NORTH DADE GREENWAYS

MASTER PLAN

NORTH DADE GREENWAYS

A STUDY IDENTIFYING LINEAR CORRIDORS FOR THE DEVELOPMENT OF A
NON-MOTORIZED TRANSPORTATION NETWORK
WITHIN NORTH DADE COUNTY

STUDY FUNDED BY THE METROPOLITAN PLANNING ORGANIZATION
MIAMI-DADE COUNTY

PREPARED BY THE GRADUATE PROGRAM IN LANDSCAPE ARCHITECTURE
SCHOOL OF ARCHITECTURE
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NORTH DADE GREENWAYS TEAM

METROPOLITAN PLANNING ORGANIZATION
MIAMI-DADE COUNTY
Jose Mesa, Director of Secretariat

BICYCLE / PEDESTRIAN PROGRAM
Jeff Hunter, Coordinator
Jae Manzella, Assistant Coordinator

GRADUATE PROGRAM IN LANDSCAPE ARCHITECTURE
SCHOOL OF ARCHITECTURE
FLORIDA INTERNATIONAL UNIVERSITY

PROJECT TEAM
Professor Ted Baker, FASLA, Project Director
Kelly Ann Hults, Project Manager
Clara E. Marichal
Herbert "Bud" Martin

CONTRIBUTORS
Professor Sylvan Jolibois, PhD, FIU
Professor John Stuart, FIU
Edward Bann Williams, FIU
Fatima D' Arce, FIU
Monique Hayez, FIU
Jennifer Skislak, FIU
Alex de la Campa, FIU
Martha Hernandez, FIU

COVER DESIGN
Ikon Communication & Marketing Design, Inc.

MIAMI DADE COUNTY COMMISSION
OFFICE OF THE MAYOR / HONORABLE ALEX PENELAS

COMMISSIONERS
Gwen Margolis, Chair
Dr. Miriam Alonso
Dr. Barbara Carey
Betty Ferguson
Miguel Diaz de la Portilla
Bruce Kaplan
Natacha S. Millan
Jimmy L. Morales
Dennis C. Moss
Pedro Reboredo
Dorin Rolle
Katy Sorenson
Javier Souto

Armando Vidal, PE, County Manager

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FOREWORD

Miami-Dade County continues in timely and cost-effective ways its efforts to meet the challenge of the 21st century. Seeking to maximize its access to the financial resources of various federal programs, the County continues to address the issues of recreation and public transport that have emerged on the federal agenda as matters of national concern. With a focus that will insure a better quality of life for its citizens, Miami-Dade County seeks to create a physical environment offering an ever-expanding array of cultural and recreational opportunities sufficient to sustain its citizens' psychological and physical well-being. The foresight of the Miami-Dade County Commission, its Metropolitan Planning Organization, and its Bicycle/Pedestrian Program in pursuing this objective are notable.

In moving forward with the conceptualization and planning of the *North Dade Greenways* – and the ultimate implementation that will follow – County government assures an urban landscape reflecting an improved aesthetic quality growing from the development of functional pedestrian corridors connecting nodes and destinations.

The *North Dade Greenways* will provide an integrated system of connectors for bicyclists, rollerbladers, joggers, equestrians, and pedestrians along more than 300 miles of urban corridor. Concurrently, it will seek to reconstruct formerly connected landscapes and to create new ecological corridors among landscape patches. This holistic process of landscape reconciliation will provide a unique variety of recreational experiences within an ecologically driven landscape.

ACKNOWLEDGMENTS

The invaluable guidance and continual assistance, review and commentary of Jeff Hunter, Bicycle/Pedestrian Coordinator and of Jae Manzella, of the Metropolitan Planning Organization of Miami-Dade County are especially acknowledged. Their encouragement has made this project a reality.

The participation of numerous citizens in providing valuable guidance through community workshops and meetings is also acknowledged. A number of community organizations participated in the discussion, consideration, and evaluation of potential routes, and recommendations for the designation of alternative routes for greenways.

An expression of special appreciation is extended to David Henderson of the Florida Department of Transportation for his continued guidance, interest and support.

The focused comments and on-going review of a range of persons with a keen interest in the development of greenways throughout south Florida deserves recognition, particularly the contributions of Bill Goldstick, Sally Jude, Diana Gonzalez, David Kaufman, Mike Diamond, Amy Werba, and Miami-Dade County staff including Walter Geiger of the Department of Planning, Development, and Regulation, and Kevin Asher of the Department of Parks and Recreation.

The guidance and support of the Division of Sponsored Research of Florida International University over the life of this project is especially acknowledged.

The dedication of Kelly Hults in coordinating and administering the finite details and structure of this broad undertaking; the computer and organizational skills of Clara Marichal; and the graphic representations and cost estimating of Bud Martin are each deserving of a special expression of appreciation.

Ted Baker, FASLA
Project Director

INTRODUCTION

GREENWAYS OFFER THE OPPORTUNITY TO OVERCOME MANY OF THE UNDESIRABLE IMPACTS ON COMMUNITY COHESION. THEY HELP STRUCTURE A RE-EMERGENCE OF ECOLOGICAL VITALITY, DEFINE A NEW URBAN AESTHETIC, AND CONTRIBUTE SIGNIFICANTLY TO THE AESTHETIC QUALITY AND PHYSICAL ORDER OF OUR URBAN ENVIRONMENT

Miami-Dade County has experienced significant modification of its desirable physical attributes and unique cultural character over the past 50 years. The outgrowth of an ever-increasing population, these changes are manifested in two major areas. The frequent alteration and expansion of the built environment – roads, shopping districts, public facilities, residential areas, and private enterprise zones – has assured an ever-increasing auto orientation. Concurrently, modification of the built environment has often required the manipulation of natural systems, those very resources that have attracted so many – resident and tourist alike – to south Florida. The literature across disciplines suggests that such change inevitably impacts community cohesion, aculturation, and aesthetics – most frequently at some cost – and opportunities have been sought continually to strengthen and restore the vitality and quality to our urban areas.

Recent social and physical change in Miami-Dade County generally reflects a demographic synthesis found in multi-cultural urban areas, leading to the frequent adjustments observed in geographic patterns of population distribution. This is observed in an ever-expanding pattern of development of measurable concentric form, in the manner of *The Garden City* of Ebeneezer Howard, but with too few of Howard's identified attributes. These patterns have developed in part from an influx of the new and diverse population common to any metropolis. They have been particularly notable in South Florida over the past few decades.

Such change has contributed to increased traffic demand, and both the need for enhancement of existing transport systems and the development of alternative forms of transportation. Observed particularly in the growth and expansion of international banking and trade, in the development of new professional sports teams, and in the frequent expansion of the Dante Fascell Port of Miami and the Miami International Airport, the enhancement of social, cultural, and governmental institutions has been viewed historically as beneficent. Perhaps the greatest benefit of such change has resulted from the growth and expansion of the multicultural character of the community, in support of social interaction and shared effort in pursuit of common community objectives.

Like many of the emerging urban centers of late 20th century America, and because of its rapid growth and development, Miami-Dade County has focused its transportation resources on highways and more recently, on high speed rail systems. The County now operates the 25 mile Metrorail line from urbanizing Hialeah on the north, through downtown Miami, to suburban Kendall on the south. Within the Miami urban center, the County also operates the multi-loop MetroMover. Miami-Dade County recently constructed and dedicated the 22 mile southern leg of an Express Busway connecting Metrorail at Kendall to the southern reaches of the County. These are notable efforts to expand the transportation network, and they each reflect innovative solutions to an historical transportation problem that seemingly expands in geometric proportion with population growth.

Miami-Dade County possesses an exurban quality, the blending of fringe agricultural and natural areas with the *borderland* zone described by Stilgoe and others, and the intense, articulated fabric celebrated by such urbanists as Jane Jacobs, Kevin Lynch, and Allan Jacobs. Thus, the character of Miami-Dade County is very different than the urban fabric of such cities as Boston, New York, Chicago, and San Francisco. While each of these urban centers is considered pedestrian-accessible and foot and bicycle traffic are legion, the very rapid growth and suburbanization, and relative youth of Miami-Dade County has occasionally left unaddressed such pedestrian accessibility.

There are within the boundaries of Miami-Dade County at least twenty-nine municipalities of varying geographic size and population. Despite this urbanization, the desirable social cohesion and physical connectivity associated with traditional urban pedestrian activity has eluded Miami-Dade's more urbanized areas. Reliance on the automobile has resulted in a disconnection with the urban landscape and a depersonalization of everyday experience, and has also led to diminished socialization within the County's diverse population. This reliance on vehicular travel has also reduced the positive physical experiences and interactions people normally associate with the landscape and its natural systems.

Greenways offer opportunities to overcome many of the undesirable impacts on community cohesion: they may help structure a re-emergence of ecological vitality, define a new urban aesthetic, and contribute significantly to the aesthetic quality and physical order of our urban environment. Greenways are viewed as natural linear corridors, defined most commonly by woodlands, the riparian corridors of streams and rivers, the edges of lakes and canals, abandoned rail alignments, and utility corridors. They are linked also to the wide hedgerows and windbreaks found in many agricultural landscapes (Hellmund, 1994). As the *South Dade Greenways Network* (Rosenberg, et al, 1994) clearly indicates, the utilization of such opportunities in the development of a greenways system is a sound, logical process, and the proposed Biscayne Trail and Everglades Trail of the *South Dade Greenways Network* are such examples. Combined, these proposals embrace the multifaceted experience of Everglades National Park, Biscayne National Park, Black Point

Park, Homestead Bayfront Park, the right-of-way of the L-31N levee, and the right-of-way of the C-111 canal. These corridors also pass through thousands of acres of pastoral agricultural landscape, diverse settings within rural and relatively undeveloped south Miami-Dade that offer users a variety of positive greenways experiences. Such settings are clearly conducive to greenway development and are likely to insure a high level of utilization.

The urbanized area of north Miami-Dade County however, presents a significantly different – and more challenging – opportunity for the development of a greenway network. Absent vast expanses of undeveloped and agricultural lands, the linear corridors of the *North Dade Greenways* result from the optimization of a patchwork of public and quasi-public easements and rights-of-way. Despite the more constrained and intensely developed environment in which the *North Dade Greenways* are to be developed, this study has identified a series of corridor alignments that address community needs within the 390 square mile study area.

