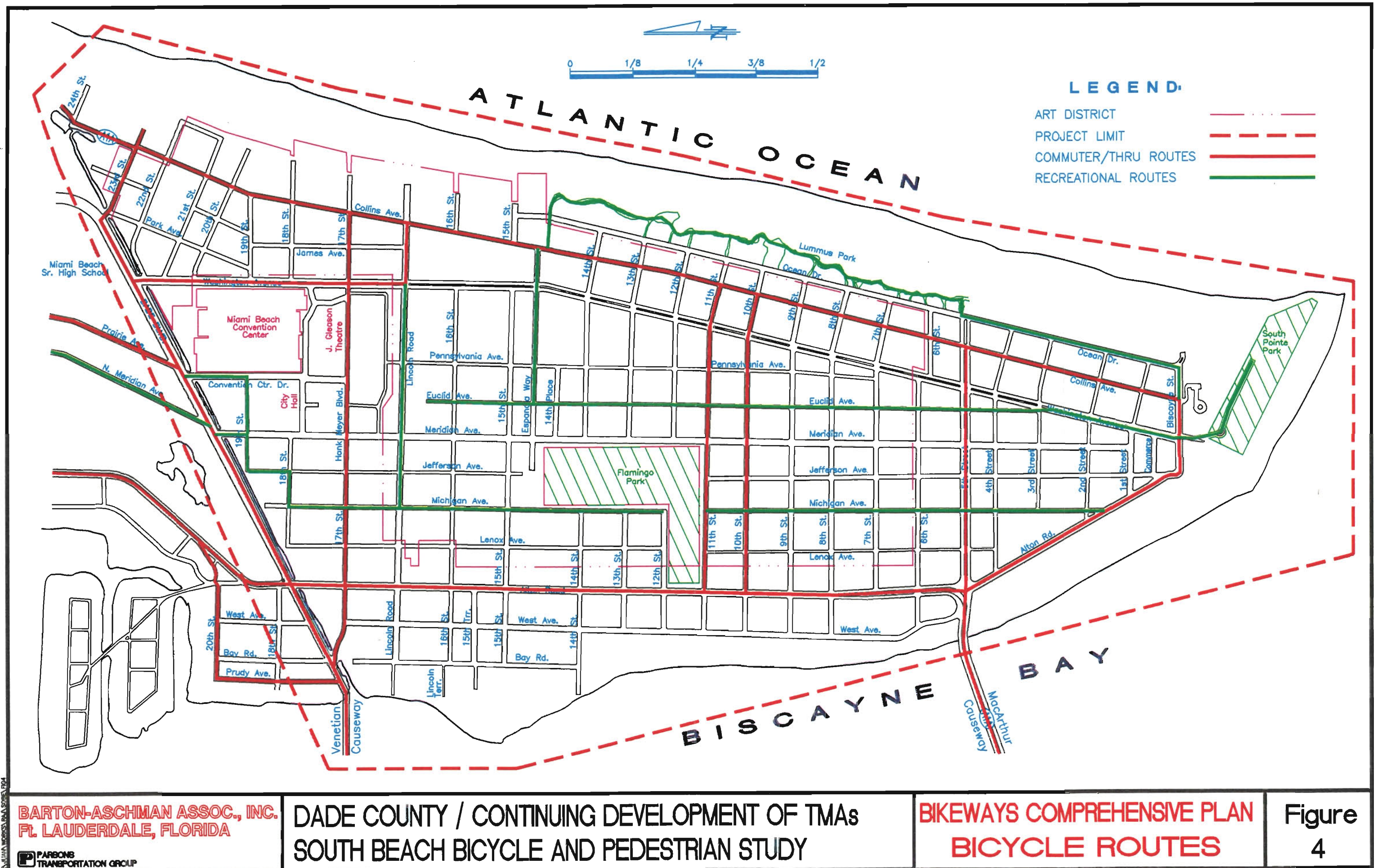
2.4 Pedestrian Facilities

Almost every street in the South Beach Area has sidewalks either one or both sides of the street. In addition to some of the improvements done to major pedestrian facilities, such as, Ocean Drive, Lincoln Road etc., have created an excellent network of pedestrian facilities in the South Beach Area.

2.5 Bicycle Corridors

In late 1993 Resolution Number 93-20881 was adopted by the City Commission of the City of Miami Beach regarding the implementation of a Bikeways Comprehensive Plan. Figure 4 shows the corridors in the South Beach Area that make-up this plan. This plan include commuter-thru routes and recreational routes. Currently, these routes are only identified by posted bicycle route signs.

It was intended, the recreational routes identified in this report will match the recreational routes identified by the Bikeways Comprehensive Plan. Most of the routes did match, however, due to engineering reasons a few alternative routes to the Bikeways Comprehensive Plan have been identified in this report. In the absence of an alternate route the route identified by the Bikeways Comprehensive Plan should be promoted. For example, this report does not identify any recreational corridors north of Lincoln Road. The Bikeways Comprehensive Plan, however, have identified Michigan Avenue/18th Street/Jefferson Avenue/19th Street/Convention Center Drive as a recreational route to serve the activities surrounding the Convention Center and the City Hall. In this instance Bikeways Comprehensive Plan corridor should be promoted.



3.0 BICYCLE AND PEDESTRIAN CORRIDORS IDENTIFICATION AND DATA COLLECTION

The street system in the South Beach Area is made-up of two-way roadways running north/south and east/west making up a grid pattern. Based on TRW-REDI property data, majority of the roads are built on public right-of-ways of either 50 feet or 70 feet. Alton Road and Washington Avenue, however, has 100 foot right-of-way, Collins Avenue has 80 foot right-of-way, and 5th Street has 160 foot right-of-way. Corridors with wide pavement areas, low traffic volumes and low land-use intensity are in general, ideal corridors for short distance and recreational bicycle-ways.

The South Beach Area has an excellent supply of sidewalks which provide access among almost all of the areas of interest, hotels, motels, parking facilities, transit stops and the beach. Almost all of the sidewalks are direct, which negate the need for the pedestrian to walk across undesignated pedestrian areas except when crossing a street. Due to the large number of pedestrian corridors that exist in the South Beach Area only the pedestrian facilities along side the bicycle corridors were studied. The identification of bicycle and pedestrian corridors was conducted through a series of subjective steps.

3.1 Field Reconnaissance

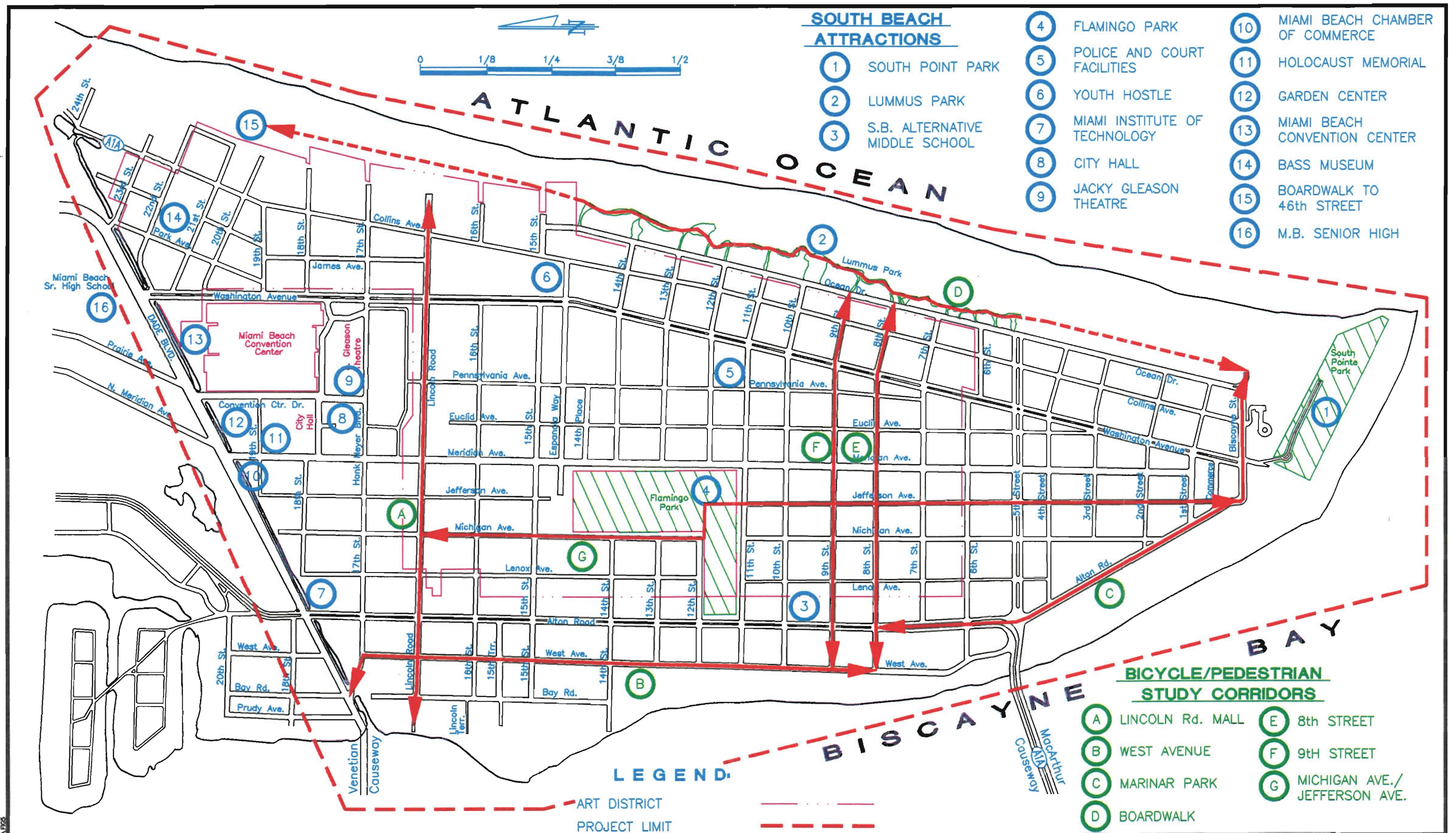
Bicycles and pedestrians could be seen on almost any corridor in the South Beach Area. During the field reconnaissance, however, they were observed closely to identify which corridors attracted most of the bicyclists and pedestrians. Not surprisingly the wide and low traffic volume corridors attracted most of the casual bicycle and pedestrian travelers. The major South Beach Attractions, high intensity residential areas, and the major business were identified on a map

of the South Beach as shown on Figure 5. Based on the field reconnaissance and input from the MPO staff and the SoBe TMA representatives seven (7) corridors were identified for bicycle and pedestrian improvements. These corridors are also shown on Figure 5, and they are:

1. Lincoln Road Mall - from Biscayne Bay to Atlantic Ocean
2. West Avenue - from Lincoln Mall to 5th Street
- 3a. Alton Road - from 5th Street to Biscayne Street
- 3b. Biscayne Street - from Alton Road to Ocean Drive
4. Boardwalk along Lummus Park
5. Eighth Street - from West Avenue to Boardwalk
6. Ninth Street - from West Avenue to Boardwalk
- 7a. Michigan Avenue - from Lincoln Mall to Flamingo Park
- 7b. Jefferson Avenue - from Flamingo Park to Biscayne Street.

Additionally, an extension of the Boardwalk further north and south were also identified as viable bicycle and pedestrian corridor.

Eighth Street and Ninth Street corridors are the major exceptions to the Bikeways Comprehensive Plan recreational routes. Eleventh Street corridor, identified in the Bikeways Plan, is a heavily traveled collector road. The A1A one-way pair PR&E Study recommends 10th Street to be two-way operations, where as 8th and 9th Streets have been identified to be one-way pair operation, which could facilitate the conceptual recommendations identified later in this report. Also, one of the objective in selecting 8th and 9th Streets corridors as oppose to 10th and 11th Street corridors is to provide an evenly spread network north of 5th Street.



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BICYCLE/PEDESTRIAN
STUDY CORRIDORS

Figure
5

Identification of these corridors is not an attempt to limit bicycle and pedestrian travel only to these corridors, rather it has been recognized that bicyclists and pedestrians have the right to use all of the roadways in the South Beach area and they currently do so.

3.2 Data Collection

Each of these seven corridors was thoroughly field-surveyed to identify major bicycle and pedestrian amenities, deficiencies and feasibility of accommodating or improving the corridors for bicycles and pedestrians. Following is a list of data collection items:

- a) Existing pedestrian and bike signs
- b) Traffic signal locations and pedestrian/bike features
- c) Exposure to inclemental weather
- d) Potential hazards
 - Security
 - Street Lighting
 - Visual Obstructions
- e) Cross-section geometry at selected locations
- f) Existing traffic and pedestrian volumes at selected locations from other sources
- g) Bicycle and pedestrian facility deficiencies

4.0 BICYCLE AND PEDESTRIAN CORRIDOR EVALUATION

Figures 6 through 12 show schematically each of the seven corridors that were identified for detailed study. The primary intent of the sketches is to show the data collection items identified previously as well as to show conceptual geometric improvements to facilitate for bicycles and pedestrians. These figures also show minor deficiencies that could be corrected at low cost along these corridors to facilitate for bicycles and pedestrians.

4.1 Lincoln Road Mall Corridor

Lincoln Road Mall Corridor could be divided into three distinct sections. The section from Biscayne Bay to Alton Road is approximately 52 feet wide between the edges of the sidewalk. Meter controlled parallel parking is permitted along both sides of the curb. The sidewalks are clean and free from any obstructions. The total pavement width is 42 feet, subtracting 16 feet for the parallel parking facility produces a 26 feet wide pavement for two-way traffic operation. According to state and federal standards (see Appendix) although 26 feet is wide enough to accommodate bicycles and motor vehicles, 28 feet is the desirable width. Therefore the short term solution will be to accommodate both bicycles and motor vehicles within the existing pavement, while exploring the feasibility of widening the roadway to better accommodate bicyclists.

The section from Alton Road to Washington Avenue is restricted to motor vehicles except at some cross streets. There is 100 feet wide pedestrian mall within the section. Forty feet of which is designated for recreational amenities such as benches, water fountains, plantings and sculptures. This area, however, is not maintained adequately for the intended



DEFICIENCIES

1. GARBAGE BIN BLOCKING SIDEWALK.
2. ROADWAY GUIDANCE SIGN BLOCKING SIDEWALK.
3. NO PEDS. SIGNAL FOR N-S.
4. CROSSWALK NOT ALIGNED WITH RAMPS.
5. NO SEATING ARRANGEMENT INSIDE THE SHELTER.
6. PEDESTRIAN SIGNAL NOT WORKING.
7. DIRTY AND UNMAINTAINED FOUNTAIN.
8. DIRTY SIDEWALK.
9. PEDS. SIGNAL NOT WORKING.
10. CROSSWALK NEED RESTRIPING.
11. PARALLEL PARKING WITH PARKING METERS.
12. ANGLE PARKING WITH PARKING METERS.

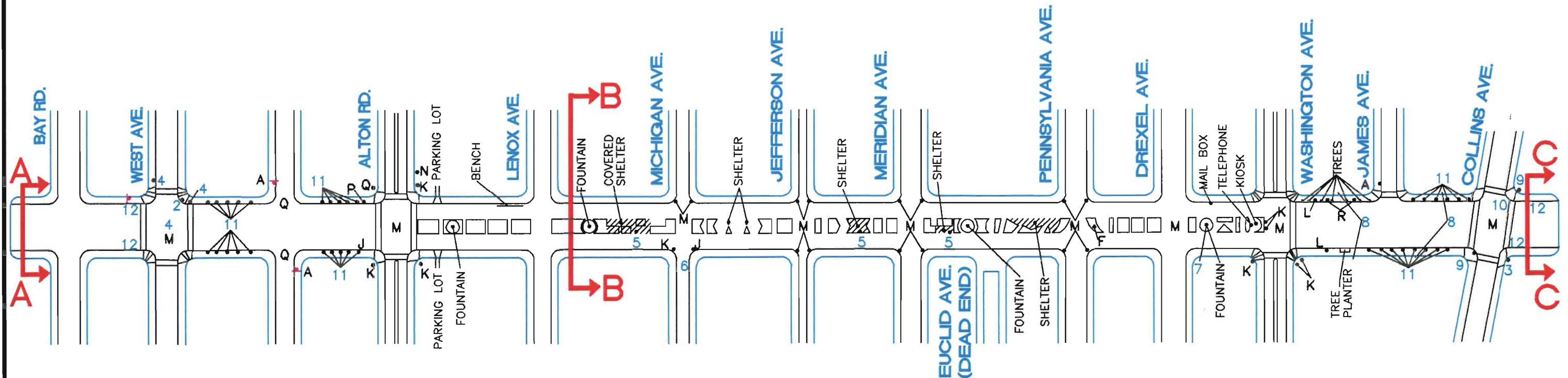
NOTES

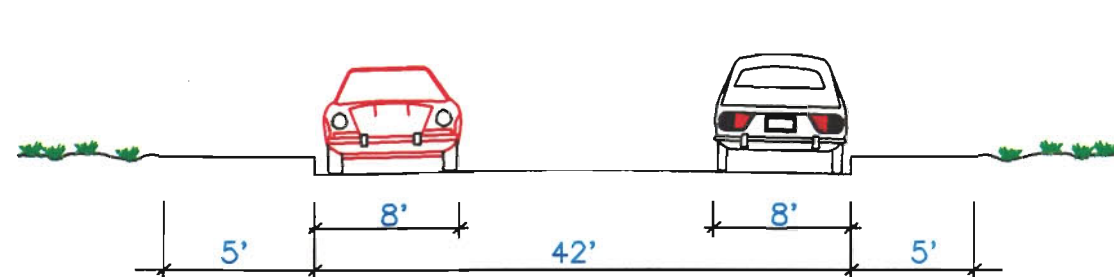
- a). THERE IS A SEPARATE 3' WIDE PATH ON BOTH SIDES OF THE CENTRAL LANDSCAPING AREA FROM LENOX TO WASHINGTON AVE. PRESUMABLY FOR BIKES. IT NEED PROPER SIGNAGE AS IT IS NOT BEING USED BY THE BICYCLISTS.
- b). THE ENTIRE MALL NEED A FACELIFT IN TERMS OF PAVEMENT SURFACE, MAINTENANCE OF ADJACENT SHOPS FRONTS AND OVERALL CHARACTERISTICS.
- c). FROM ALTON ROAD TO WASHINTONG AVE. THERE IS A 40' WIDE LANDSCAPE RECREATIONAL AREA IN THE MEDIAN.

IMPROVEMENTS

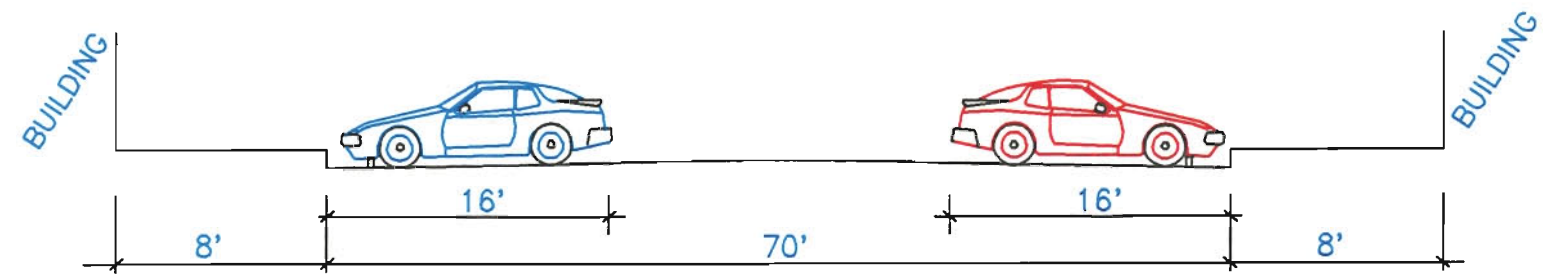
- I. FIX ALL MINOR DEFICIENCIES.
- II. PROVIDE SIGNING AND MARKING TO ACCOMMODATE BICYCLE LANES IN BOTH DIRECTIONS.

- A - STOP SIGN
F - ROADWAY GUIDE SIGN
J - "NO TURN ON RED WHEN PED. IN CROSSWALK" SIGN
K - SIGNAL POLE
L - BUS STOP AND BENCH
M - PEDESTRIAN SIGNAL
N - SIGNAL BOX
P - NEWSPAPER STAND
Q - UNEVEN PAVEMENT
R - "NO PARKING" SIGN

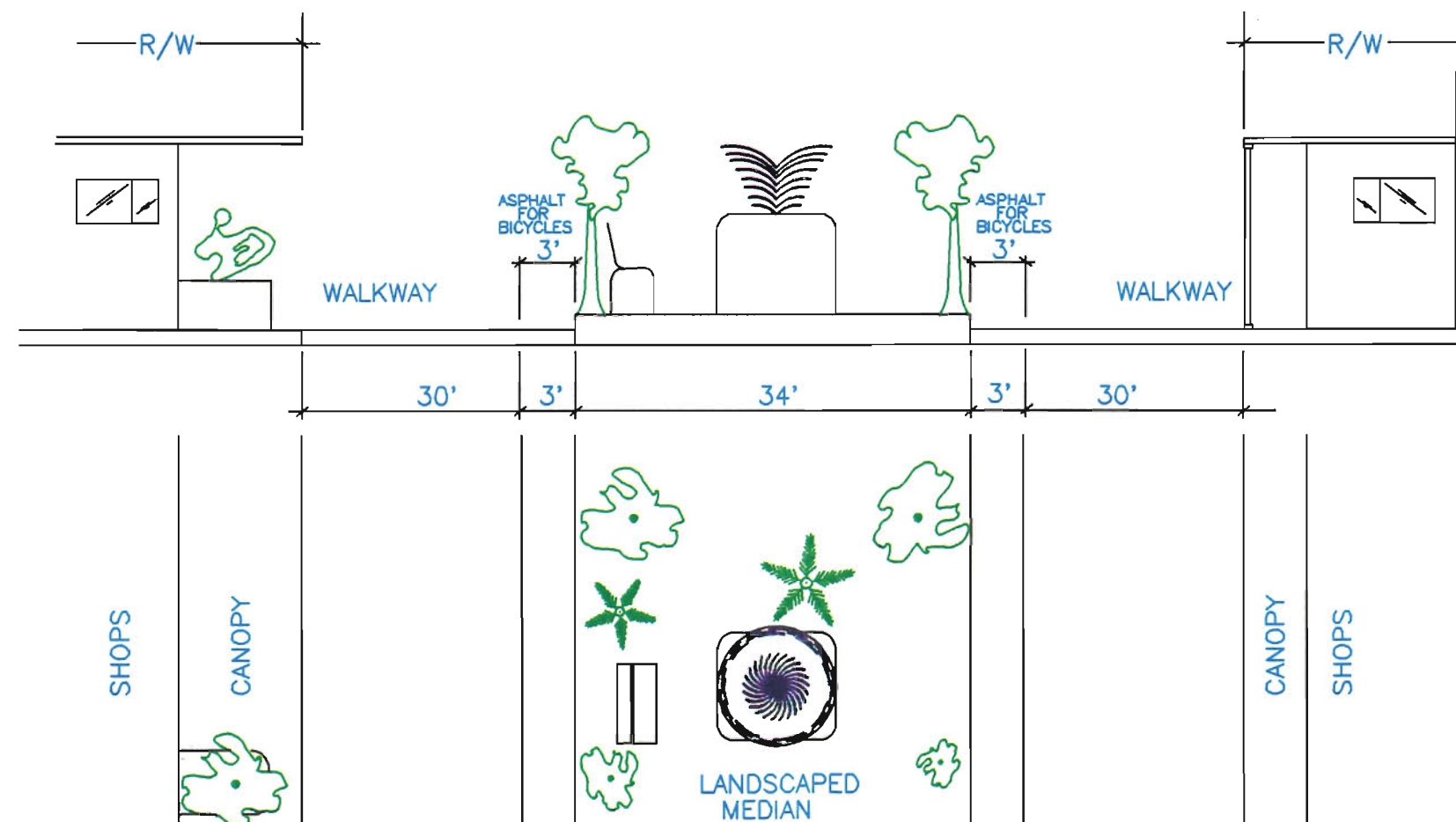




SECTION A-A



SECTION C-C



SECTION B-B

use. There is a 30 foot wide space on both sides of the median for pedestrians, bicyclists and roller blades. It is feasible to designate 5 feet on both sides of the median for bicycle use. It should be properly marked and signed to delineate from the pedestrian use. There is an Architectural Plan currently exist to improve this section of Lincoln Mall to incorporate a tram service. If possible, these conceptual recommendations should be included as part of this redevelopment plan.

The third section is from Washington Avenue to Atlantic Ocean. This section is 86 feet wide between the edges of the sidewalks. Meter controlled angle parking is permitted on both sides of the roadway next to the curb. There are 8 feet wide sidewalks on both sides of the roadway. Most of the sidewalk is not functional at the time of the field reconnaissance due to construction work adjacent to the roadway. By providing one lane of motor vehicle operation in each direction, there is adequate pavement to delineate bicycle lanes in each direction.

4.2 West Avenue Corridor

West Avenue corridor begins at the Dade Boulevard and 17th Street intersection and runs easterly until it reaches the West Avenue intersection. The intersection of Dade Boulevard and 17th Street is signed and marked hap-hapzardly. A special intersection study is recommended to improve and accommodate bicycles and pedestrians at this intersection.

The north/south portion of this corridor, which begins at 17th Street intersection could be divided into two distinct segments. The first segment runs between 17th Street and 16th Street intersections. It also include the Lincoln Road intersection at the middle. This section is 55 feet wide between the edges of the sidewalk, 45 feet of which is asphalt pavement in addition to two 5 feet sidewalks. There are three lanes with middle two-way left turn lane. Parallel parking is permitted along the both edges of this segment, although the adjacent land use is such each parcel of land appear to have their own parking area. The bicycles are expected to compete with motor vehicles

for space within this segment. There are two solutions exist to solve this problem; one is to eliminate the center left turn lane and stripe for separate bike lanes on both sides, or eliminate the on-street parking and create separate bike lanes. The parking removal option appear to be better option because the turn lanes are necessary at the intersections.

The second segment begins at 16th Street and ends at 8th Street. This segment is also 55 feet wide between the edges of the sidewalks, 45 feet of which is asphalt roadway and the reminder is made up of two 5 foot sidewalks. This segment does not have center turn lane. Parking is restricted near driveways. Therefore, 4 feet of the pavement along both edges could be striped as well as parking restricted to accommodate bicycles.

Many minor deficiencies, as shown on Figures 7A, 7B, and 7C, are also noted along this corridor. These deficiencies could be taken care of by local maintaining agencies. The city is in the process of preparing plans for reconstructing West Avenue. If possible, bicycle features should be added to the cities' design plans. These plans should also address extending the bicycle and pedestrian facilities south to Alton Road, across 5th Avenue. These concepts could also be incorporated into FDOT's, Alton Road reconstruction project, that is currently under PD&E Study.

DEFICIENCIES

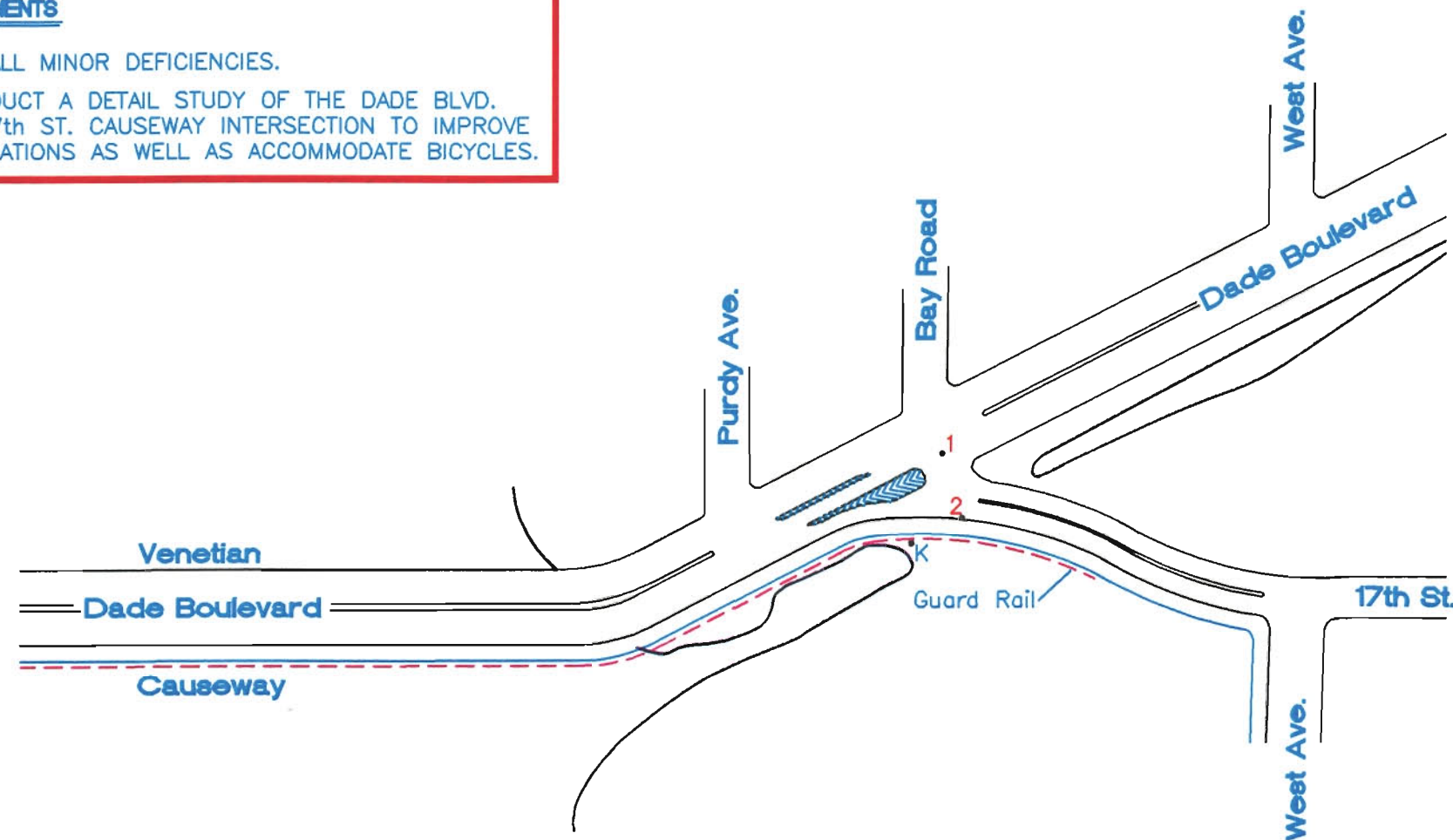
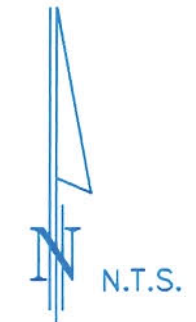
1. CONFLICTING AND CONFUSING INTERSECTION
2. DIRTY SIDEWALK.