The proposed corridors offer a variety of trails that will serve the needs of a broad cross-section of the Miami-Dade County population and they will help enhance the experience of urban living for residents and visitors alike.

MASTER PLAN

The *North Dade Greenways* study area is bounded on the south by North Kendall Drive (Southwest 88th Street), on the west by Krome Avenue (Southwest 177th Avenue), on the north by County Line Road (Northwest 202nd Street), and on the east by Biscayne Bay and the Atlantic Ocean.

The study area serves an estimated 1.5 million residents and includes such ethnically and physically diverse areas as Little Havana, Little Haiti, Sweetwater, The Black Grove, Brownsville and Liberty City, Hialeah, downtown Miami, the waterfront and Miami River neighborhoods and undeveloped areas of west Miami-Dade. Its physical fabric is defined by a host of governmental, quasi-public, and private uses including Hialeah Race Track, the Dante Fascell Port of Miami, Miami International Airport, Greynolds Park, Miami Beach, Venetian Pool, Vizcaya, Dadeland Mall and Miami International Mall, Bayside, the Miami Arena, numerous public parks, and a wide variety of educational sites including Florida International University's two campuses, and the six campuses of Miami Dade Community College.

The study area is criss-crossed with a network of South Florida Water Management District canals; Florida Power & Light transmission corridors; local roads, collectors, arterials, and expressways; and railroad rights-of-way. Public access and use of these facilities is not currently assured, and even existing policy on public access to rights-of-way may vary from site to site. Despite such variation of policy the issue of public use is so compelling as to require a new perspective on such use.

Project Limit
Dade / Broward County Line
Okeechobee Road
State Road 826
Interstate 95
US Highway #1
Florida's Turnpike
Krome Avenue
State Road 826
State Road 836
Miccosukee Trail / 22 miles to L-67
N. Kendall Drive
Project Limit
US Highway #1
BISCAYNE BAY
ATLANTIC OCEAN
Miles
0 1 2
LEGEND
Altantic Trail
Beacon Trail
Commodore Trail
East-West Trail
Flagler Trail
Gold Coast Trail
Krome Trail
Lake Belt Trail
Lehman Link
Ludlam Trail
M Path Trail
Memorial Trail
Merrick Trail
Miami River Trail
Miccosukee Link
Miller Link
Oleta Link
Perimeter Trail
Snake Creek Trail
Snapper Creek Trail
South Dade Greenway Network
Trailheads
Turnpike Trail
Unity Trail
Venetian Link
West Kendall Trail

MASTER PLAN

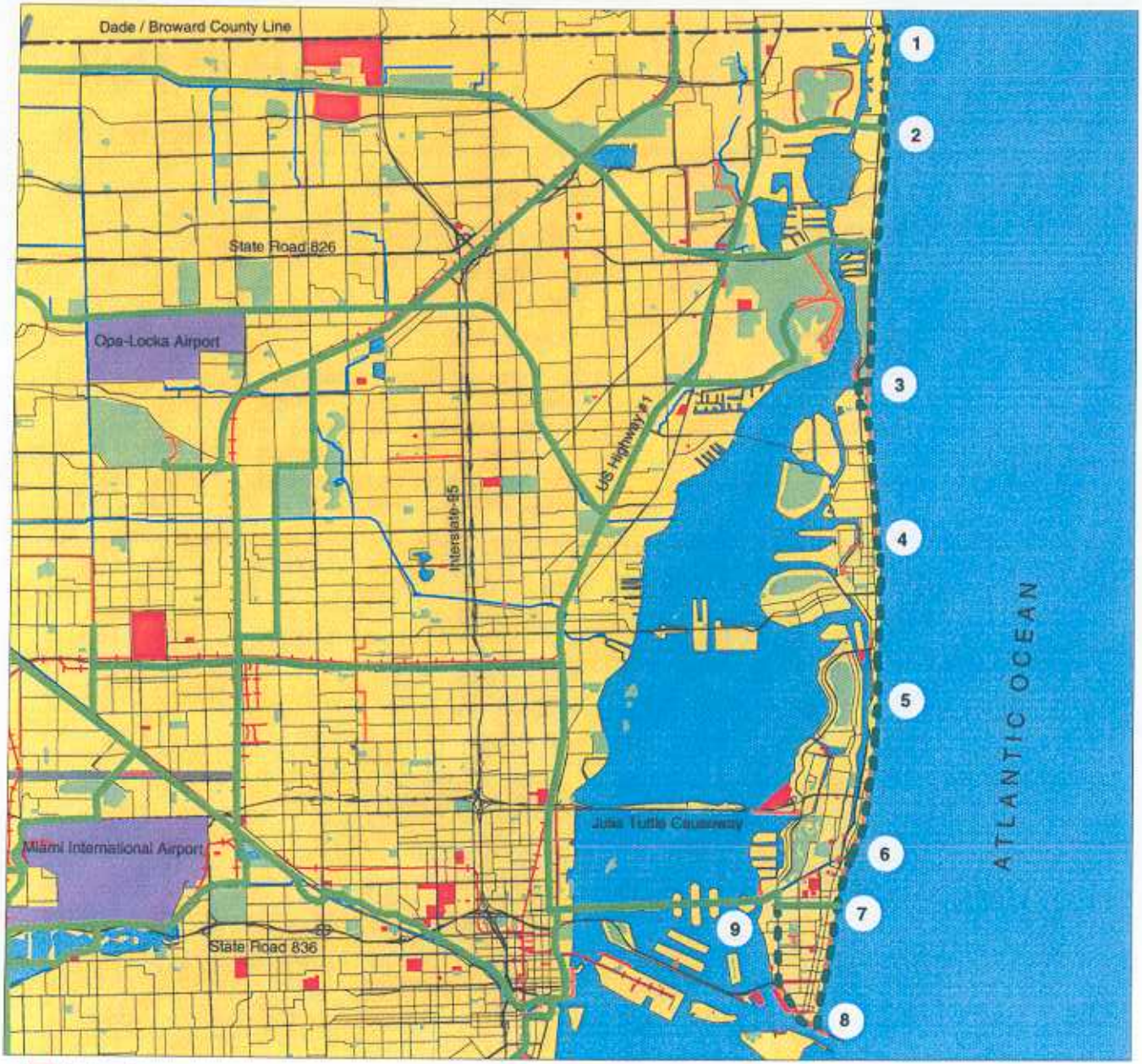
GREENWAY CORRIDORS

THESE PROPOSED CORRIDORS ESTABLISH A WELL-INTEGRATED SYSTEM OF GREENWAYS LINKING THE NORTH REGION OF MIAMI-DADE COUNTY. THIS UNIQUE URBAN SETTING COUPLED WITH GROWING DEVELOPMENT PRESSURE, HAS CREATED A MOST CHALLENGING ENVIRONMENT IN WHICH TO DEVELOP SUCH A GREENWAY SYSTEM. TO INSURE THE AVAILABILITY OF FUTURE OPPORTUNITIES IN SUPPORT OF THE OBJECTIVES OF THIS REPORT, NEW ZONING APPLICATIONS AND REQUESTED LAND USE MODIFICATIONS SHOULD BE GRANTED IN CONCERT WITH THE ALLOCATION OF CORRIDOR ALIGNMENTS THAT WILL SUPPORT FUTURE GREENWAY DEVELOPMENT.

ATLANTIC TRAIL

DESCRIPTION

Length:	16.8 miles
North Links:	Dade / Broward County Line
Intersecting Links:	Lehman Link Oleta Link
South Links:	Venetian Link
Objective:	A non-motorized multi-use corridor along the Atlantic Ocean shoreline, as a path at the beach edge, and as an alternative lane along parallel roads when required.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Altantic Trail

Miles
0 .5 1 1.5 2

ATLANTIC TRAIL

REGION 1

OPPORTUNITY

A continuous bicycle and pedestrian path along Miami-Dade County's Atlantic Ocean shoreline, the Atlantic Trail will offer an uninterrupted waterfront connection, and a link to Broward County at the northern limits of the city of Golden Beach.

CONSTRAINT

The coastline of the City of Golden Beach is dotted with private residences. Because this oceanfront development occurs between Messini Avenue and Terracini Avenue, the Atlantic Trail's northern segment must utilize the road easement of Ocean Boulevard. This segment of Ocean Boulevard is identified by the *Metro-Dade Bicycle Facilities Plan* (1994) as a corridor suited for a short-range on-road bicycle facility.[1] Additionally, Miami-Dade County's *Transportation Improvement Program* (1997) refers to the areas from Golden Beach to Haulover Park, and from Bal Harbour to Southpointe Park – parallel to the Atlantic Ocean shoreline – as representing an "unfunded need" for a non-motorized component, specifically a new multi-use facility.[2]

REGION 2

OPPORTUNITY

South of 164th Street Park, the Atlantic shoreline presents the opportunity to create a bicycle and pedestrian facility on the beach, just east of the coastal dunes. The Park will allow a transition eastward to the beach from Ocean Boulevard for bicyclists and pedestrians. The proposed Atlantic Trail will continue southward along the shoreline to Gilbert Simpson Park located on Sunny Isles Boulevard, and to Haulover Park, located at the southern tip of the neighborhood of Sunny Isles. The existing bicycle and pedestrian facility along Sunny Isles Boulevard will allow a connection from the Atlantic Trail westward to the Flagler Trail.

REGION 3

OPPORTUNITY

The proposed Atlantic Trail links to the existing bicycle and pedestrian paths within Haulover Park and Haulover Marina. This link provides access from the shoreline path westward to the bridge

on State Road A1A (Collins Avenue).

CONSTRAINT

Conflicts occur as the Atlantic Trail utilizes the narrow bridge on State Road A1A. This bridge connects Haulover Park and adjacent County properties, with the City of Bal Harbour. The bridge provides a four-foot easement on either side for pedestrians – an expanse insufficient for bicyclists and other users. A cantilevered outrigger with a minimum width of eight feet, projecting from the eastern section of the bridge, will link facilities in Haulover Park with a vast array of shopping amenities, hotels, and condominiums in Bal Harbour. Additional conflicts result from the prohibition of bicyclists on Bal Harbour's paved beach path, which with access relocated to the corridor of A1A, to the point where it can reconnect to the beach path at 96th Street. As the Atlantic Trail enters the City of Surfside at 96th Street, it will become a continuous shoreline multi-use path allowing non-motorized travel for a distance of approximately nine miles, to Southpointe Park at the southern tip of Miami Beach.