NOTES

- a). THIS INTERSECTION COULD BE IMPROVED TO ACCOMMODATE BICYCLES FROM AND TO VENETIAN CAUSEWAY.

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.
- II. CONDUCT A DETAIL STUDY OF THE DADE BLVD. @ 17th ST. CAUSEWAY INTERSECTION TO IMPROVE OPERATIONS AS WELL AS ACCOMMODATE BICYCLES.



DEFICIENCIES

1. BROKEN SIDEWALK.
2. NEWSPAPER STAND BLOCKING THE SIDEWALK.
3. PARALLEL PARKING WITH METERS.
4. NO PEDS. SIGNAL FOR N-S MOVEMENT.
5. NO RAMP FOR THE CROSSWALK.
6. FIRE HYDRANT BLOCKING SIDEWALK.
7. MAIL BOX COMPLETELY BLOCKING THE SIDEWALK.
8. THERE IS NO SEPARATE PEDS. SIGNAL. PEDS. HAVE TO FOLLOW THE TRAFFIC SIGNAL.
9. THERE IS NO RAMP FOR THE CROSSWALK.

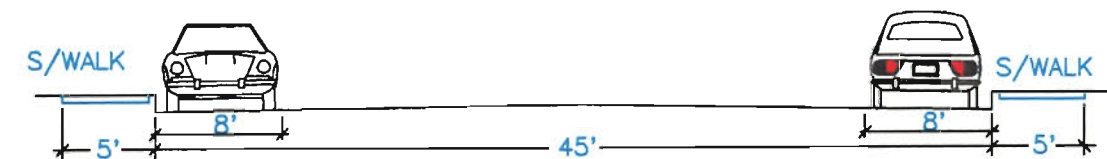
- A - STOP SIGN
F - ROADWAY GUIDE SIGN
J - "NO TURN ON RED WHEN PED. IN CROSSWALK" SIGN
K - SIGNAL POLE
N - SIGNAL BOX
P - NEWSPAPER STAND
R - "NO PARKING" SIGN
S - PARKING METER

NOTES

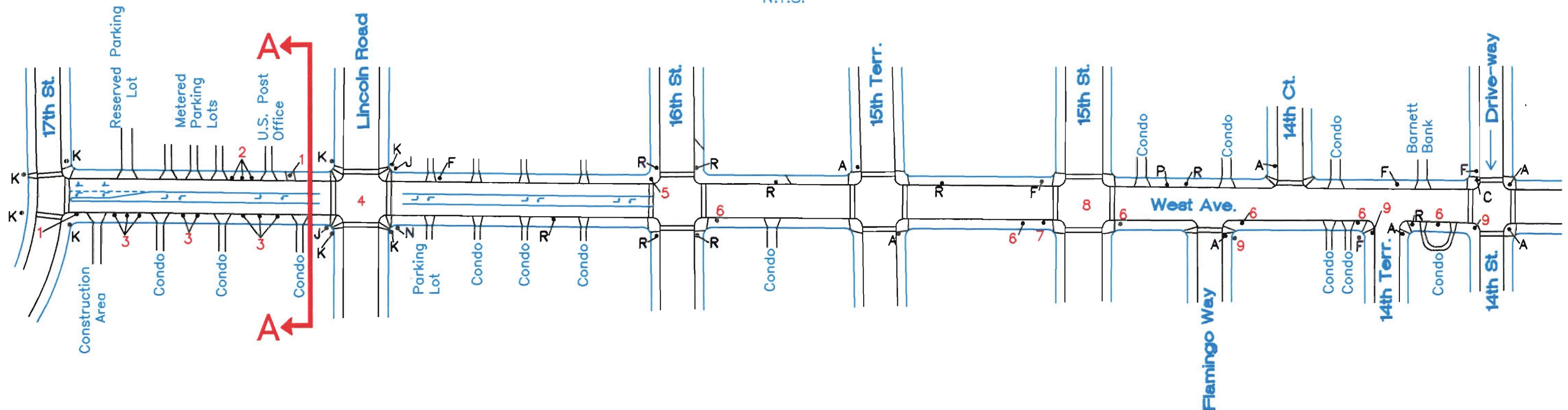
a). MANY BICYCLIST OBSERVED ALONG THE CORRIDOR.

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.
- II. BETWEEN 17th ST. AND LINCOLN BLVD. ACCOMMODATE BICYCLES ON WIDE THRU LANE.
- III. SOUTH OF 17th ST. ACCOMMODATE BICYCLES BY STRIPPING SEPARATE BIKE LANES.



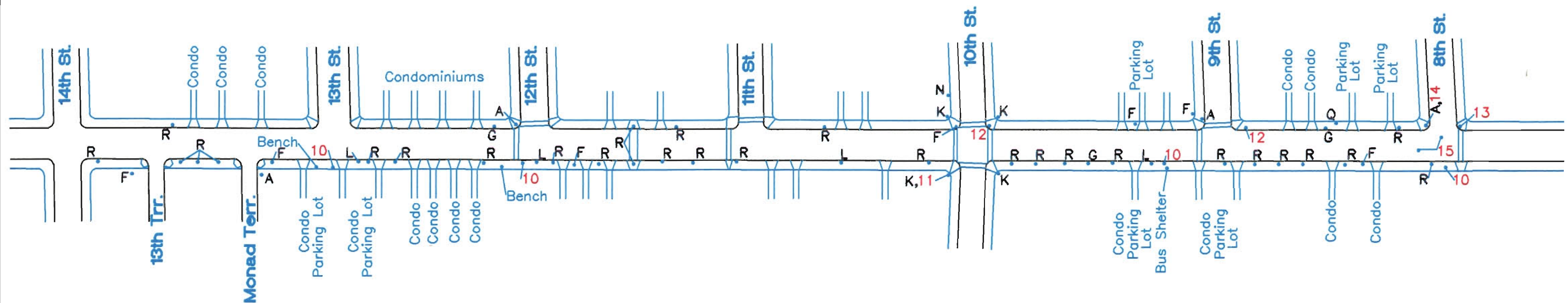
SECTION A-A



DEFICIENCIES

10. GARBAGE BIN BLOCKING SIDEWALK.
11. PEDESTRIAN SIGNAL NOT VISIBLE DUE TO A TREE.
12. FIRE HYDRANT AND SIGNAL POLE BLOCKING THE SIDEWALK.
13. FIRE HYDRANT BLOCKING THE SIDEWALK.
14. STOP SIGN AND NEWSPAPER STAND BLOCKING THE SIDEWALK.
15. NO CROSSWALK STRIPING.

- A - STOP SIGN
- F - ROADWAY GUIDE SIGN
- G - PED. CROSSING SIGN
- K - SIGNAL POLE
- L - BUS STOP AND BENCH
- N - SIGNAL BOX
- Q - UNEVEN PAVEMENT
- R - "NO PARKING" SIGN



4.3 Marina Park Corridor

The first segment of this corridor is the Alton Road from 8th Street to 5th Street. This section of Alton Road is very heavily traveled and has many conflict points along the way. Therefore, bicycle use should be discouraged along this segment. In the long run the appropriate alternative to Alton Road will be to have direct connection between West Avenue and Marina Park corridors. The FDOT project to reconstruct 5th Street Fly-over to Alton Road will be a good opportunity to accomplish this. One possible suggestion will be to incorporate a bicycle and pedestrian tunnel under the Fly-over bridge.

The second segment of the Marina Park Corridor begins at 5th Street and runs as far as Biscayne Street intersection. The MacArthur Causeway bridge which intersects at 5th Street provide the southern connector between the mainland and the South Beach area. Therefore, further studies are needed to identify ways to accommodate bicycles and pedestrian across the bridge as well as to improve the safety and operational conditions at the 5th Street intersection. This segment has 100 feet wide corridor, which include a 4-lane divided roadway as well as 10 foot sidewalks on both sides of the roadway. The sidewalks are wide enough to accommodate both recreational bicyclists and pedestrians.

The third segment of this corridor is the Biscayne Street from Alton Road intersection to Ocean Drive intersection/beach. This segment is 88 feet wide between the edges of the sidewalks. It contains four-lane divided highway with on street parking as well as 10 foot sidewalks on both sides of the roadway. The sidewalks along this segment of the roadway is also wide enough to accommodate both recreational bicyclists and pedestrians.

The Marina Park corridor has very good pedestrian facilities between 5th Street intersection and Biscayne Street intersection. Many minor deficiencies, however, noted during the field reconnaissance and identified in Figures 8A, 8B and 8C.

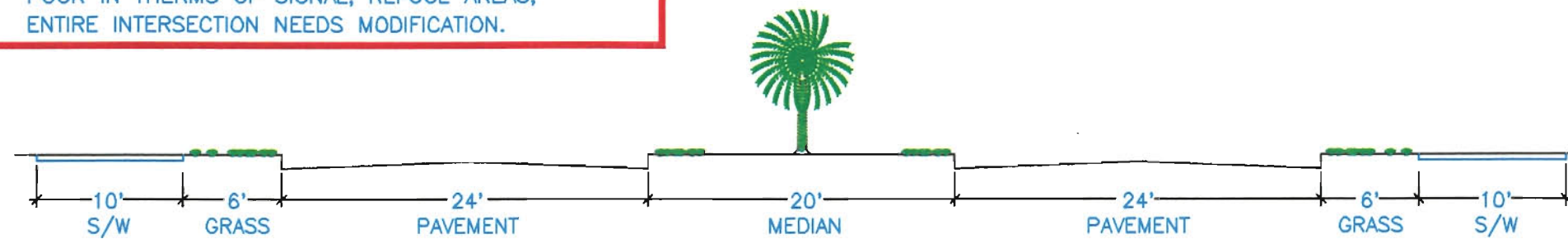
- A - STOP SIGN
- F - ROADWAY GUIDE SIGN
- G - PED. CROSSING SIGN
- K - SIGNAL POLE
- L - BUS STOP AND BENCH
- P - NEWSPAPER STAND
- R - "NO PARKING" SIGN

DEFICIENCIES

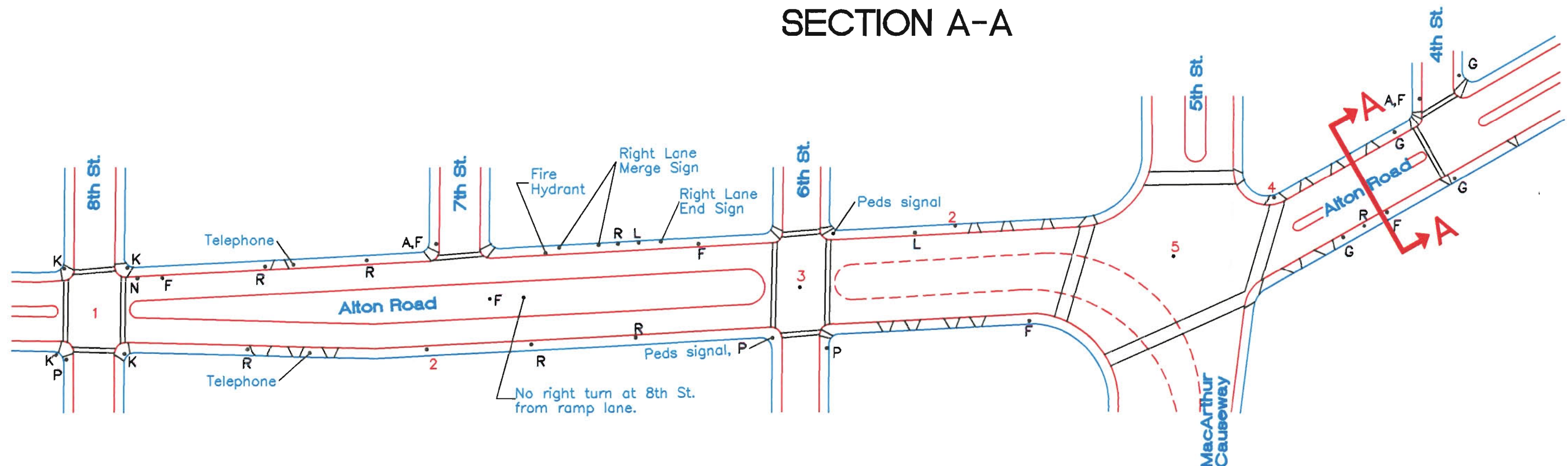
1. CROSSWALK NEEDS RESTRIPING.
2. DIRTY SIDEWALK.
3. NONE OF THE PEDESTRIAN SIGNALS WORKING AT THIS INTERSECTION. CROSSWALK NEEDS RESTRIPING AND ALIGNMENT WITH RAMPS. BETTER RAMPS REQUIRED.
4. PEDS SIGNAL NOT PROPERLY SITED.
5. THE PEDS/BIKES SAFETY AT THIS INTERSECTION IS POOR IN TERMS OF SIGNAL, REFUGE AREAS, ENTIRE INTERSECTION NEEDS MODIFICATION.

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.
- II. FURTHER STUDY IS NEEDED TO IMPROVE OPERATION AND SAFETY AT THE 5th ST. INTERSECTION AS WELL AS ACCOMMODATE BICYCLES AND PEDESTRIANS.
- III. FURTHER STUDY IS NEEDED TO IDENTIFY WAYS TO ACCOMMODATE BICYCLES ON THE MacARTHUR CAUSEWAY.