REGION 4

OPPORTUNITY

The proposed Atlantic Trail links to the North Shore State Recreational Area at 80th Street. Existing paths within this one-mile linear recreational area will offer Atlantic Trail users access to the Altos Del Mar Historic District, Atlantic Heights Library, and the North Shore Community Center. Additionally, this recreational area provides access through dense native shoreline flora to the elevated boardwalk that exists on this site.

REGION 5

OPPORTUNITY

The City of Miami Beach is currently completing the *North Beach Recreational Corridor* study, between 75th Street and 63rd Street. Its objectives are to preserve existing on-street

parallel parking, increase the width of sidewalks from four to eight feet, reduce traffic congestion, ameliorate intersection operations, and provide pedestrian and streetscape amenities supporting the revitalization of the North Beach area.[3] The Atlantic Trail creates the opportunity for a continuous shoreline facility linking proposed and existing segments.

REGION 6

OPPORTUNITY

An additional beachwalk project is currently under consideration by the City of Miami Beach: it includes the area from 21st Street to Lummus Park at 9th Street. Among design objectives identified in the *Conceptual Design Report* are the provision for a secure, lateral beachfront access for pedestrians, bicycles, and emergency vehicles to the major business districts of Ocean Drive and Lincoln Road. Additionally, the beachwalk project will provide oceanfront amenities, including restrooms at each beach access point. Control of pedestrian and emergency vehicle movements across the primary dune, will enhance and protect the overall beach and dune system as a primary design objective.[4] The Atlantic Trail offers the opportunity to connect segments of these proposed beachfront projects, creating unimpeded access to bicycle, jog, or rollerblade along the Atlantic Ocean shoreline of Dade County.

REGION 7

OPPORTUNITY

The Atlantic Trail offers an alternate route at Lincoln Road that will connect to the proposed Venetian Link, and to similar existing facilities in the vicinity. Atlantic Trail users will have ready access to the shopping and dining amenities along historic Lincoln Road. A continued westward route along Lincoln Road will connect to the Venetian Link at Alton Road. Additionally, the Atlantic Trail will consolidate connection to existing facilities along 5th Street, Miami Beach Drive, Dade Boulevard, Inlet Boulevard, and the southern tip of Alton Road.

CONSTRAINT

Although minimal, vehicular conflicts do occur at points where existing pedestrian paths intersect the Atlantic Trail. For example, as Atlantic Trail users transfer to the existing facility along Lincoln Road, vehicular traffic on Collins Avenue and on Washington Avenue may pose a conflict. Existing traffic signals at each intersection should assist in providing safe passage for those desiring a westerly route.

REGION 8

OPPORTUNITY

The Atlantic Trail offers the opportunity to connect to Southpointe Park, Ocean Front Park, Pier Park, and the Miami Beach Marina located on the southernmost tip of Miami Beach. A popular tourist attraction, historical South Beach can serve as a trailhead for the Atlantic Trail. Utilizing the existing path along Biscayne Street, the Atlantic Trail will parallel the island's coastline and continue north along Alton Road.

CONSTRAINT

Conflicts will increase as the property within this southern district changes ownership and development pressure grows. Coordination between the City of Miami Beach, the Metropolitan Planning Organization, and private property owners will foster a positive atmosphere in which compromise insuring the public's right of access along the entire southern coastline of Miami Beach, may be achieved.

REGION 9

OPPORTUNITY

The Atlantic Trail offers the opportunity to connect to the mainland via the Venetian Link. The Venetian Link begins at the junction of the Atlantic Trail along Alton Road, and the existing facility along Lincoln Road. This link will provide access to the existing facility along Dade Boulevard that will ultimately connect at its western terminus with the M-Path Trail and the Flagler Trail, located within the Biscayne Boulevard corridor. The M-Path Trail will provide a southern route through Downtown Miami and South Miami.

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[1]Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[2] Metropolitan Planning Organization. *Transportation Improvement Program* (Miami: Metropolitan Dade County, 1997) 252.

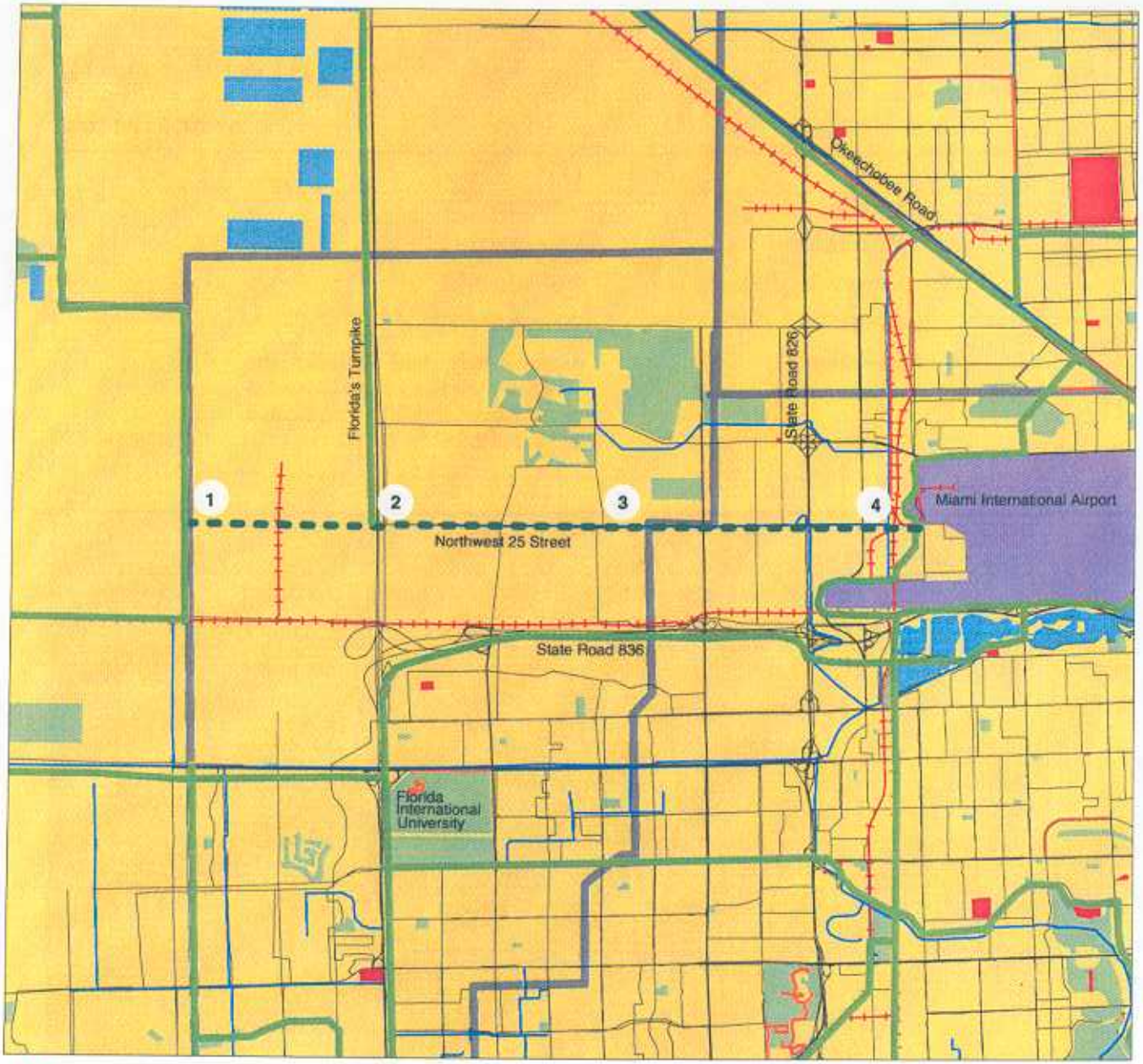
[3] City of Miami Beach. *The North Beach Recreational Corridor* (Vero Beach: Kimley-Horn and Associates, Inc. 1993) 2.

[4] City of Miami Beach. *Beachwalk Project: Lummus Park to 21st Street* (Coral Gables: Coastal Systems International, Inc. 1997) 3.2.

BEACON TRAIL

DESCRIPTION

Length:	6.9 miles
West Links:	Lake Belt Trail
Intersecting Links:	Turnpike Trail
East Links:	Perimeter Trail
Objective:	A greenway path within the southerly portion of the easement of the Northwest 25th Street canal in West Dade.



BEACON TRAIL

REGION 1

OPPORTUNITY

Located within the southerly portion of the canal easement of Northwest 25th Street, the Beacon Trail establishes a direct link to the Lake Belt Recreational Area located west of Florida's Turnpike. A study currently being conducted by a coalition of private interests and government agencies, the *Northwest Dade County Freshwater Lake Belt Plan* is being developed to insure the protection of future water resources for South Florida. It seeks also to identify issues of common interest, and to coalesce environmental concerns with the activities and needs of the rock mining industry. Such conciliation will insure the preservation of a vast expanse of the land-water interface in West Dade, that will be utilized for recreational and environmental purposes.[1]

CONSTRAINT

Northwest 25th street currently terminates at northwest 142nd Avenue in the community of Doral. Newly planned residential communities and industrial properties are predominant in this region. A map of applications by developers to amend the *Comprehensive Development Master Land Use Plan* indicates several areas adjacent to Northwest 25th Street that are subject to ongoing petitions.[2] Such proposed modifications fairly insure that urban development may progress beyond the current Urban Development Boundary within this area, west of Florida's Turnpike.

REGION 2

OPPORTUNITY

The Beacon Trail provides an important link to the Beacon Tradeport, a proposed entertainment and industrial complex currently in the planning stages. The Beacon Tradeport will occupy the tract of land located between Northwest 25th Street and State Road 836, from Northwest 107th Avenue to Florida's Turnpike. A mixed-use development, the Tradeport will offer visitors and residents a mix of retail shopping, dining, theaters, and an amusement park, while providing warehousing facilities to merchants and businesses.