SECTION A-A



BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA_s
SOUTH BEACH BICYCLE AND PEDESTRIAN STUDY

MARINA PARK
CORRIDOR

Figure
8-A

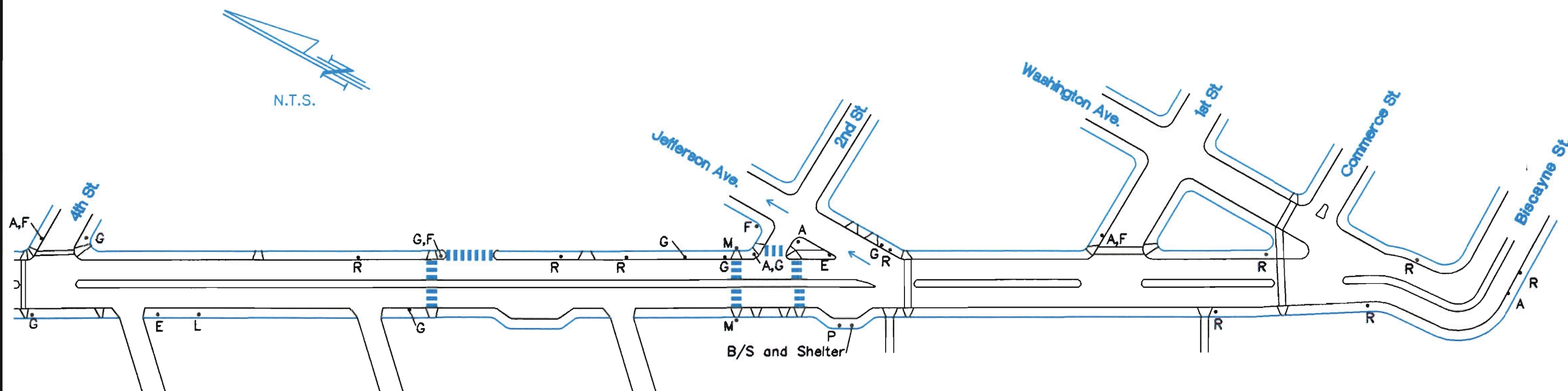
DEFICIENCIES

6. NO RAMPS HERE. ALSO NO PROPER SIDEWALK.
7. LIGHT POLE AND NEWSPAPER STAND BLOCKING THE SIDEWALK.
8. FIRE HYDRANT BLOCKING THE SIDEWALK.

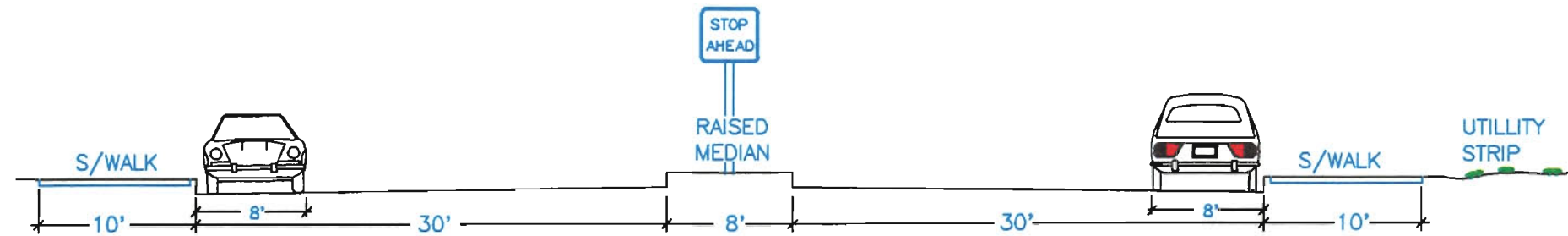
NOTES

- a). THIS CORRIDOR HAS VERY GOOD PEDESTRIAN FACILITIES FROM MacARTHUR CAUSEWAY TO THE BISCAYNE ST.

- A - STOP SIGN
 F - ROADWAY GUIDE SIGN
 G - PED. CROSSING SIGN
 L - BUS STOP AND BENCH
 M - PEDESTRIAN SIGNAL
 P - NEWSPAPER STAND
 R - "NO PARKING" SIGN
 S - PARKING METER



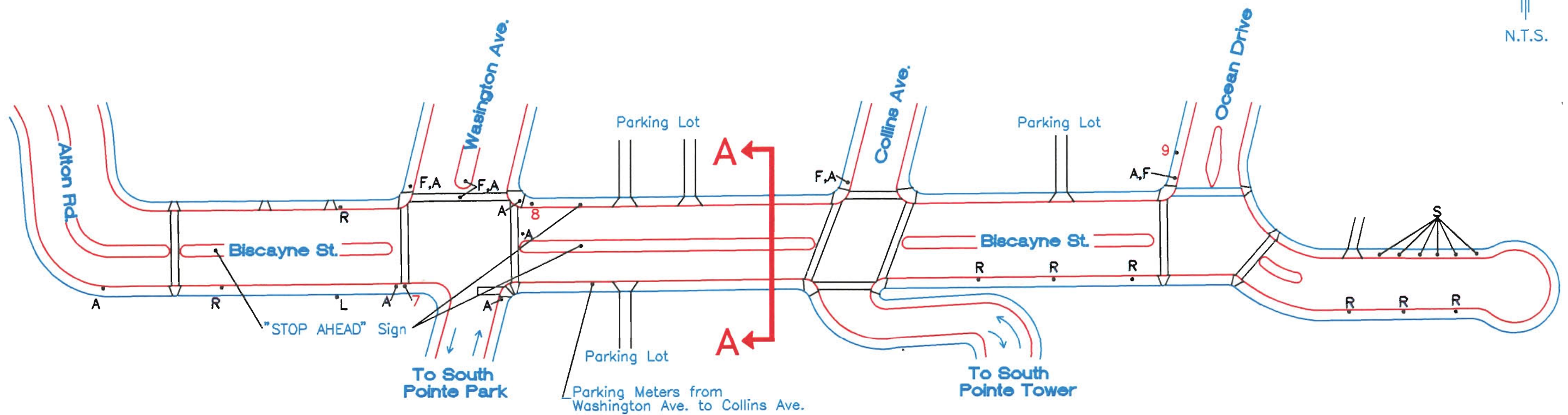
- A - STOP SIGN
- F - ROADWAY GUIDE SIGN
- L - BUS STOP AND BENCH
- R - "NO PARKING" SIGN



SECTION A-A

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.



4.4 Boardwalk Corridor

This corridor begins south of 15th Street and winds along the beach, parallel to Ocean Drive, and ends at the 5th Street intersection and Ocean Drive. Figures 9A and 9B illustrate the Boardwalk Corridor with the amenities that are available along the way. This corridor is specifically designed and built for recreational purposes. No motor vehicles, except for maintenance and security purposes, are allowed within this corridor. The Boardwalk is made of 20 feet of concrete pavement with a 3 feet high continuous wall along the east edge of the pavement to stop sand from blowing on to the pavement. Some sand does, however, get on to the pavement due to constant recreational activities and openings that exist on the wall for beach access.

Very few or no deficiencies could be noted along this corridor. This corridor is currently used by pedestrians, roller-skates, as well as bicyclists. At times it tend to look very crowded and appear to have lots of conflicts. Since there is a public right-of-way available between the Boardwalk and the Ocean Drive, creating an asphalt bike path may be a solution to separate the bicyclists from the pedestrians, the roller-skaters and reduce the conflicts.

Extending this corridor further north to the 46th Street Boardwalk and south to Biscayne Street should be considered as a possible long term high cost expansion of this corridor. The recreational route identified in the Bikeways Comprehensive Plan, i.e.: Collins Avenue to the north and Ocean Drive to the south should be considered as the short term low cost connectors for the Boardwalk Corridor.

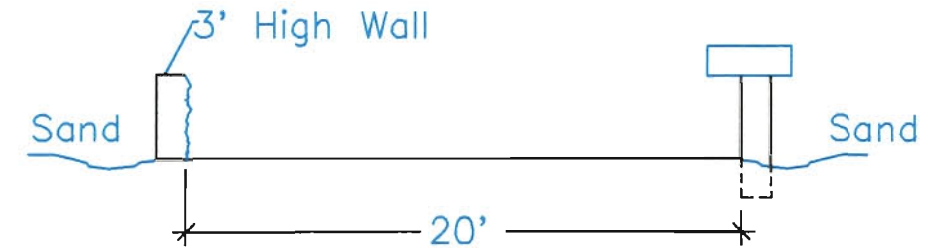
- A - STOP SIGN
- F - ROADWAY GUIDE SIGN
- S - PARKING METER
- T - 3' CONCRETE POLES WITH LIGHT FIXTURES

NOTES

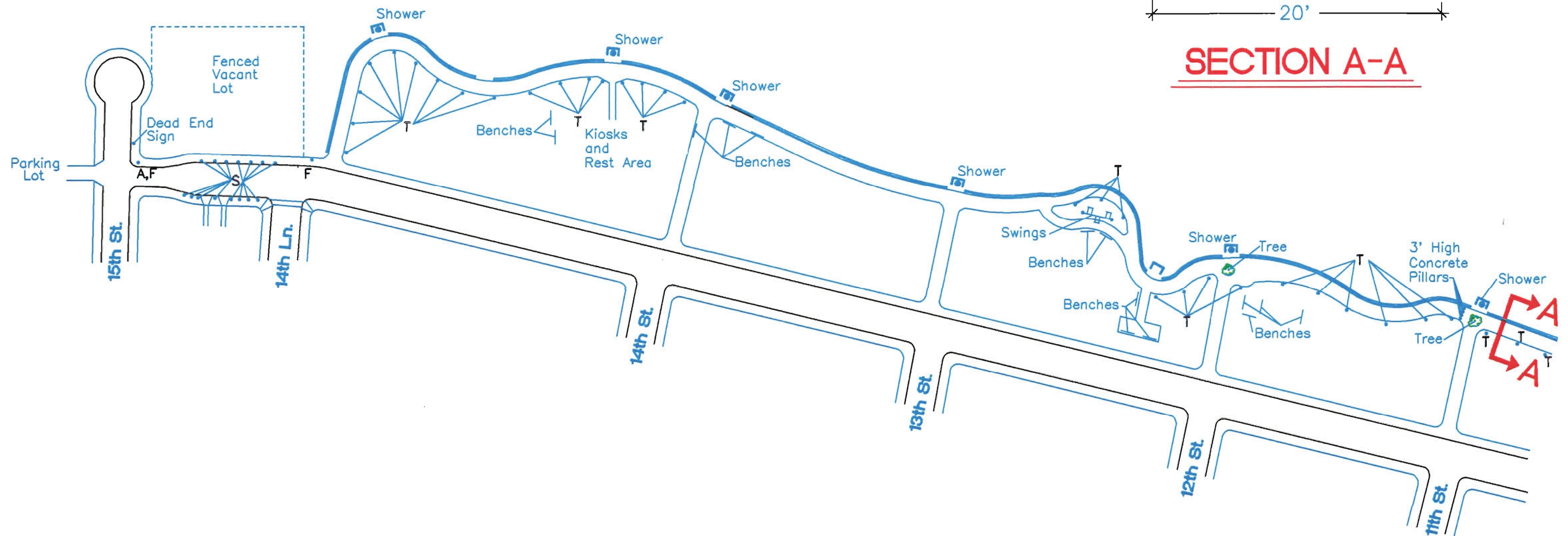
a). THE PEDS AND BIKES CORRIDOR SHOULD BE EXTENDED SOUTH TO BISCAYNE STREET AND NORTH TO 46th ST. BOARDWALK SO AS TO GIVE ACCESS TO THE PARK ON THE SOUTH AND ALSO



S - PARKING METER



SECTION A-A



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SOUTH BEACH BICYCLE AND PEDESTRIAN STUDY

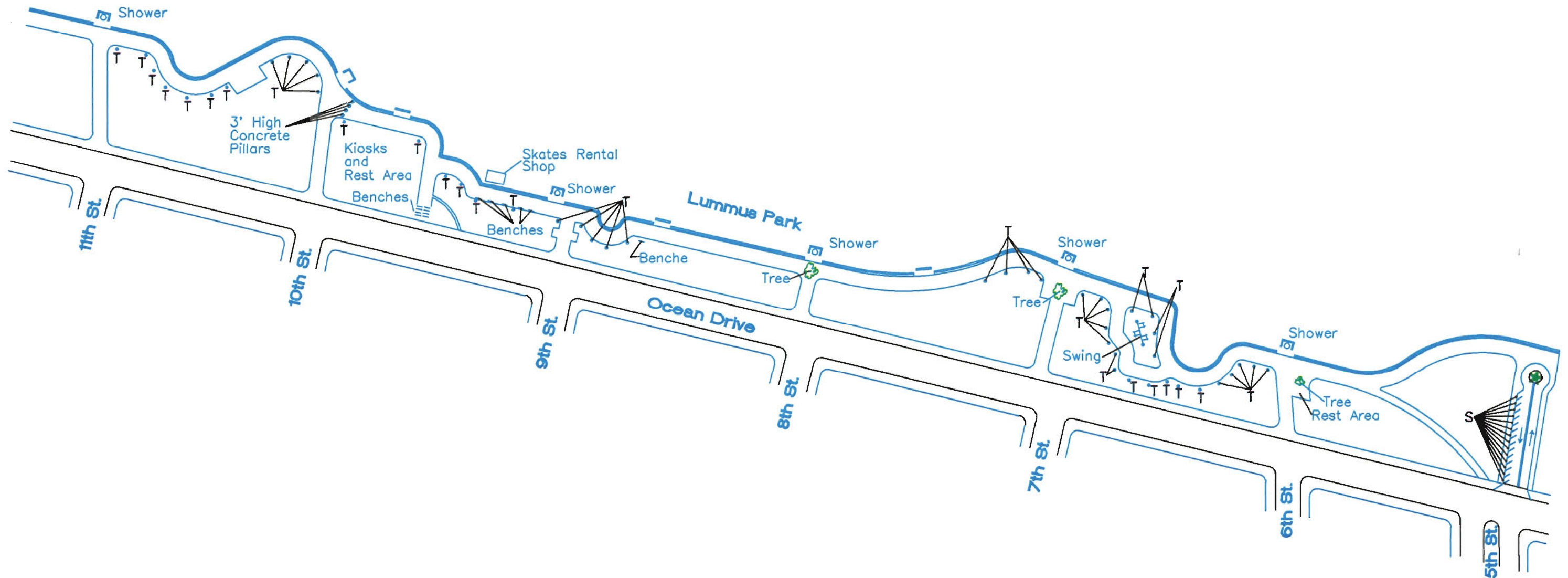
BOARDWALK
CORRIDOR

Figure
9-A

NOTES

a). THE PEDS AND BIKES CORRIDOR SHOULD BE EXTENDED SOUTH BISCAYNE STREET AND NORTH TO 46th ST. BOARDWALK SO AS TO GIVE ACCESS TO THE PARK ON THE SOUTH AND ALSO PROVIDE CONTINUITY OF BIKE ROUTE.