CONSTRAINT

Recent design proposals generated by the Florida Department of Transportation – in concert with the developer – for adjacent rights-of-way have included the widening of Northwest 25th Street to compensate for future traffic growth. The north portion of the 12-foot canal right-of-way is of adequate width to accommodate a bicycle and pedestrian path. The construction of a littoral zone between the canal and the path will enhance habitat value

within the corridor. This requires that the canal not be directed through a culvert. Improved pedestrian linkages along the south side of Northwest 25th Street are also being implemented. A current corridor study of the Florida Department of Transportation seeks to ameliorate conditions within the Northwest 25th Street right-of-way, while maintaining the current easement south of the canal.[3]

REGION 3

OPPORTUNITY

With the development of the Beacon Trail, various import and export centers, a country club and spa, and shopping amenities that are within a one-mile radius of the proposed greenway, can be linked. The Beacon Trail serves both a major shopping facility and an employment center – Miami International Mall and the Beacon Tradeport – on Northwest 107th Avenue. The Trail also establishes a link to the Miami Free Zone, a significant hub for import and export business activity. It also creates a non-motorized travel opportunity serving a large number of commercial and light industrial facilities of the region including the Miami International Corporate Center, Airport Lake Industrial Park, America's Gateway Park, Expressway Industrial Park, Palmetto International Center, Galloway Financial Center, and Miami International Commerce Center. The Beacon Trail will also create a link along Northwest 97th Avenue to the Doral Country Club, home of the annual Doral Open golf tournament.

CONSTRAINT

Presently, the canal right-of-way along Northwest 25th Street measures 12 feet in width. Site investigations revealed significant use of the canal right-of-way by joggers, in the vicinity of the Miami-Dade Police station located at Northwest 92nd Avenue. Barriers to the construction of a path within the canal right-of-way include lighting fixture locations and a guardrail. Development of a path requires that the guardrail be relocated to an alignment in closer proximity to the edge of road pavement. This will permit a greater expanse along the canal easement for the bicycle and pedestrian facility.

REGION 4

OPPORTUNITY

The Beacon Trail will link to the proposed Perimeter Trail at the terminus of Northwest 25th Street at the Miami International Airport. Beacon Trail users will have the opportunity to radiate out of the centrally located Perimeter Trail, to connect the areas of north, south, and east Dade County.

CONSTRAINT

The Florida Department of Transportation is currently conducting a corridor study of Northwest 25th Street. Future prospects suggest a notable increase in vehicular traffic volume for those areas immediately west of the airport, due to the construction of additional cargo bays on the western fringe of Miami International Airport, and other area development. Recommendations for abating future heavy truck activity at the intersection of Northwest 25th Street and Perimeter Road include the design of an elevated ramp for the sole use of multi-axle vehicles, which is intended to relieve congestion at the connection to the Palmetto Expressway (State Road 826).[4] Although presently regarded as a corridor study that will exclusively explore vehicular traffic, the promotion of non-motorized transportation applications within this ever-expanding area will likely ease traffic congestion. Such action will also create an aesthetically pleasing environment in lieu of the current circumstance wrought with an asphalt network of roads that are designed solely for vehicular use.

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[1] South Florida Water Management District. *Northwest Dade County Freshwater Lake Belt Plan: Making Wholes, Not Just Holes* (Miami: SFWMD Visual Communications Division, 1997) 4.

[2] Metro-Dade Department of Planning, Development, and Regulation. *Areas Subject to November 1996 Applications to Amend the CDMP Land Use Plan Map* (Miami: April 21, 1994).

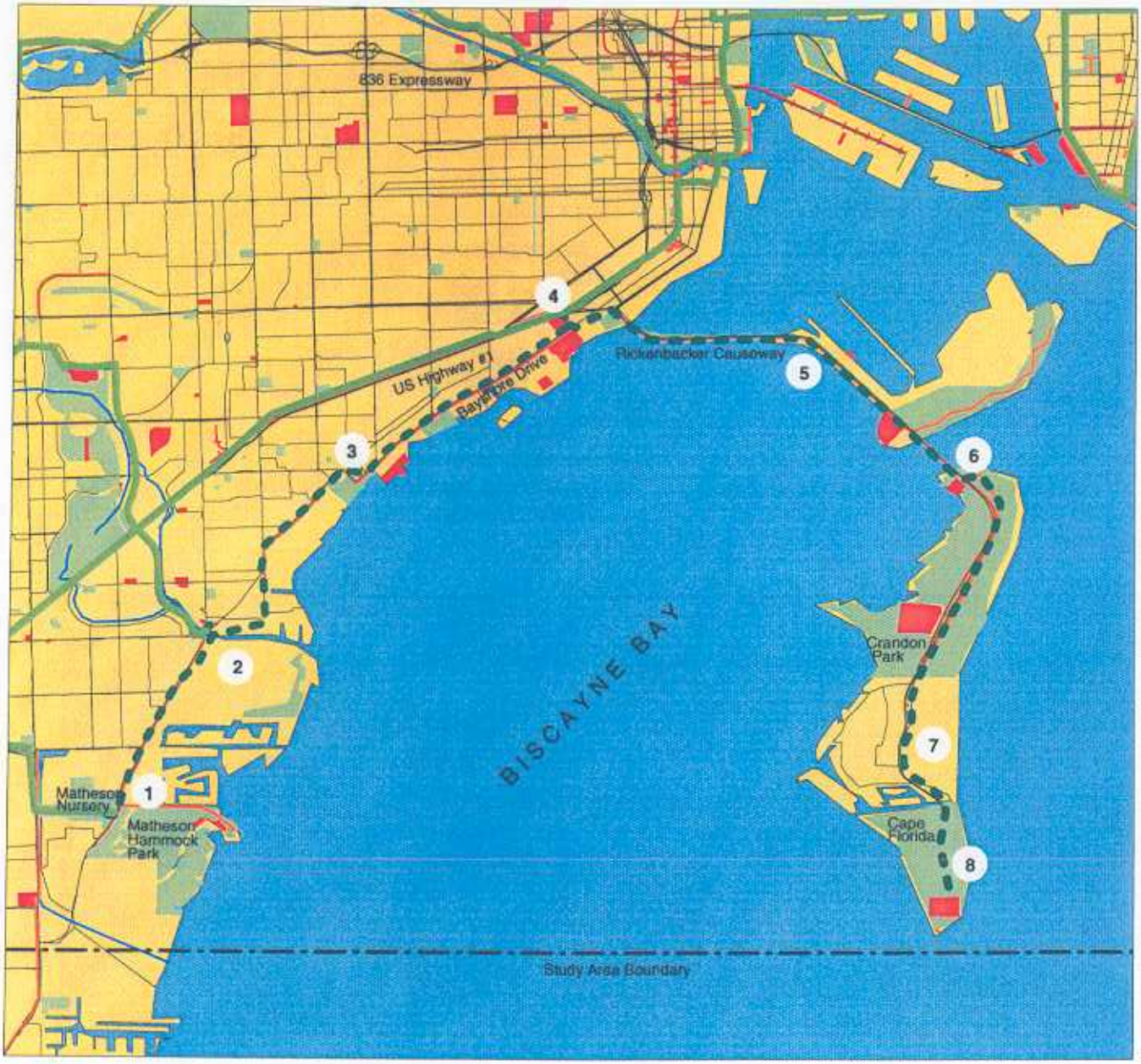
[3] Pat Shortal, telephone conversation with researcher at Florida Department of Transportation, 20 February 1997.

[4] Shortal, interview.

COMMODORE TRAIL

DESCRIPTION

Length:	15.1 miles
West Links:	Snapper Creek Trail
Intersecting Links:	Merrick Trail M-Path Trail
East Links:	Bill Baggs Cape Florida State Recreation Area
Objective:	Enhancement and linkages to existing segmented bicycle and pedestrian facilities within road rights-of-way.



Points of Interest
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Commodore Trail

Miles
0 .2 .4 .6 .8

COMMODORE TRAIL

REGION 1

OPPORTUNITY

The location of the terminus of the Commodore Trail in the vicinity of Matheson Hammock Park, this region includes the existing multi-use path along Old Cutler Road from Matheson Hammock north to Cartegena Plaza at Cocoplum Circle. A number of ideal amenities make Matheson Hammock Park appropriate for inclusion as a trailhead facility. The Park contains ample parking and bike paths, with access to showers, concession stands, a marina, public beaches, and natural areas along Biscayne Bay. Additionally, the Park is adjacent to Fairchild Tropical Garden and the recently acquired ITT Snapper Creek Reserve to the south. The development of Matheson Hammock Park as a trailhead facility should include a trail connection through the former "Matheson Hammock Nursery". This trail connection will provide a link between Old Cutler Road and Red Road (Southwest 57th Avenue), immediately west of the Snapper Creek Canal. This segment links Commodore Trail to the existing bike path along Red Road, connecting to the Snapper Creek Trail. It also allows trail users the opportunity to continue to the rural, agricultural areas of South Miami-Dade along scenic Old Cutler Road. Improvements to the existing multi-use path between Cartegena Plaza and Matheson Hammock Park would include those recommended within the "Non-Motorized Component – Unfunded Needs" section of the Metropolitan Planning Organization's *Transportation Improvement Program.*[1]

REGION 2

OPPORTUNITY

This segment of the Commodore Trail will occur from Cartegena Plaza at Cocoplum Circle north, to the intersection of Douglas Road (Southwest 37th Avenue) and Main Highway, and will connect with the Merrick Trail to the west, along Sunset Drive. Existing parking areas immediately south of the Coral Gables Waterway are currently used as an embarkation point for the existing Old

Cutler Road multi-use path. As proposed in the *Transportation Improvement Program.*[2], an enhanced trailhead facility and pedestrian bridge across the Coral Gables Waterway should be developed in this location. Immediately north of the waterway and east of Douglas Road, Ingraham Park can accommodate the trail from the pedestrian bridge to Sunrise Avenue. Selected for its lower traffic volume – as compared to Edgewater Drive – and its access to Sunrise Park, this portion of trail along Sunrise Avenue provides access to the southern leg of Douglas Road. The trail will continue north along Douglas Road, utilizing the existing multi-use path, from Ingraham Highway to Main Highway.

CONSTRAINT

An appropriate crossing at the intersection of Le Jeune Road (Southwest 42nd Avenue) with Cartegena Plaza – south of the Coral Gables Waterway pedestrian bridge – would be required for safe access to the Merrick Trail. The portion of the Commodore Trail along Ingraham Highway will require improvements to the existing path and an pedestrian crossing at Edgewater Drive. Facility development would be required along the Ingraham Highway right-of-way between Edgewater Drive and Sunrise Avenue. Striping and signage within the roadway of Sunrise Avenue coupled with facility development along Douglas Road would be required to delineate the trail space from vehicular travel lanes, and enhance the level of visibility from residential driveways and overall user safety.

REGION 3

OPPORTUNITY

Located in Coconut Grove, this region of the Commodore Trail will run from the intersection of Main Highway and Douglas Road northward to the intersection of South Bayshore Drive and Southwest 32nd Road. Among important historic and cultural sites, and possessing unique tropical scenery along this segment of the Trail, are Coconut Grove Playhouse, the historic Black Grove, Barnacle State Historic Site, Peacock Park, an array of retail shops, Kenneth M. Meyers Bayfront Park, Coconut Grove Sailing Club, Dinner Key Marina and Convention Center, Miami City Hall, Coral Reef Yacht Club, Kennedy Park, Mercy Hospital, Viscaya Museum and Gardens, and the Museum of Science and Space Transit Planetarium. Trail development in this region will utilize the existing multi-use paths along Main Highway and South Bayshore Drive, and will include improvements to Mc Farlane Road. In addition to the trail routes along Main Highway, Mc Farlane Road, and South Bayshore Drive, an additional trail "spur" along Southwest 27th Avenue will connect the Commodore Trail with the M-Path Trail and the Coconut Grove Metrorail Station at U. S. Highway #1. Improvements to the existing facilities and development of a trail spur along Southwest 27th Avenue, have been identified within the Metropolitan Planning Organization's *Transportation Improvement Program.*[3]

CONSTRAINT

Parallel parking along Main Highway between Charles Avenue and Mc Farlane Road presents an obstacle to trail continuity within the village core of Coconut Grove. The existing multi-use path terminates at Charles Avenue, where a wide sidewalk facility begins. Trail development in this area will include ample space for bicycle facilities within the right-of-

way of Main Highway. A directional change occurs in the trail at Mc Farlane Road, which is necessary to connect Main Highway to South Bayshore Drive. The existing wide sidewalk facility along the south side of Mc Farlane Road terminates immediately south of St. Stephen's Episcopal Church. The combination of a narrow sidewalk and on-street parking creates a conflict to trail development in this area, adjacent to Peacock Park. Accommodating trail development while enhancing the sidewalk will improve pedestrian connectivity between the Coconut Grove village core, Peacock Park, Biscayne Bay, and Dinner Key.

REGION 4

OPPORTUNITY

This region, near the entrance to Rickenbacker Causeway, serves Virginia Key and Key Biscayne. The opportunity exists to connect to the M-Path Trail within the Metrorail right-of-way and to other bikeway routes along South Miami Avenue and Brickell Avenue. These connections present opportunities for trail users to travel throughout the Brickell area and Coconut Grove, and to connect to the existing multi-use path along the Rickenbacker Causeway. The existing multi-use path along South Bayshore Drive terminates at the intersection of Southwest 32nd Road. The existing bike route continues along Southwest 32nd Road through the Brickell Hammock neighborhood, a route deemed "suitable" in the *Bike Miami Map*. This segment allows access to Alice Wainwright Park, near the entrance to the Rickenbacker Causeway.[4] Recent public hearings on closure of this route have been held at the request of area residents, who have expressed concern with potential crime that may be associated with public access to the existing bike route. Access to Alice Wainwright Park remains a significant public priority and the existing route provides a greater degree of safety than possible alternatives. Such alternative routes as those along South Miami Avenue and South Dixie Highway (U S Highway #1), to the intersection of Southwest 26th Road, Brickell Avenue, and the entrance to the Rickenbacker Causeway may be viable, although safety concerns are more pronounced. The one-half mile route along South Bayshore Drive is rated as "less suitable" in the *Bike Miami Map* [5] and is identified for "Proposed Short-Range On-Road Bicycle Facilities" within Metro-Dade's Bicycle Facilities Plan.[6]

CONSTRAINT

The existing roadway and right-of-way conditions along South Bayshore Drive and South Dixie Highway are not currently suitable for multi-use trail development. Residential land use and an existing pedestrian sidewalk occur along the right-of-way from Southwest 32nd Road to the intersection of U S Highway #1. Redesign of the right-of-way would be required for the development of a multi-use path that would accommodate both pedestrians and bicyclists along this portion of South Bayshore Drive. Similarly, the conditions along U S Highway #1 are not conducive to trail development. The existing roadway and pedestrian sidewalk limit the opportunities for trail development along this one block link to the entrance of the Rickenbacker Causeway. Redevelopment of the roadway, including lane realignment and possible reduction in width of the center median, would be required for the development of a trail facility at this location.

REGION 5

OPPORTUNITY

The existing multi-use path along the Rickenbacker Causeway, from the entrance at Brickell Avenue to Virginia Key will be utilized in this region. This portion of the trail allows users direct access to the open spaces and beaches along the Causeway. The area offers expansive views of downtown Miami, the Port of Miami, Virginia Key, Key Biscayne, and Biscayne Bay. The trail will provide access to numerous places of interest on Virginia Key, including Mast Academy, the Miami Seaquarium, Miami Rowing Club, NOAA Headquarters, and the University of Miami's Rosensteil School of Atmospheric and Marine Science. Future development plans for the under-utilized area of Virginia Key should include a trail spur that will connect to the main facility along Rickenbacker Causeway. Improvements to the existing path as identified within the *Transportation Improvement Program* of Metropolitan Dade County, will enhance the existing facility.[7]

REGION 6

OPPORTUNITY

The terminus of the Commodore Trail occurs on Key Biscayne. This portion of the Trail will include both the existing path through Crandon Park and the existing bike lanes along Crandon Boulevard. The termination of these facilities at the southern limit of Crandon Park requires extension of the trail along Crandon Boulevard through the Village of Key Biscayne. This portion of Crandon Boulevard is rated as "suitable" in the *Bike Miami Map* [8], and is identified for "Proposed Long-Rang Bicycle Facilities".[9] Development of this Trail through the Village of Key Biscayne should include enhancements to the west corridor of the right-

of-way of Crandon Boulevard. A wide sidewalk facility and separate bike lanes that would improve access to the commercial and retail establishments in the Village are highly desirable. Additionally, a trail facility will improve access to the Key Biscayne Community Park located just south of the commercial district. The trail will continue along Crandon Boulevard to Bill Baggs Cape Florida State Recreation Area. This area offers a destination point for Commodore Trail users, with a variety of amenities including beaches, the historic Cape Florida Lighthouse, concessions, and showers, all of which make this State Recreation Area an ideal terminus for the Commodore Trail.

CONSTRAINT

A constraint occurs in the vicinity of the Crandon Park Marina. The area contains an existing intersection crossing of Crandon Boulevard, that links the path along the west side of the Causeway with the path through Crandon Park along the east side of Crandon Boulevard. Additionally, bike lanes along both the northbound and southbound travel lanes of Crandon Boulevard begin here. Signage improvements to this area will improve safety and enhance the continuity at this transition point in the bike path. The development of the improved right-of-way along Crandon Boulevard in the Village of Key Biscayne will require modifications to existing storm drainage structures and other utilities located within the right-of-way. Additionally, the location of numerous driveway entrances presents a conflict to the safety of trail users in this area.

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[1] Metropolitan Planning Organization. *Transportation Improvement Program* (Miami: Metropolitan Dade County, 1997) 253-5.

[2] *Ibid.* 253-5.

[3] *Ibid.*, 253-5.

[4] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[5] *Ibid.*

[6] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[7] Metropolitan Planning Organization. *Transportation Improvement Program* (Miami: Metropolitan Dade County, 1997) 253-5.

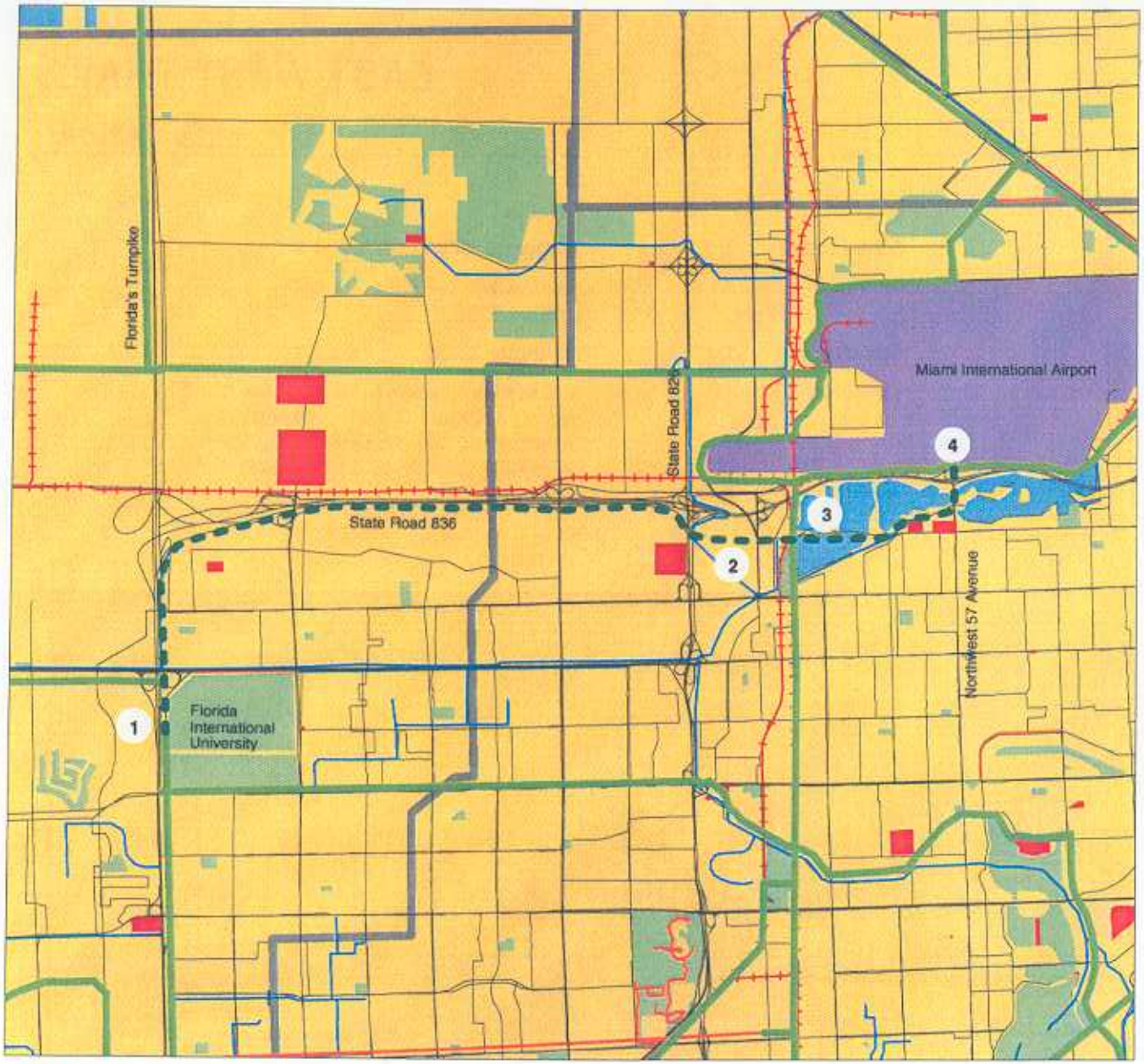
[8] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[9] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