S - PARKING METER
T - 3' CONCRETE POLES WITH LIGHT FIXTURES



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SOUTH BEACH BICYCLE AND PEDESTRIAN STUDY

**BOARDWALK
CORRIDOR**

Figure
9-B

4.5 Eighth Street Corridor

This is one of the east/west corridor that begins at West Avenue and ends at Ocean Drive. This corridor is 50 feet wide between the edges of the sidewalk. It is made up of 38 feet of asphalt pavement and two six feet of sidewalks. On street parking is permitted along the both edges of this corridor. Although, the pedestrian movements are accommodated on the sidewalks, it is not adequate to accommodate both bicycle and pedestrian movements. Two possible solutions exist to accommodate bicycles on this corridor. One will be to eliminate parking along one side of the roadway and stripe for bicycle lane. The second solution will be to have one-way operation on 8th Street and stripe to accommodate for bicycle lane. The second option might be an acceptable solution since parking removal is a sensitive issue in the South Beach area.

The on-street parking tend to create a major sight distance problem for motorists who approach the intersection along this corridor. Near the intersections, parking should be restricted by striping the pavement and posting signs according to local standards.

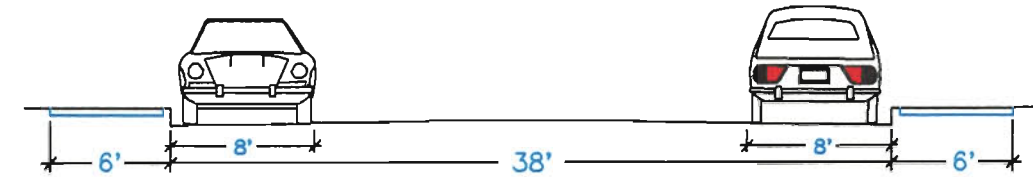
4.6 Ninth Street Corridor

This corridor is physically and operationally similar to the 8th Street corridor. If the first option were to be selected to accommodate bicycles on 8th Street, i.e. remove parking along one side to accommodate bicycles, then 9th Street should not be considered as part of the bicycle corridors. On the other hand if the one-way option to be selected, then 9th Street should also be regulated to be one-way operation, but in the opposite direction to 8th Street operation, so that both these streets would function as a one-way pair. The one-way pair option will further improve the capacity problems that exist at the Washington Avenue and Collins Avenue intersections.

DEFICIENCIES

1. GARBAGE BIN BLOCKING SIDEWALK.
2. NEWSPAPER STAND BLOCKING SIDEWALK.
3. NO RAMP ON SIDEWALK AT THIS CROSSING.
4. LIGHT POLE BLOCKING SIDEWALK.
5. NO CROSSWALK FOR E-W.
6. BENT "STOP" SIGN.
7. NO PEDS. HEADS FOR N-S.
8. NO PEDS. HEADS FOR N-S & E-W.
9. SIGHT DISTANCE PROBLEM AT ALL INTERSECTIONS.

- A - STOP SIGN
- F - ROADWAY GUIDE SIGN
- K - SIGNAL POLE
- L - BUS STOP AND BENCH
- N - SIGNAL BOX
- P - NEWSPAPER STAND
- Q - UNEVEN PAVEMENT
- R - "NO PARKING" SIGN
- S - PARKING METER



SECTION A-A

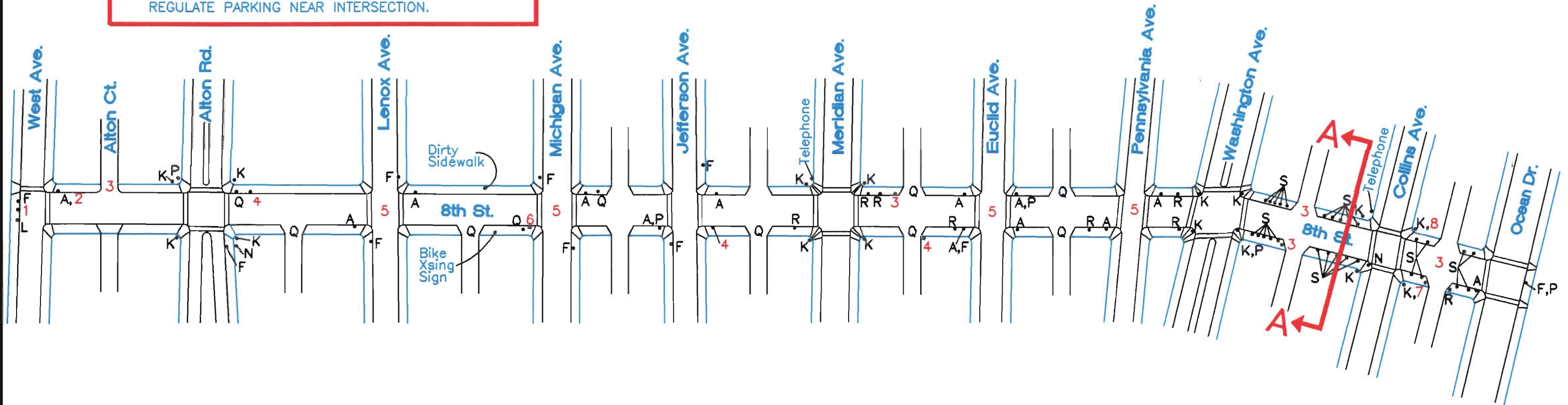


NOTES

- a). ON STREET PARKING ALONG BOTH SIDES OF THE CORRIDOR.

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.
- II. EITHER REMOVE PARKING OR RESTRICT TO ONE-WAY OPERATION TO ACCOMMODATE BICYCLE LANE.
- III. INSTALL RESTRICTIVE SIGNING AND MARKING TO REGULATE PARKING NEAR INTERSECTION.



DEFICIENCIES

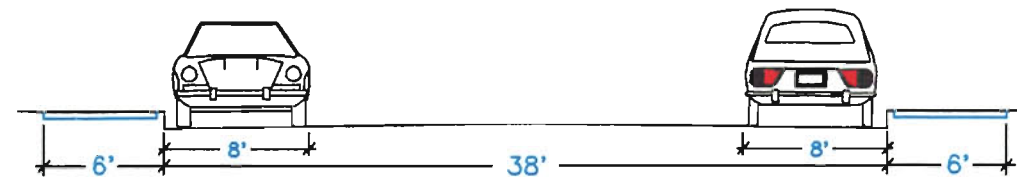
1. SIGHT DISTANCE PROBLEMS
2. NEWSPAPER STAND BLOCKING SIDEWALK.
3. NEED CROSSWALK.

IMPROVEMENTS

- I. FIX ALL MINOR DEFICIENCIES.
- II. EITHER REMOVE PARKING OR RESTRICT TO ONE-WAY OPERATION TO ACCOMMODATE BICYCLE LANE.
- III. INSTALL RESTRICTIVE SIGNING AND MARKING TO REGULATE PARKING NEAR INTERSECTION.

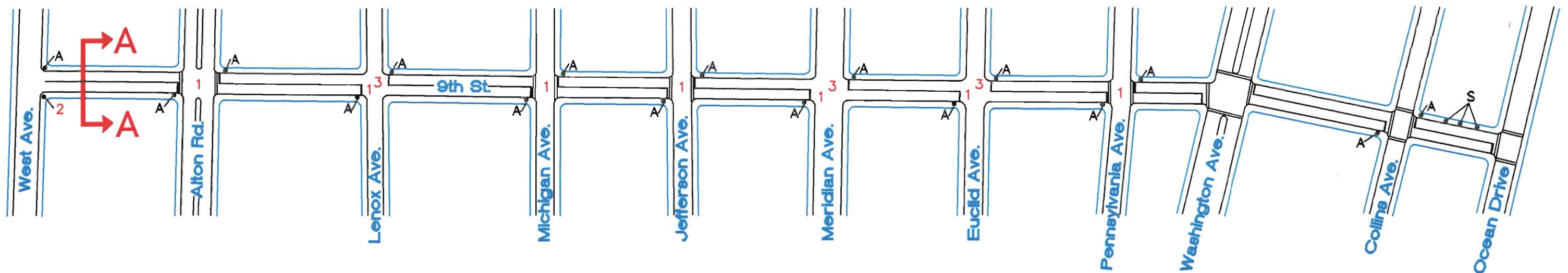
NOTES

a). ON STREET PARKING ALONG BOTH SIDES OF THE CORRIDOR.



SECTION A-A

A - STOP SIGN
S - PARKING METER



4.7 Michigan Avenue/Jefferson Avenue Corridor

The north section of Michigan Avenue beginning at Lincoln Road and ends at the Flamingo Park, and the southern section of Jefferson Avenue begins at Flamingo Park and ends at Biscayne Street make up this corridor. Both of these sections are connected within Flamingo Park.

The Michigan Avenue section from Lincoln Road Mall to 15th Street is 50 feet wide between the edges of the sidewalks. It consist of two 6 foot sidewalks and 38 foot asphalt pavement. On-street parking is permitted along both sides of this roadway. Similar to all the streets with on-street parking in South Beach area, the parked vehicles tend to create sight distance problem at intersection approaches. Therefore, pavement markings and signing in accordance with local regulations should be installed to discourage parking near intersections. One option will be to remove parking along one side of the roadway to accommodate the bicycle lane.

The section south of 15th Street appear to have a wider right-of-way. There is no designated parking along this section, but many vehicles were found to be parked along the east swale area next to the Flamingo Park. This section of the corridor has 28 feet of asphalt pavement. Therefore bicycle lanes could be accommodated along the both sides of this section.

The Jefferson Avenue section is 70 feet wide between the edges of the sidewalks. It consists of two 8 foot sidewalks and a 54 feet asphalt pavement. On-street parking is also permitted along both sides of this asphalt pavement. As indicated earlier the on-street parking creates sight distance problems at the intersections. Proper markings and signings should be installed to regulate the sight distance problem. The existing asphalt pavement is wide enough to accommodate two 5 foot bike lanes in both directions next to the parking area.

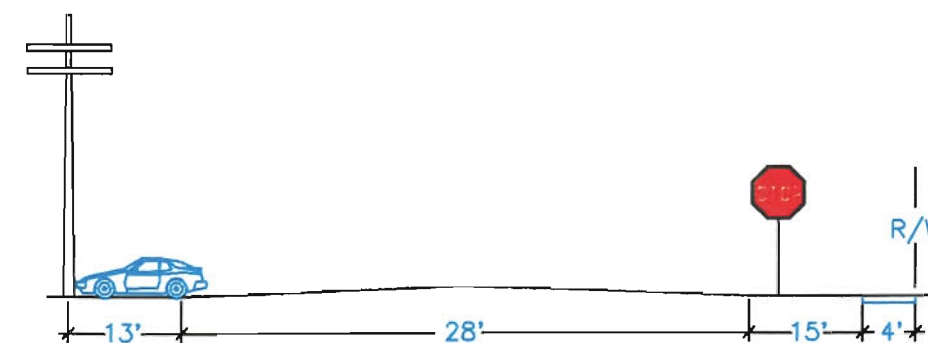
Few minor deficiencies along the Michigan Avenue/Jefferson Avenue corridor were identified during the field reconnaissance, they are shown in Figures 12A and 12B. Most of these deficiencies could be fixed by the local maintaining agencies.

NOTES

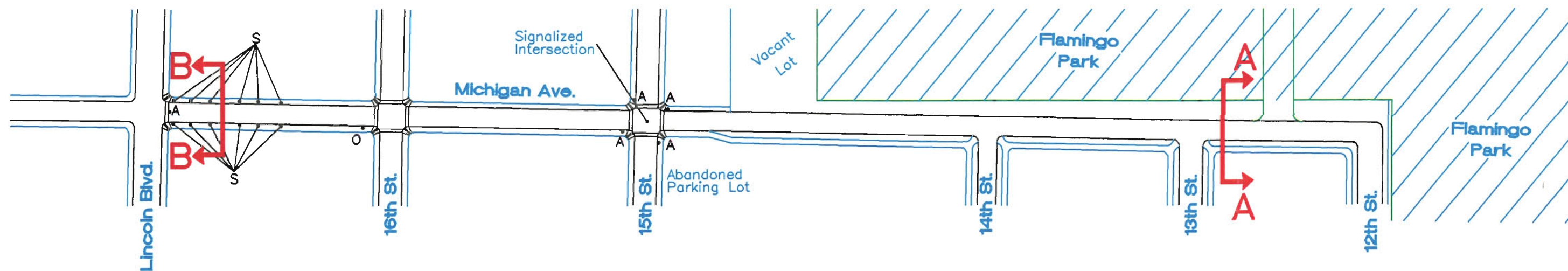
- EAST AND WEST SIDES OF THE CORRIDOR ARE IN GENERAL IN GOOD CONDITIONS, EXCEPT FOR THE SWALE AREA.
- NO HANDICAP RAMPS FROM NORTH OF 14th STREET TO SOUTH OF 12th STREET.
- LIGHTING COULD BE IMPROVED.
- SIGHT DISTANCE PROBLEM AT INTERSECTIONS.

IMPROVEMENTS

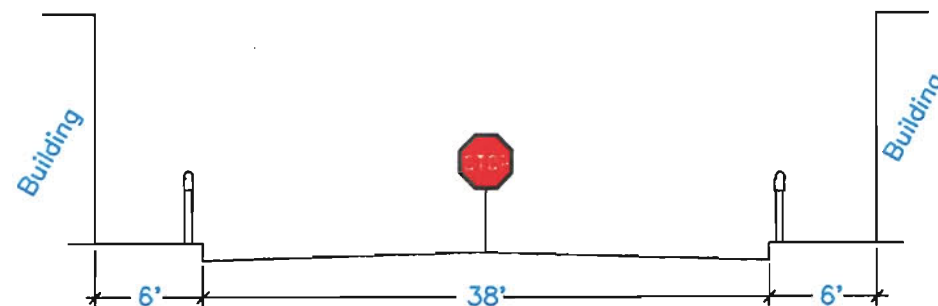
- BETWEEN LINCOLN BLVD. AND 15th ST. REMOVE PARKING ON ONE SIDE TO ACCOMMODATE BICYCLES.
- SOUTH OF 15th ST. STRIPE THE PAVEMENT FOR BICYCLES LANES.
- INSTALL REGULATORY SIGNING AND MARKING TO RESTRICT PARKING NEAR INTERSECTIONS.