EAST-WEST TRAIL

DESCRIPTION

Length:	7.9 miles
West Links:	Snapper Creek Trail
Intersecting Links:	Miccosukee Trail Ludlam Trail
East Links:	Perimeter Trail
Objective:	A greenway beneath an elevated rail within the Florida Department of Transportation's proposed East-West Multimodal Corridor.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
East-West Trail

Miles
0 .2 .4 .6 .8

EAST-WEST TRAIL

REGION 1

OPPORTUNITY

The East-West Trail, a non-motorized transportation corridor, will run from the University Park campus of Florida International University to the Blue Lagoon area south of Miami International Airport. This trail results in part from the East-West Multimodal Corridor Study being conducted presently. Preliminary proposals recommend a continuous bicycle and pedestrian facility along the entire transit rail route. In an effort to ease traffic congestion south of the airport, this transit route parallels State Road 836 from Florida International University east to the Port of Miami.[1] Recent amendments in response to suggestions from transit engineers, have resulted in a substantial decrease in the continuity of paved bicycle and and pedestrian paths along the East-West transit route.[2] The multimodal corridor's second phase of construction includes a link from Florida International University to the Palmetto Station at Northwest 72nd Avenue (Milam Dairy Road). If implemented, an elevated rail with a continuous bicycle and pedestrian corridor beneath will occupy the broad easement of State Road 836.[3]

REGION 2

OPPORTUNITY

The East-West Multimodal Corridor Study generates many opportunities to create trail links connecting to its east-west alignment. The first phase of construction along the East-West Multimodal Corridor will include a bicycle and pedestrian link from the planned Palmetto Station at Northwest 72nd Avenue, east to Northwest 57th Avenue (Red Road). [4]

REGION 3

OPPORTUNITY

The East-West Trail will connect to the proposed Ludlam Trail, a linkage that will provide a southbound route along the Florida East Coast (FEC) Railroad right-of-way parallel to Northwest 67th Avenue (Ludlam Road). A southbound connection on the Ludlam Trail will establish a link to the Dadeland Regional Activity Center, composed of Dadeland Mall, Dadeland Stateion, and the Dadeland North Metrorail Station. Users of the East-West Trail that choose a northbound deviation along the Ludlam Trail will have the opportunity to link to the Perimeter Trail, approximately one-half mile to the north.

REGION 4

OPPORTUNITY

The East-West Trail provides an opportunity to extend the current bicycle and pedestrian path proposals in the East West Corridor Study, north along Northwest 57th Avenue through the Blue Lagoon area south of Miami International Airport,[5] creating a direct link to the proposed Perimeter Trail. Centrally located within the *North Dade Greenways* study area, the Perimeter Trail encircles the Miami International Airport. Because of its central location and circular route, the Perimeter Trail will serve as a hub from which other trails in the *North Dade Greenways* system radiate. From the Perimeter Trail, East-West Trail visitors will have the opportunity to travel to the extreme northern or eastern portions of Dade County.

CONSTRAINT

Vehicular constraints occur where the East-West Trail occupies the road right-of-way of Northwest 57th Avenue. In the 1995 draft of the Environmental Impact Statement of the East-West Multimodal Corridor, provision for a bicycle and pedestrian link along Northwest 57th Avenue between Perimeter Road and West Flagler Street is considered.[6] As plans are finalized for the East-West Multimodal Corridor, appropriate allocation of corridor widths to accommodate the development of bicycle and pedestrian facilities will significantly enhance east-west travel, and should be a primary objective.

[1] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995) Figure 3.2.

[2] Myrna Valdes, interview with Supervising Transportation Planner and Project Manager at Parsons-Brinckerhoff, 30 April 1997.

[3] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995) Figure 3.2.

[4] Myrna Valdes, interview with Supervising Transportation Planner and Project Manager at Parsons-Brinckerhoff, 30 April 1997.

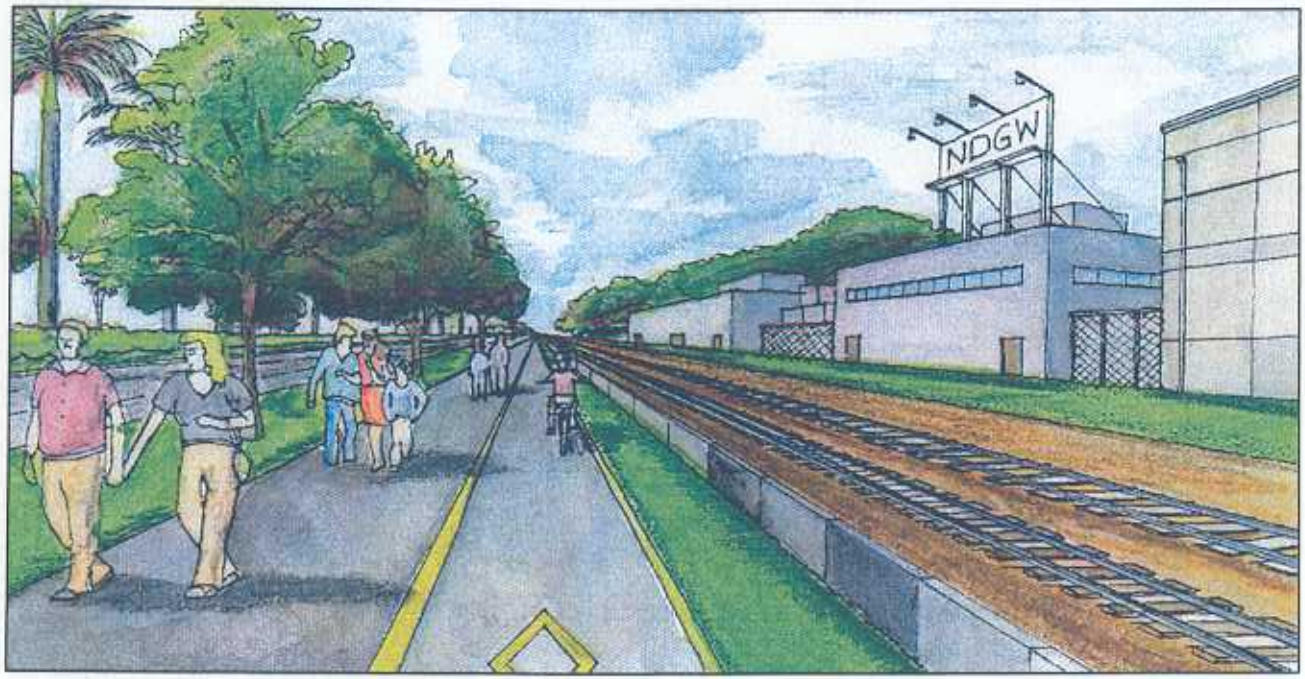
[5] Valdes, interview.

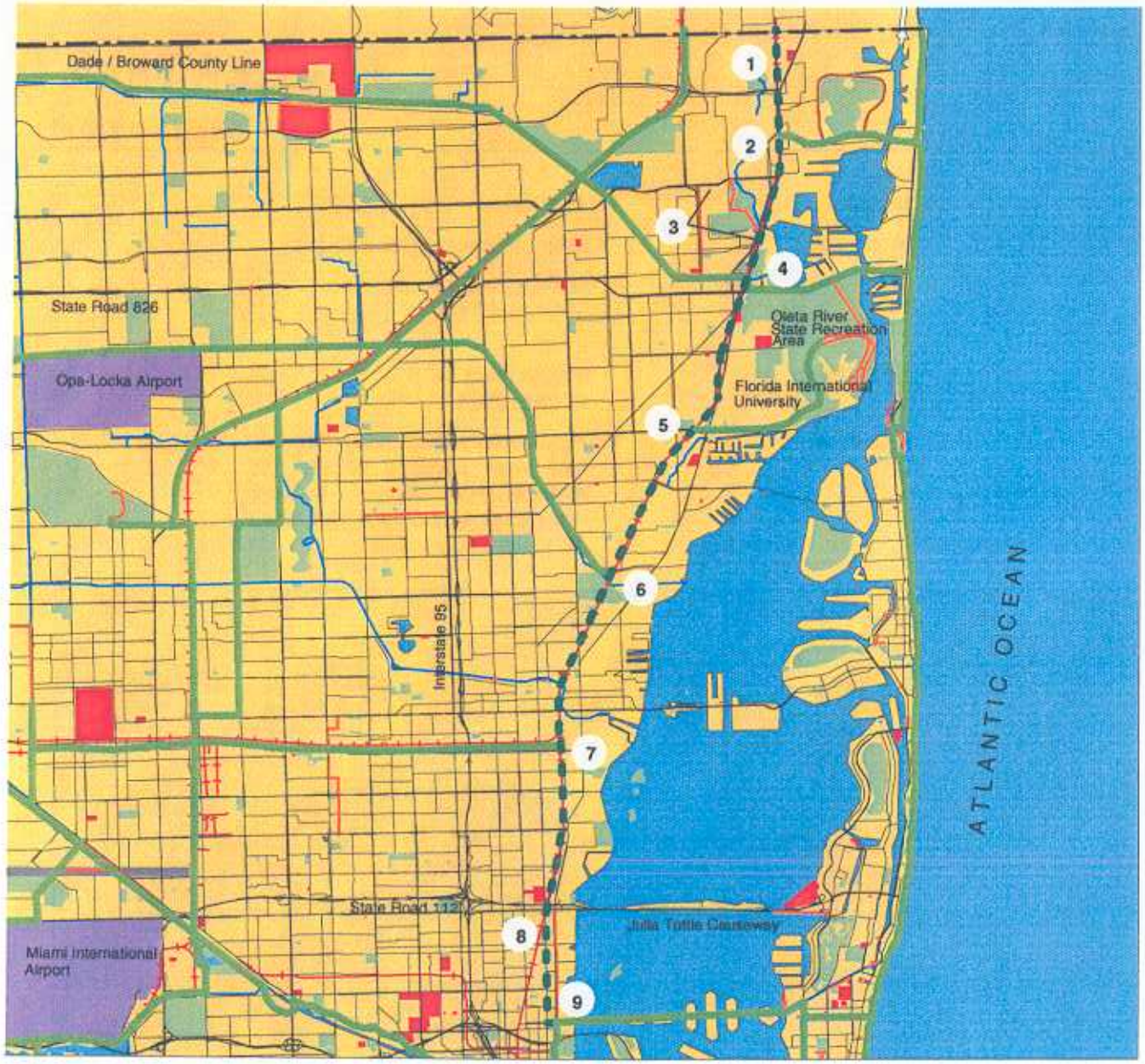
[6] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995) Figure 3.2.

FLAGLER TRAIL

DESCRIPTION

Length:	14.9 miles
North Links:	Dade / Broward County Line
Intersecting Links:	Snake Creek Trail Memorial Trail Unity Trail
South Links:	Miami River Trail M-Path Trail
Objective:	A greenway occupying the east and west portions of the FEC Railroad right-of-way, between downtown Miami and the Dade / Broward County line.





Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Flagler Trail

Miles
0 .2 .4 .6 .8

FLAGLER TRAIL

REGION 1

OPPORTUNITY

The Flagler Trail occupies the Florida East Coast (FEC) Railroad right-of-way that runs south from the Miami-Dade / Broward county line parallel to Biscayne Boulevard (U S Highway #1). The potential for restoration of this alignment as a recreational corridor has already been recognized in Dade County's *Railroad Rights-of-Way Assessment.*[1] The corridor provides a one-hundred foot right-of-way linking the northeast regions of Golden Shores, Golden Beach, and North Miami Beach with downtown Miami. Because of the rail's continuous right-of-way width, the Flagler Trail will occupy both the west and east portions of the right-of-way, allowing for a central buffer zone that will act as a barrier between the paths and the tracks. At its northern terminus, the Flagler Trail provides bicycle / pedestrian access to Broward County.

CONSTRAINT

A Flagler Trail extension into Broward County, although plausible, has not been included in Broward's "10 Year Horizon for a Bicycle Facility Network".[2]

REGION 2

OPPORTUNITY

The Flagler Trail will connect to the proposed Lehman Link, creating the opportunity for travel to the coastal areas of northeast Miami-Dade.

CONSTRAINT

Vehicular conflicts occur as users of the Flagler Trail seek to traverse Biscayne Boulevard to reach the Lehman Link, that occupies the road easements of the Lehman Causeway. In this region, Biscayne Boulevard consists of six lanes – three in each direction. Although traffic calming initiatives have been introduced through the construction of a seven-foot median that separates northbound and southbound lanes, additional barriers to vehicular speeds must be implemented on this heavily traveled thoroughfare. The addition of canopy trees in the planting strips between the boulevard's paved lanes and the commercial property lines may help reduce vehicular speed and increase pedestrian safety, by providing a shaded and enclosed streetscape. This overhead "enclosure" of shade trees will not only enhance the aesthetic value of the boulevard, but will aid in identifying a safe zone for pedestrians that cross this multi-lane highway.[3]

REGION 3

OPPORTUNITY

After crossing the Oleta River, the Flagler Trail connects to the existing bicycle and pedestrian path in Greynolds Park. The Greynolds Park path, combined with the path within the Northeast 19th Avenue right-of-way, offer recreational links to Miami Gardens Drive. Although deemed "not suitable" by the Metropolitan Planning Organization's *Bike Map*, a link on Miami Gardens Drive between the two existing paths will create a loop utilizing a portion of the Snake Creek Trail.[4]

CONSTRAINT

Greynolds Park shares its east property line with the right-of-way of West Dixie Highway (State Road 909), where the FEC Railroad right-of-way deviates to the southwest. As the Flagler Trail approaches the Oleta River, the construction of a pedestrian bridge parallel to the existing railroad bridge will provide a link to the southern segment of the proposed Flagler Trail. The bicycle / pedestrian path within Greynolds Park is comprised of a northbound corridor that terminates at Miami Gardens Drive.

REGION 4

OPPORTUNITY

Viewed as a "Proposed Long-Range Off-Road Bicycle Facility" by the *Metro-Dade Bicycle Facilities Plan,* the FEC Railroad right-of-way offers the opportunity to link to the existing bicycle and pedestrian facility on Sunny Isles Boulevard (Northeast 163rd Street), and to the proposed Snake Creek Trail on the Snake Creek Canal.[5] The Flagler / Sunny Isles facility link will allow Flagler Trail users to connect eastward to Oleta River State Recreation Area, Florida International University's north campus, and the Atlantic Trail on Ocean Boulevard. The Flagler / Snake Creek link will provide a westbound access to the communities of North Miami Beach, Norland, Carol City, and Miami Lakes. Additional destination features located at the junction of the Flagler Trail and the Snake Creek Trail include the Spanish Monastery and its adjacent park, and East Greynolds Park.

CONSTRAINT

Vehicular conflicts may occur as Flagler Trail users cross Biscayne Boulevard to access the existing facility on Sunny Isles Boulevard. The aforementioned traffic calming features – such as border landscaping and traffic control devices, including existing traffic signals with crosswalks – will create a heightened awareness among drivers of a potential conflict and that caution is required.

REGION 5

OPPORTUNITY

The Flagler Trail creates a link to the Oleta Link that will provide bicycle and pedestrian access to Florida International University, Oleta River State Recreation Area, and residences on Northeast 135th Street. The intersection of the Flagler Trail with the Oleta Link will also provide access to Enchanted Forest Park and Arch Creek Park. These parks will function as rest stops for trail users, offering a variety of amenities including restroom facilities, picnic areas with pavilions, an interpretive center, and wildlife viewing.

CONSTRAINT

As a corridor with numerous conflicts, the *North Dade Greenways* study seeks to enhance the "walkability" of Biscayne Boulevard. Flagler Trail users who wish to approach the Oleta Link must cross the boulevard at Northeast 135th Street. If the enhancement of the boulevard embraced aesthetic issues involving the surface of the corridor as well as revamping the corridor edges with vegetation and site furnishings, Biscayne Boulevard would become a strolling mile for both pedestrians and vehicles. Biscayne Boulevard should be revamped as a pedestrian / vehicular corridor. Decreasing the vehicular corridor will reduce vehicle velocities, and increase non-motorized use of a pedestrian-friendly corridor.[6]

REGION 6

OPPORTUNITY

The Flagler Trail also presents an opportunity to link to the proposed Memorial Trail at Biscayne Canal. An existing path along Northeast 107th Street – between the FEC Railroad right-of-way and the Biscayne Canal – provides a direct link to the Memorial Trail. Flagler Trail users that desire this alternate will have a westbound travel opportunity to the communities of Biscayne Park, Biscayne Gardens, Opa-Locka, and Miami Lakes. An alternative progression along the Flagler Trail will offer the opportunity to connect to the neighborhoods of Miami Shores, El Portal, and North Bay Village.

CONSTRAINT

Although an existing pedestrian bridge exists within Miami Shores Golf and Country Club property, an adjacent pedestrian bridge must be constructed for the Flagler Trail to span Biscayne Canal. As the FEC Railroad right-of-way bisects the Club's site diagonally, it creates a fenced corridor that is elevated above the golf course. Although highly plausible, a proposed greenway within the FEC corridor – through a private country club – may be met with opposition. Therefore, suitable local roads such as Northeast 107th Street, Northeast 5th Avenue, and Northeast 101st Street may provide an alternate route around the Country Club for the Flagler Trail. In addition, a recreation center located at the eastern terminus of Northeast 101st Street will offer a point at which the Flagler Trail will reestablish its corridor on the FEC Railroad right-of-way,

continuing to downtown Miami.

REGION 7

OPPORTUNITY

Within this region, the Flagler Trail can link to the Unity Trail, which occupies the FEC Railroad spur parallel to Northwest 72nd Street in Miami. This link will provide an alternate westbound travel opportunity for Flagler Trail users. It will offer a bicycle and pedestrian travel opportunity to the communities of Northside and Hialeah

REGION 8

OPPORTUNITY

The Flagler Trail offers a link to the existing bicycle and pedestrian facility on Biscayne Boulevard under Interstate 195. This link will provide a continuous travel opportunity to the Omni International Mall and the future Performing Arts Center at Biscayne Boulevard.

CONSTRAINT

The development of an alternate route for this portion of the Trail is necessary as the FEC Railroad right-of-way enters the Florida East Coast Railroad Yards, lying immediately south of Interstate 195. The right-of-way width decreases greatly and the safety of greenway users will thus be at risk. Therefore, a parallel facility on Biscayne Boulevard is a welcome opportunity to continue the Flagler Trail through downtown Miami. A vehicular constraint may occur as visitors to the Flagler Trail attempt to cross Biscayne Boulevard in order to connect to the existing path on the east side of the Boulevard.