SECTION A-A



- A - STOP SIGN
- S - PARKING METER
- O - FIRE HYDRANT



SECTION B-B

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMAs
SOUTH BEACH BICYCLE AND PEDESTRIAN STUDY

**MICHIGAN AVENUE
CORRIDOR**

Figure
12-A

DEFICIENCIES

1. SIGHT DISTANCE PROBLEM.
2. BUILDING UNDER CONSTRUCTION, SIDEWALK COVERED WITH DEBRIS.

IMPROVEMENTS

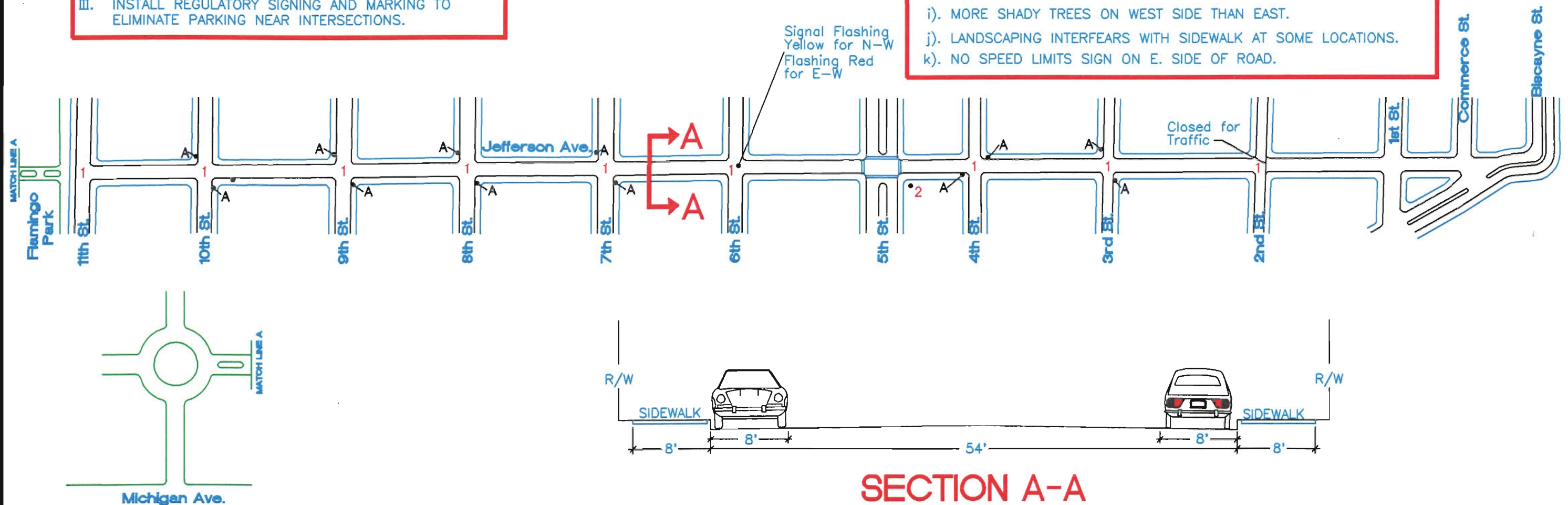
- I. FIX ALL MINOR DEFICIENCIES.
- II. STRIPE BOTH SIDES OF THE ROADWAY NEX TO PARKING AREA FOR BICYCLE LANES.
- III. INSTALL REGULATORY SIGNING AND MARKING TO ELIMINATE PARKING NEAR INTERSECTIONS.



A - STOP SIGN

NOTES

- a). VERY LITTLE TRAFFIC.
- b). LOTS OF CHILDREN.
- c). CARS PARKED ON BOTH SIDES.
- d). LANDSCAPING FAIR TO GOOD.
- e). STOP BARS AT CROSS STREETS ARE NOT CLEAR.
- f). SIGHT DISTANCE IS POOR AT ALL INTERSECTIONS DUE TO ON STREET PARKED VEHICLES.
- g). SIDEWALK AND LANDSCAPING VERY POOR S. OF 5th ST. BUT MANY NEW DEVELOPMENT ARE CROPPING-UP OPPORTUNITY FOR REDEVELOPMENT. APPEAR TO HAVE GOOD EXISTING LIGHTING CONDITIONS.
- h). ENVIROMENTAL CONDITIONS DETIRIORATE AS YOU GO AWAY SOUTH FROM FLAMINGO PARK.
- i). MORE SHADY TREES ON WEST SIDE THAN EAST.
- j). LANDSCAPING INTERFEARS WITH SIDEWALK AT SOME LOCATIONS.
- k). NO SPEED LIMITS SIGN ON E. SIDE OF ROAD.



5.0 BICYCLE AND PEDESTRIAN CORRIDORS EVALUATION SUMMARY

The preceding section identified seven major bicycle and pedestrian corridors within the South Beach area. There are a number of improvements required to make these corridors attractive to pedestrians and to accommodate bicyclists. The proposed improvements include both low cost short-term improvements that could be implemented by the local maintaining agencies, as well as high cost long-term capital improvements.

Table 1 lists all the improvements for each of the seven corridors in their order of importance and ease of implementation. Although it would be ideal to implement all the proposed improvements, the reality is that there are limited funds available to implement these improvements. Therefore, it is imperative to implement the improvements which will result in the greatest level of benefits.

It is necessary, therefore, to prioritize the corridors to identify which corridors should be given priority treatment. This prioritization was developed based on a review of the data, field reconnaissance and engineering judgement.

- | | | |
|----|---------------------------------------|---|
| 1. | Lincoln Rd. Mall Corridor | - from West Avenue to Boardwalk. |
| 2. | West Ave. Corridor | - from 17th Street to 8th Street. |
| 3. | 8th St. Corridor | - from West Avenue to Boardwalk. |
| 4. | 9th Street Corridor | - from West Avenue to Boardwalk. |
| 5. | Boardwalk Corridor | - from 5th Street to 46th Street Boardwalk. |
| 6. | Michigan Ave./Jefferson Ave. Corridor | - from Biscayne Street to Lincoln Mall. |
| 7. | Marina Park Corridor | - from 5th Street to Ocean Drive. |

TABLE 1: BICYCLE AND PEDESTRIAN CORRIDORS IMPROVEMENT SUMMARY

Corridor	Improvements
1. Lincoln Road Mall Corridor	<ul style="list-style-type: none"> ● Set up a routine maintenance program ● Improve signing and markings ● Fix pedestrian features at signalized intersections ● Provide signing and markings from Alton Road to the ocean to accommodate bicycle lanes in both directions. ● Improve intersection marking and signing to accommodate bicycle lanes
2. West Avenue Corridor	<ul style="list-style-type: none"> ● Improve signing and markings ● Provide signing north of 16th Street, and signing and marking south of 16th Street to accommodate bicycles in both directions. ● Future operational and safety study at Dade Boulevard and 17th Street intersection. ● Improve intersection signing and markings to accommodate bicycle lanes.
3. Marina Park Corridor	<ul style="list-style-type: none"> ● Improve signing and markings ● Future operational and safety study at Alton Road and 5th Street intersection. ● Future study to accommodate bicycle and pedestrian facility across McArthur Causeway ● Include a pedestrian tunnel under 5th Street Fly-over as part of the FDOT project.
4. Boardwalk Corridor	<ul style="list-style-type: none"> ● Add asphalt pavement along the west edge of the Boardwalk to accommodate and delineate bicycle lane. ● Extend the Boardwalk further north to 46th Street Boardwalk and further south to Biscayne Street.
5. Eighth Street Corridor	<ul style="list-style-type: none"> ● Restrict parking near intersection by adding regulatory signing and markings ● Improve signing and markings ● Option #1: Remove parking in one direction to accommodate bicycle lane ● Option #2: Regulate one-way operation (paired with 9th Street) to accommodate bicycle lane.
6. Ninth Street Corridor	<ul style="list-style-type: none"> ● Restrict parking near intersections by adding regulatory signing and markings ● Improve signing and markings ● Option #1: Remove parking in one direction to accommodate bicycle lane ● Option #2: Regulate one-way operation (paired with 8th Street) to accommodate bicycle lanes.
7. Michigan Avenue/Jefferson Avenue Corridor	<ul style="list-style-type: none"> ● Restrict parking near intersections by adding regulatory signing and markings ● Improve landscaping ● On Michigan Avenue north of 15th Street remove parking on one side to accommodate bicycle lane ● On Michigan Avenue south of 15th Street add signing and markings to accommodate bicycle lanes ● On Jefferson Avenue add signing and markings to accommodate bicycle lanes in both directions on the left side of parked vehicles.

6.0 GENERAL RECOMMENDATIONS

This Chapter describes improvements, both general to South Beach as well as specific to certain corridors, and the future needs for the study area.

6.1 Bicycles and Pedestrian Amenities

- Due to the high volume and the safety of bicycles and pedestrians certain corridors must provide priority treatment to bicycles and pedestrians. Some of the priority treatment techniques are:
 - Eliminate or limit vehicular movements within the corridor
 - If motor vehicles are allowed, provide roadway surface treatments, such as gateway treatment and chokers to reduce vehicular speed.
 - At signalized intersections, provide all-red clearance intervals for pedestrians to cross freely in any direction.
 - Emphasize bicycle and pedestrian use by installing bicycle and pedestrian crossing signs and improving crosswalk visibility (e.g.: "zebra" crosswalk markings).

Some of the locations and bicycle and pedestrian corridors that are candidates for priority treatment are:

- a. Lincoln Road Mall at all intersections
- b. Ocean Drive and at intersections
- c. West Avenue at intersections
- d. Michigan Avenue and Jefferson Avenue near Flamingo Park

- Bicycle and pedestrian corridors will be utilized more frequently if they have meaningful beginning and ending points as well as traverses origins and sinks. The Boardwalk is a good candidate for such improvements. It should be further extended towards the north to connect to the 46th Street Boardwalk and toward the south to connect to Biscayne Street. This corridor should be supplemented by providing special bike lanes.
- Improving bicycle and pedestrian corridor attractiveness is a way to create the proper environment to encourage bicycle and pedestrian usage. Soothing and non-threatening colors along pedestrian corridors is one way to achieve this. Colors could be added to the corridors naturally or artificially; naturally, by improving the landscaping. Landscaping improvements, in general, should be part of the South Beach revitalization projects. Artificially, corridor attractiveness can be improved by painting. Colors that are attractive and which create a sense of a secure environment should be part of city code requirements.
- The South Beach area has a large number of attractions that are walking distance from hotels and motels. Information directional signs to orient bicyclists and pedestrians should be located at strategic locations. These signs should be mounted at pedestrian eye-level, near the bicycle and pedestrian corridors but clear from the walking areas.
- The SoBeTMA could undertake many activities to promote bicycle and pedestrian usage in the South Beach area. Public participation is one such activity. Visitors to the South Beach area could be encouraged to fill out suggestion cards and deposit them at properly-located suggestion boxes. The SoBeTMA could also discourage the construction of new and expansion of existing parking garages within the congested

areas to discourage motor vehicle usage. They could also increase parking fees and provide subsidies to visitors for using the transit. The SoBeTMA, in corporation with local merchants and tourist agencies, could create regular bicycle and walking tours to utilize the proposed bicycle and pedestrian corridors.

6.2 Bicycle and Pedestrian Safety

Bicycle and pedestrian safety begins with facilitating motor vehicle traffic while integrating bicycle and pedestrian facilities into the system. It is apparent that roadway improvements are needed at all intersections along the proposed corridors to improve motor vehicle access and to improve bicycle and pedestrian safety. In addition to these intersection, following two intersections should be further studied for operational and safety improvements:

- Alton Road @ 5th Street
- Dade Boulevard @ 17th Street

6.3 Bicycle and Pedestrian Security

In a bicyclists or pedestrian's mind, the perception of security plays a more decisive role in utilizing the facility than does the reality of security. The presence of security personal and ample lighting gives a person sense of security. Flamingo Park and South Point Park are the two target areas in South Beach for such improvements. In addition to improving security and lighting proper maintenance of vegetation, cleanliness, and code enforcement could further improve the sense of security. Near the bus stops, there should always be street lighting. The bus stops should be free of any overgrown vegetation that could heighten the sense of insecurity among transit users.

6.4 Transit Usage

In addition to improving amenities, steps should be taken to encourage transit usage. Specifically, the non-standard peak times caused by the tourists visiting the South Beach attractions should be taken into consideration for providing transit service to the area. Public transit peak time headways should be sensitive to these unique times. At locations where there is only bus stops, signs, bus shelters and benches should be added. All transit stops must be well lit and portray a sense of security to the users. All transit stops must be routinely maintained for cleanliness.

6.5 ADA Compliance

The ADA does not require existing facilities to meet the standards set forth to accommodate handicapped users unless it has been programmed for reconstruction. The ADA, however, requires the agencies that have authority over streets develop a plan and construct curb cuts in those locations where they are required. The SoBeTMA in cooperation with the City, State and the County should set up a systematic and prioritized program to upgrade the existing conditions to meet such needs.

BIBLIOGRAPHY

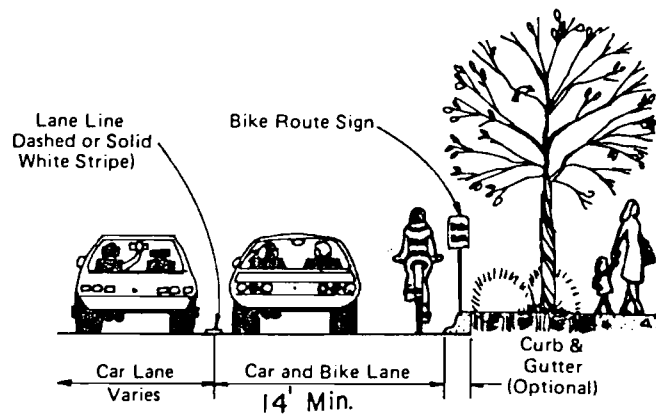
1. "National Bicycling and Walking Study - Final Report"; Federal Highway Administration, Report No. FHWA-PD-94-023, Washington D.C.; November 1991.
2. Miami Beach Chamber of Commerce 71st Annual Report and Membership Directory
3. State of Florida, Department of Transportation, "Bicycle Facilities Planning & Design Manual, Revised 1992.
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6. "Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas": Research Report, NCHRP Report #294A; Washington D.C., June 1987.
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APPENDIX A

BICYCLE LANE DESIGN STANDARDS

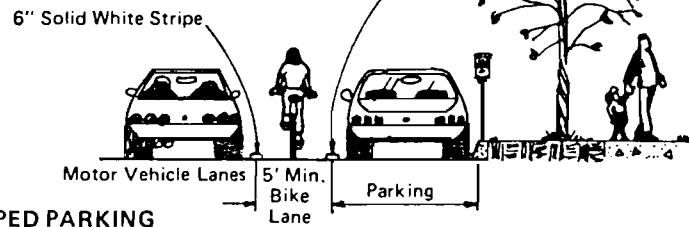
(Source: FDOT Bicycle Facilities Planning and Design Manual)

a. WIDE CURB-LANE

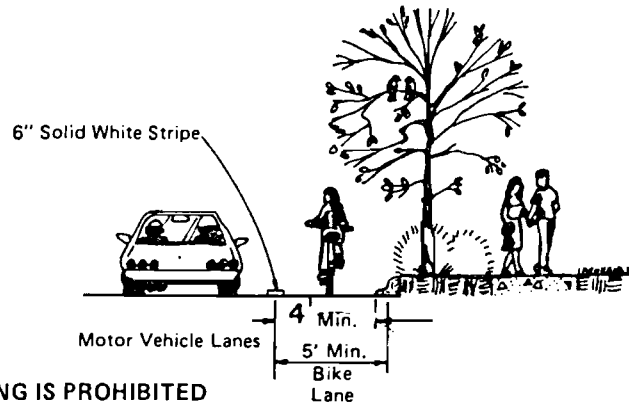


b. CURBED STREET WITH STRIPED PARKING

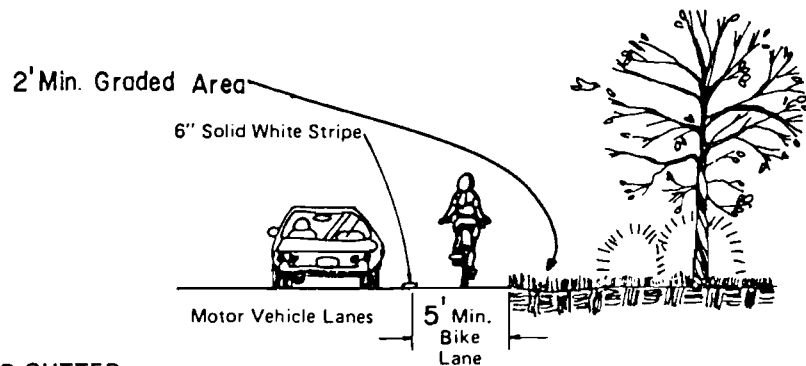
*The optional solid white stripe may be advisable where stalls are unnecessary (because parking is light) but where there is concern that motorists may misconstrue the bike-lane to be a traffic lane.



c. CURBED STREET WHERE PARKING IS PROHIBITED

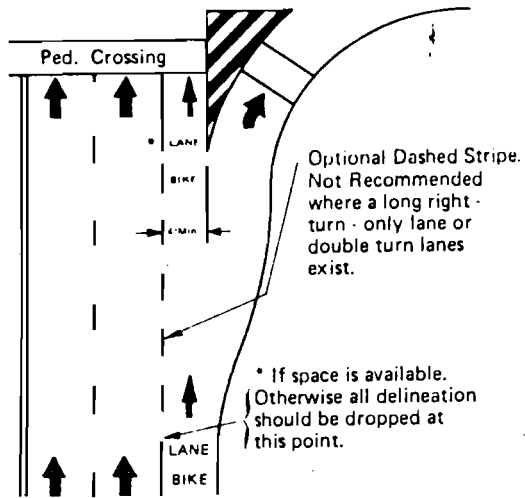


d. STREET WITHOUT CURB OR GUTTER

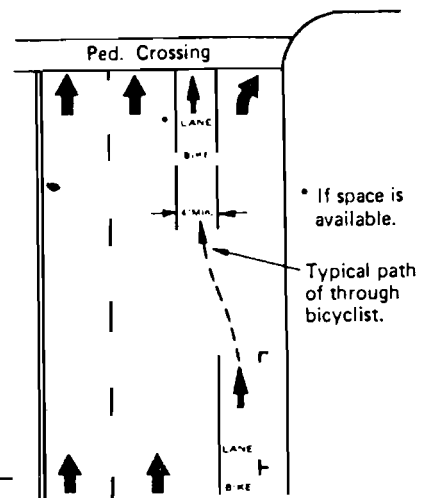


Source: Federal Highway Administration, Department of Transportation, "Proposed Design and Construction Criteria for Bikeway Construction Projects." Federal Register, Monday, August 4, 1980.

Bicycle lane and wide curb-lane.

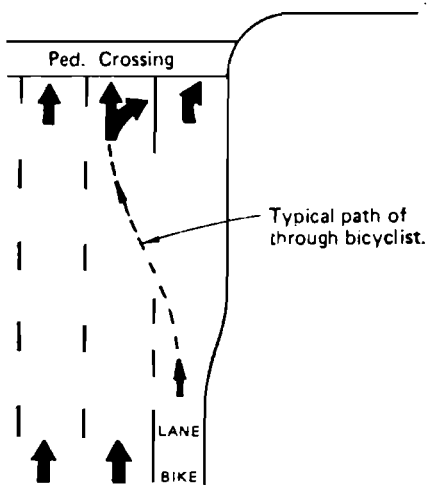
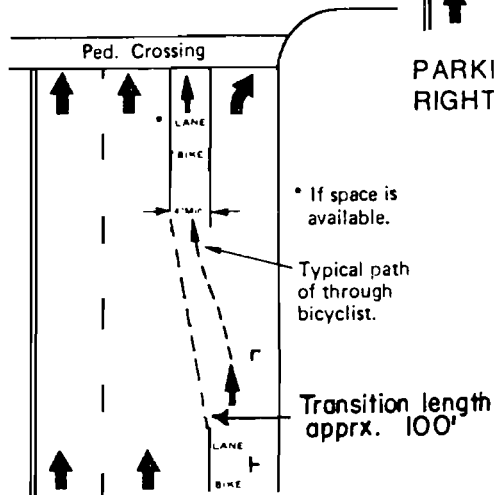


RIGHT-TURN-ONLY LANE

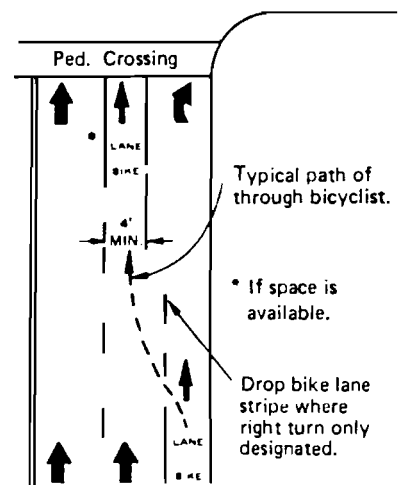


PARKING LANE BECOMES RIGHT-TURN-ONLY LANE

PARKING LANE BECOMES RIGHT-TURN-ONLY LANE (WITH BIKE LANE STRIPING)



OPTIONAL DOUBLE RIGHT-TURN-ONLY LANE



RIGHT LANE BECOMES RIGHT-TURN-ONLY LANE

Source: AASHTO Guide For Development Of New Bicycle Facilities

Bike lanes approaching motorist right-turn-only lanes.

APPENDIX B

PEDESTRIAN AND TRAFFIC VOLUMES AT SELECTED LOCATIONS (Source: SR A1A/Collins Avenue - One Way Pair PD&E Study)

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 5th Street
DATA BY: J. Cuervo		DATE: 4-9-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	11
8-9	23
11-12	78
12-1	83
1-2	72
3-4	62
4-5	63
5-6	50

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
5	12	34	47	41	33	29	36
6	11	44	36	31	29	34	14



Street: 5th

7-8	13
8-9	22
11-12	25
12-1	23
1-2	35
3-4	25
4-5	18
5-6	25

7-8	7	6
8-9	9	13
11-12	16	9
12-1	11	12
1-2	14	21
3-4	15	10
4-5	12	6
5-6	13	12

8	5	7-8
10	17	8-9
16	35	11-12
37	23	12-1
15	20	1-2
16	12	3-4
13	20	4-5
11	10	5-6

7-8	13
8-9	27
11-12	51
12-1	60
1-2	35
3-4	28
4-5	33
5-6	21

4	8	14	13	12	4	6	12
7	6	14	17	10	4	7	9
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	11
8-9	14
11-12	28
12-1	30
1-2	22
3-4	8
4-5	13
5-6	21

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 8th Street
DATA BY: D. Lynch, J. Lewis		DATE: 4-9-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	23
8-9	47
11-12	64
12-1	78
1-2	84
3-4	80
4-5	62
5-6	82

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
12	24	33	39	41	42	20	43
11	23	31	39	43	38	42	39



Street: 8th

7-8	17
8-9	29
11-12	50
12-1	57
1-2	44
3-4	45
4-5	37
5-6	58

7-8	6	11
8-9	11	18
11-12	20	30
12-1	29	28
1-2	25	19
3-4	19	26
4-5	17	20
5-6	21	37

17	15	7-8
0	0	8-9
15	7	11-12
0	0	12-1
0	0	1-2
29	30	3-4
0	0	4-5
0	0	5-6

7-8	32
8-9	0
11-12	22
12-1	0
1-2	0
3-4	59
4-5	0
5-6	0

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
67	10	14	0	0	67	0	0
61	0	27	0	0	73	0	0

7-8	128
8-9	0
11-12	41
12-1	0
1-2	0
3-4	140
4-5	0
5-6	0

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 10th Street
DATA BY: R. Jacobs, J. Dorenkott		DATE: 4-9-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	6
8-9	11
11-12	35
12-1	59
1-2	6
3-4	14
4-5	31
5-6	15

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
2	7	12	45	3	12	25	9
4	4	23	14	3	2	6	6



Street: 10th

7-8	18
8-9	22
11-12	37
12-1	49
1-2	42
3-4	55
4-5	65
5-6	42

7-8	7	11
8-9	10	12
11-12	19	18
12-1	27	22
1-2	26	16
3-4	28	27
4-5	31	34
5-6	20	22

3	8	7-8
4	3	8-9
12	22	11-12
6	7	12-1
4	6	1-2
4	9	3-4
2	5	4-5
6	2	5-6

7-8	11
8-9	7
11-12	34
12-1	13
1-2	10
3-4	13
4-5	7
5-6	8

7	21	30	46	18	34	51	33
11	29	73	33	30	15	39	47
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	18
8-9	50
11-12	103
12-1	79
1-2	48
3-4	49
4-5	90
5-6	80

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 11th Street
DATA BY: J. Cuervo, R. Denis		DATE: 4-10-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	10
8-9	20
11-12	38
12-1	84
1-2	67
3-4	68
4-5	77
5-6	41

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
6	13	6	25	30	44	44	20
4	7	32	59	37	24	33	21



Street: 11th

7-8	18
8-9	17
11-12	46
12-1	47
1-2	27
3-4	54
4-5	57
5-6	64

7-8	8	10
8-9	9	8
11-12	30	16
12-1	34	13
1-2	17	10
3-4	26	28
4-5	27	30
5-6	25	39

5	5	7-8
10	7	8-9
19	19	11-12
14	30	12-1
9	15	1-2
10	18	3-4
22	20	4-5
17	14	5-6

7-8	10
8-9	17
11-12	38
12-1	44
1-2	24
3-4	28
4-5	42
5-6	31

16	18	38	38	51	104	70	50
9	25	57	87	97	45	29	34
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	25
8-9	43
11-12	95
12-1	125
1-2	148
3-4	149
4-5	99
5-6	84

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 14th Street
DATA BY: J. Lewis, D. Lynch		DATE: 4-10-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	4
8-9	4
11-12	18
12-1	9
1-2	3
3-4	21
4-5	63
5-6	30

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
1	2	8	0	2	12	35	21
3	2	10	9	1	9	28	9



Street: 14th

7-8	6
8-9	13
11-12	16
12-1	7
1-2	3
3-4	4
4-5	2
5-6	1

7-8	4	2
8-9	3	10
11-12	5	11
12-1	4	3
1-2	0	3
3-4	1	3
4-5	1	1
5-6	1	0

9	9	7-8
11	2	8-9
22	6	11-12
31	19	12-1
60	32	1-2
32	10	3-4
28	15	4-5
14	9	5-6

7-8	18
8-9	13
11-12	28
12-1	50
1-2	92
3-4	42
4-5	43
5-6	23

8	5	12	21	14	9	8	7
3	0	5	8	8	9	9	7
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	11
8-9	5
11-12	17
12-1	29
1-2	22
3-4	18
4-5	17
5-6	14

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: Espanola Way
DATA BY: R. Jacobs		DATE: 4-10-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	5
8-9	7
11-12	20
12-1	10
1-2	6
3-4	23
4-5	13
5-6	14

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
0	0	3	2	1	4	2	4
5	7	17	8	5	19	11	10



7-8	13
8-9	21
11-12	43
12-1	38
1-2	50
3-4	39
4-5	49
5-6	62

7-8	3	10
8-9	9	12
11-12	26	17
12-1	22	16
1-2	26	24
3-4	14	25
4-5	21	28
5-6	28	34

Street: Espanola Way

0	13	16	15	14	9	19	9
2	8	30	14	37	8	17	8
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	2
8-9	21
11-12	46
12-1	29
1-2	51
3-4	17
4-5	36
5-6	17

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 15th Street
DATA BY: J. Dorenkott		DATE: 4-10-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	5
8-9	6
11-12	11
12-1	18
1-2	23
3-4	26
4-5	14
5-6	34

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
2	2	3	8	8	15	7	20
3	4	8	10	15	11	7	14



Street: 15th

10	16	7-8	7-8	26
13	13	8-9	8-9	26
20	23	11-12	11-12	43
28	36	12-1	12-1	64
35	29	1-2	1-2	64
27	42	3-4	3-4	69
36	34	4-5	4-5	70
50	38	5-6	5-6	88

2	10	18	7	11	9	18	23
2	8	21	19	24	11	22	20
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	4
8-9	18
11-12	39
12-1	26
1-2	35
3-4	20
4-5	40
5-6	43

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: Lincoln Road
DATA BY: J. Cuervo, R. Denis		DATE: 4-11-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	47
8-9	99
11-12	247
12-1	255
1-2	172
3-4	140
4-5	173
5-6	148

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
24	53	124	139	82	80	83	82
23	46	123	116	90	60	90	66



Street: Lincoln

7-8	16
8-9	63
11-12	104
12-1	128
1-2	116
3-4	83
4-5	112
5-6	128

7-8	5	11
8-9	37	26
11-12	53	51
12-1	64	64
1-2	51	65
3-4	46	37
4-5	62	50
5-6	73	55

17	23	7-8
39	41	8-9
93	94	11-12
86	114	12-1
89	102	1-2
61	94	3-4
48	68	4-5
53	60	5-6

7-8	40
8-9	80
11-12	187
12-1	200
1-2	191
3-4	155
4-5	116
5-6	113

4	47	161	159	114	105	107	69
11	30	195	150	123	146	92	90
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	15
8-9	77
11-12	356
12-1	309
1-2	237
3-4	251
4-5	199
5-6	159

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 17th Street
DATA BY: J. Dorenkott, R. Jacobs		DATE: 4-11-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	4
8-9	25
11-12	34
12-1	12
1-2	14
3-4	5
4-5	20
5-6	27

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
1	6	17	7	7	3	13	13
3	19	17	5	7	2	7	14



Street: 17th

7-8	36
8-9	81
11-12	157
12-1	113
1-2	116
3-4	133
4-5	131
5-6	171

7-8	29	7
8-9	46	35
11-12	64	93
12-1	61	52
1-2	57	59
3-4	71	62
4-5	74	57
5-6	94	77

16	26	7-8
44	32	8-9
77	29	11-12
80	27	12-1
38	17	1-2
48	24	3-4
41	27	4-5
74	14	5-6

7-8	42
8-9	76
11-12	106
12-1	107
1-2	55
3-4	72
4-5	68
5-6	88

7	20	17	24	19	8	26	27
3	4	29	17	24	26	13	14
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	10
8-9	24
11-12	46
12-1	41
1-2	43
3-4	34
4-5	39
5-6	41

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: SR A1A		INTERSECTING ROUTE: 18th Street
DATA BY: J. Lewis, D. Lynch		DATE: 4-11-91
FORM COMPLETED BY: B. LeCocq		DATE: 4-15-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	8
8-9	19
11-12	39
12-1	11
1-2	22
3-4	9
4-5	17
5-6	25

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
2	6	9	8	12	6	9	12
6	13	30	3	10	3	8	13



Street: 18th

7-8	9
8-9	9
11-12	30
12-1	15
1-2	36
3-4	42
4-5	30
5-6	117

7-8	3	6
8-9	2	7
11-12	18	12
12-1	7	8
1-2	20	16
3-4	18	24
4-5	7	23
5-6	63	54

6	6	7-8
35	42	8-9
96	101	11-12
58	51	12-1
34	43	1-2
52	39	3-4
40	57	4-5
52	37	5-6

7-8	12
8-9	77
11-12	197
12-1	109
1-2	77
3-4	91
4-5	97
5-6	89

0	8	8	4	9	13	22	12
0	9	3	16	4	16	26	11
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	0
8-9	17
11-12	11
12-1	20
1-2	13
3-4	29
4-5	48
5-6	23

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: Collins Avenue		INTERSECTING ROUTE: 20th Street
DATA BY: Raynauld Denis, Sr.		DATE: 4-16-91
FORM COMPLETED BY: Robin Rizzo		DATE: 4-29-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	4
8-9	14
11-12	27
12-1	24
1-2	22
3-4	27
4-5	33
5-6	41

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
1	1	9	14	8	18	20	23
3	13	18	10	14	9	13	18



Street: 20th

7-8	43
8-9	58
11-12	74
12-1	69
1-2	103
3-4	102
4-5	98
5-6	84

7-8	20	23
8-9	29	29
11-12	45	29
12-1	39	30
1-2	67	36
3-4	71	31
4-5	55	43
5-6	50	34

28	26	7-8
43	55	8-9
91	113	11-12
58	52	12-1
51	46	1-2
54	36	3-4
49	50	4-5
75	63	5-6

7-8	54
8-9	98
11-12	204
12-1	110
1-2	97
3-4	90
4-5	99
5-6	138

5	6	15	18	24	23	30	25
11	3	9	14	18	16	22	16
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	16
8-9	9
11-12	24
12-1	32
1-2	42
3-4	39
4-5	52
5-6	41

Florida Department of Transportation
PEDESTRIAN MOVEMENT SUMMARY

SECTION:	CITY: Miami Beach	COUNTY: Dade
STATE ROUTE: Collins Avenue		INTERSECTING ROUTE: 21st Street
DATA BY: Deen Lynch/Jeffrey Lewis		DATE: 4-16-91
FORM COMPLETED BY: Robin Rizzo		DATE: 4-29-91
REMARKS:		

Street: SR A1A (Collins Avenue)

7-8	7
8-9	7
11-12	3
12-1	2
1-2	31
3-4	14
4-5	20
5-6	11

7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6
5	0	3	1	15	4	12	1
2	7	0	1	16	10	8	10



Street: 21st Street

7-8	17
8-9	15
11-12	10
12-1	15
1-2	14
3-4	34
4-5	29
5-6	23

7-8	3	14
8-9	4	11
11-12	4	6
12-1	8	7
1-2	5	9
3-4	16	18
4-5	17	12
5-6	10	13

10	9	7-8
30	23	8-9
22	35	11-12
47	47	12-1
34	42	1-2
13	17	3-4
23	48	4-5
36	43	5-6

7-8	19
8-9	53
11-12	57
12-1	94
1-2	76
3-4	30
4-5	71
5-6	79

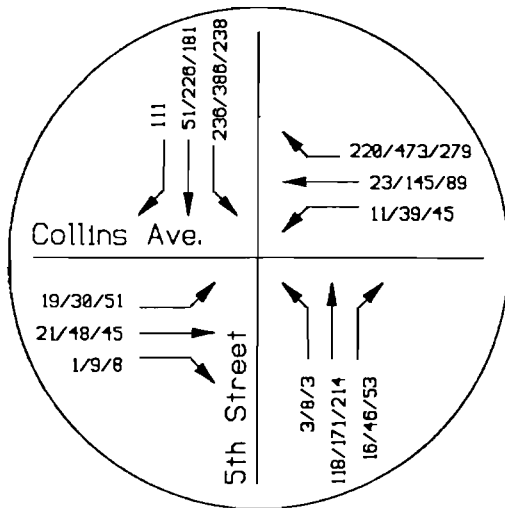
7	18	9	33	19	27	30	20
1	7	19	20	19	12	12	13
7-8	8-9	11-12	12-1	1-2	3-4	4-5	5-6

7-8	8
8-9	25
11-12	28
12-1	53
1-2	38
3-4	39
4-5	42
5-6	33

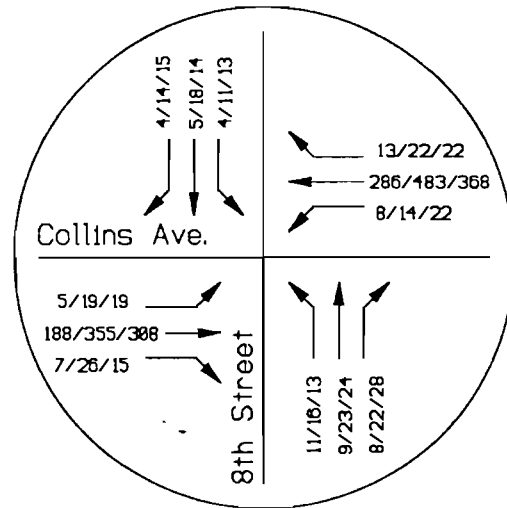
Existing Intersection Volumes:

Collins Avenue @ 5th Street, 8th Street, 10th Street & 11th Street

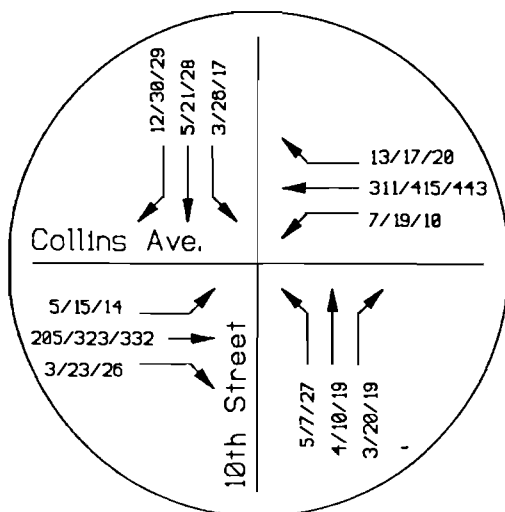
Collins Avenue @ 5th Street



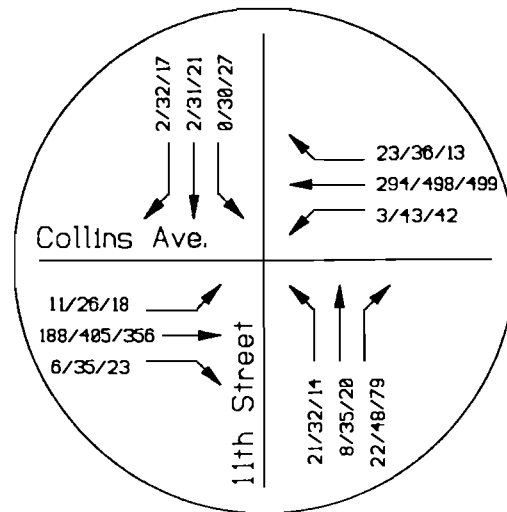
Collins Avenue @ 8th Street



Collins Avenue @ 10th Street



Collins Avenue @ 11th Street

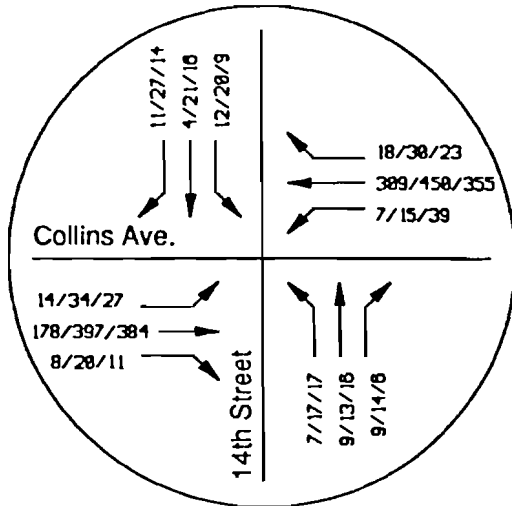


AM Peak/Mid-Day Peak/PM Peak

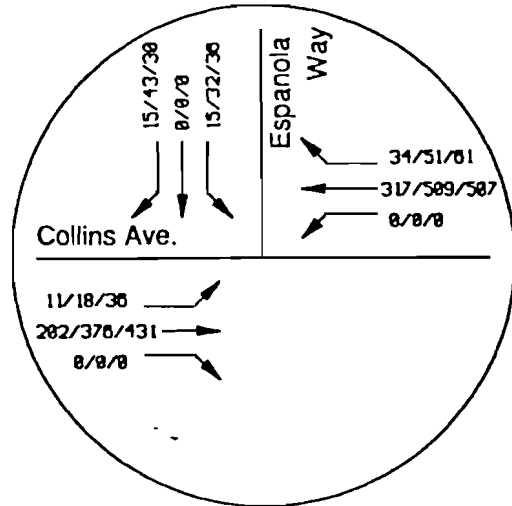
Existing Intersection Volumes:

Collins Avenue @ 14th St., Espanola Way, 15th St. & Lincoln Rd.

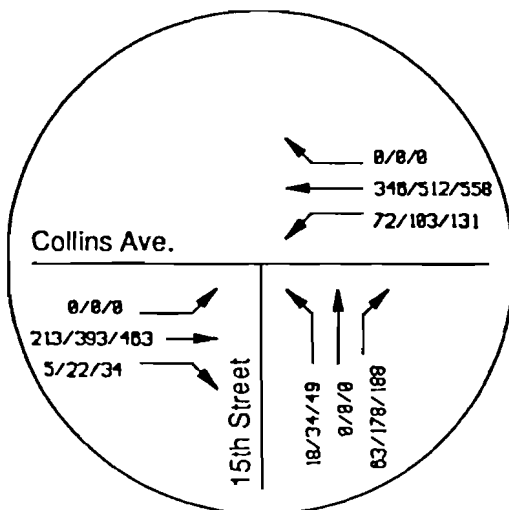
Collins Avenue @ 14th Street



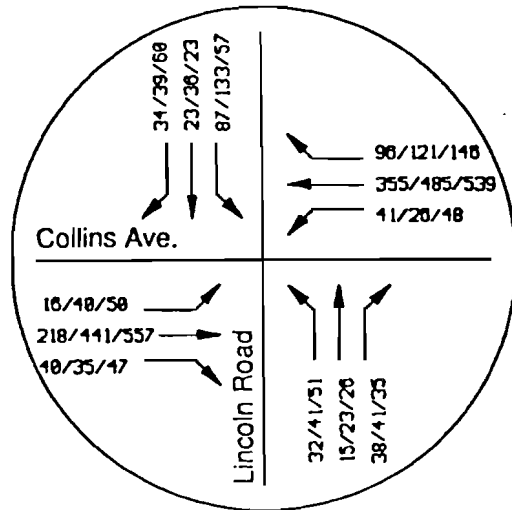
Collins Avenue @ Espanola Way



Collins Avenue @ 15th Street



Collins Avenue @ Lincoln Road

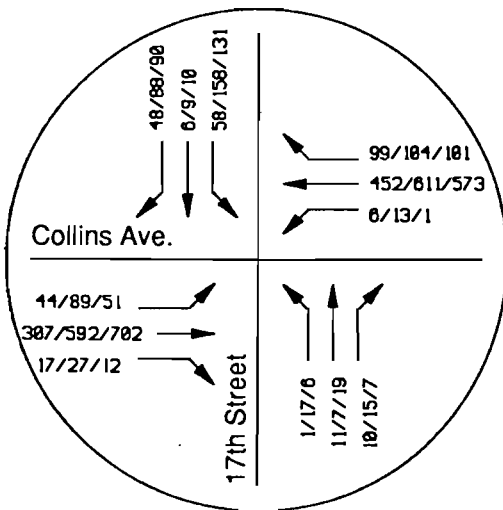


AM Peak/Mid-Day Peak/PM Peak

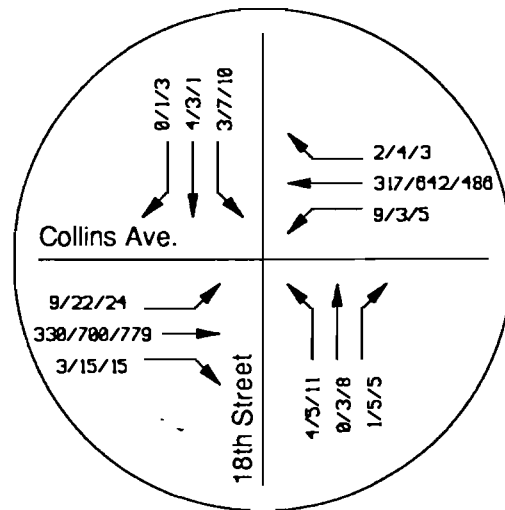
Existing Intersection Volumes:

Collins Avenue @ 17th Street, 18th Street, 20th Street & 21st Street

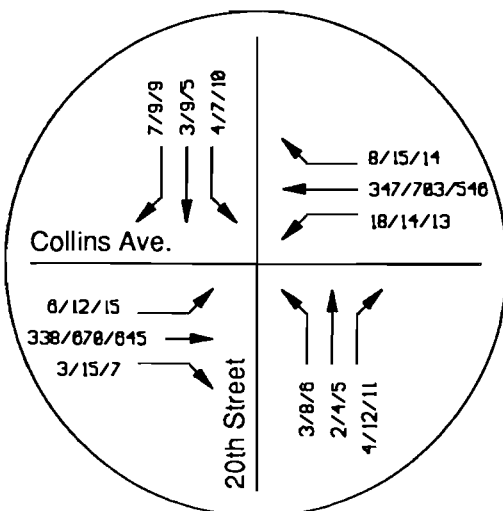
Collins Avenue @ 17th Street



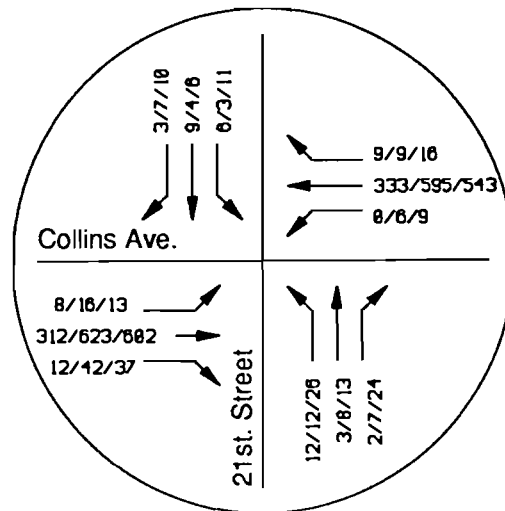
Collins Avenue @ 18th Street



Collins Avenue @ 20th Street



Collins Avenue @ 21st Street



AM Peak/Mid-Day Peak/PM Peak