REGION 9

OPPORTUNITY

The Flagler Trail terminates at the intersection of the Venetian Causeway (Northeast 15th Street) and Biscayne Boulevard. The proposed Venetian Trail will allow Flagler Trail users to continue eastward to Miami Beach, while. the proposed M-Path Trail will offer an extended route along the existing bicycle and pedestrian facility on Biscayne Boulevard, to downtown Miami and areas south.

[1] Metropolitan Planning Organization. *Railroad Rights-of-Way Assessment* (Miami: I. C. F. Kaiser and Associates, August 1993) 38.

[2] Broward County Metropolitan Planning Organization. *Broward County Bicycle Facilities Network Plan* (Ft. Lauderdale: Broward County, June 1992) 3-19.

[3] Metro-Dade Public Works Department. *Street Closure Study Technical Memorandum 3: Traffic Calming Alternatives for Residential Traffic Control* (Miami: Fredric R. Harris, Inc., March 1996) 9.

[4] Bicycle and Fedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

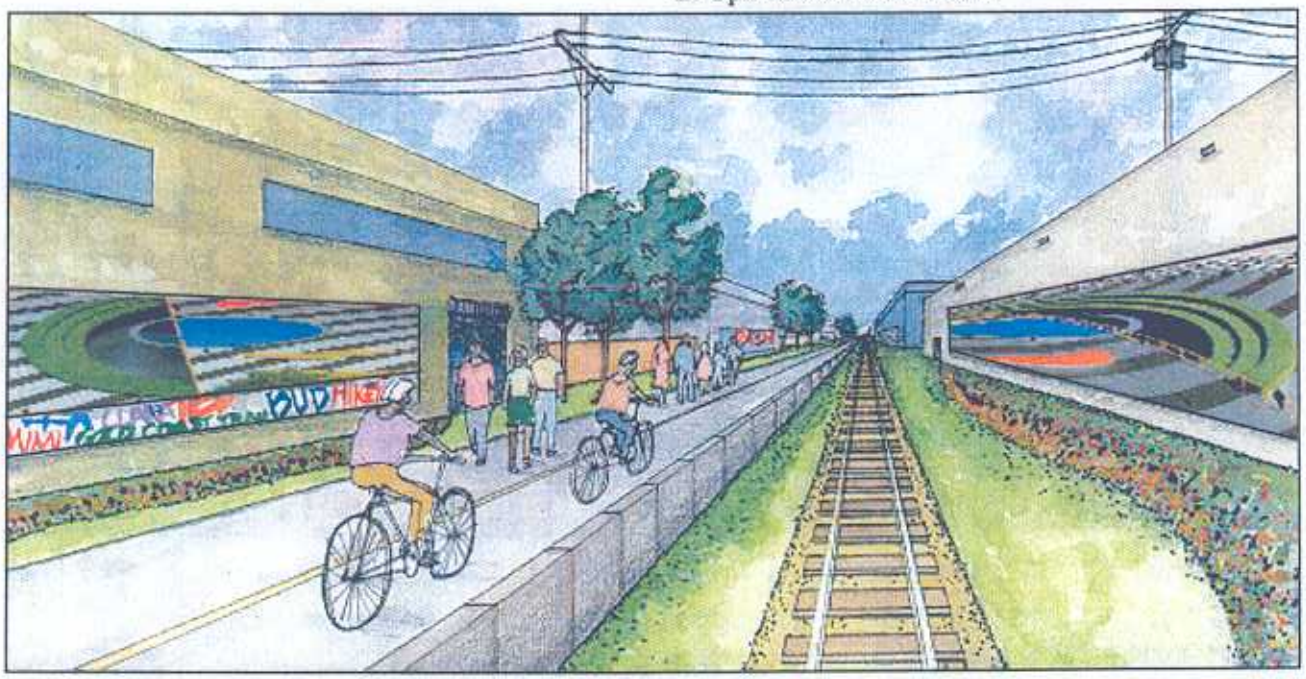
[5] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

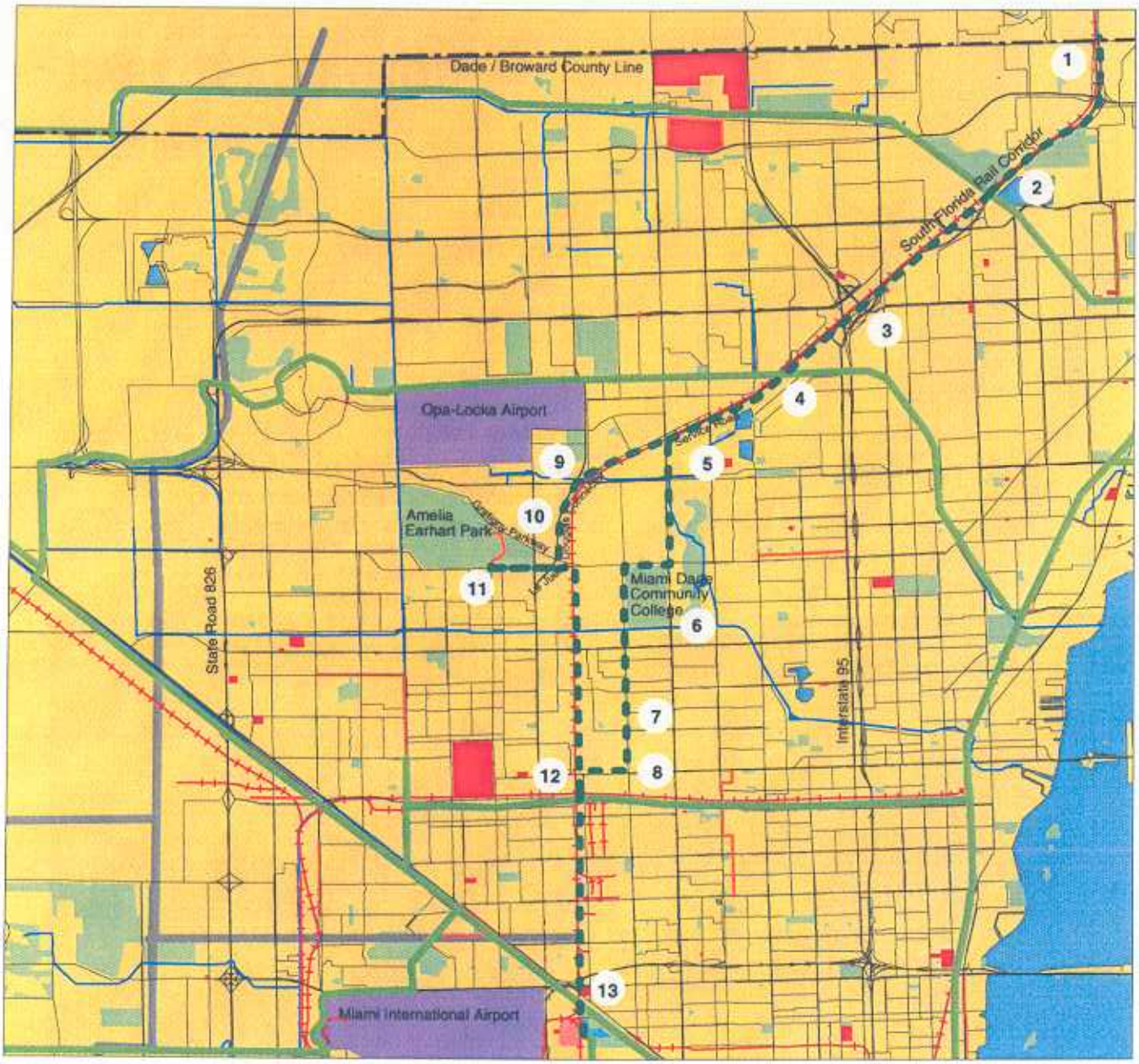
[6] Jane Holtz Kay. *Asphalt Nation: How the Automobile Took Over America and How We Can Take It Back* (New York: Crown Publishers, Inc., 1997)21-5.

GOLD COAST TRAIL

DESCRIPTION

Length:	20.8 miles
North Links:	Dade / Broward County Line
Intersecting Links:	Snake Creek Trail Memorial Trail Unity Trail
South Links:	Miami River Trail The Miami Intermodal Center Perimeter Trail
Objective:	A path occupying the easement of the South Florida Rail Corridor and providing an alternate loop as a lane along Northwest 27th Avenue and other collector and local roads in Opa-Locka and Hialeah.





Points of Interest
Airports
Parks and Greenways
Miami Intermodal Center Site
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Gold Coast Trail

Miles
0 .2 .4 .6 .8

GOLD COAST TRAIL

REGION 1

OPPORTUNITY

The Gold Coast Trail will provide bicycle / pedestrian access to Broward County. As a *rail-with-trails* bicycle and pedestrian facility, the Gold Coast Trail will occupy the South Florida Rail Corridor, formerly owned by CSX.

CONSTRAINT

A constraint may exist as the *Broward County's Bicycle Facilities Plan* has not yet identified the South Florida Rail Corridor as a potential bicycle facility in its "ten-year horizon".[1]

REGION 2

OPPORTUNITY

The opportunity exists to connect to the currently utilized bicycle and pedestrian path along Snake Creek Canal. This connection will allow access to an east route to the beaches, and to a west route through the Norland area, leading eventually to the wetland areas of western Miami-Dade County.

REGION 3

OPPORTUNITY

The Gold Coast Trail provides the opportunity to create an intermodal access point at the Golden Glades Interchange Park and Ride Facility. This Park and Ride facility provides vehicular parking, and offers the opportunity to transfer onto Metrobus or Tri-Rail.

CONSTRAINT

Constraints in the form of vehicular access ramps to State Road 826, Florida's Turnpike, and Interstate-95 result in conflicts among vehicles, bicyclists, and pedestrians. The existing railroad easement that diagonally intersects the Golden Glades Interchange will provide a continuous corridor through the interchange for Gold Coast Trail users. The Miami-Dade Park and Ride facility in the Golden Glades Interchange will allow Gold Coast Trail users the opportunity to store their bicycles and ride Tri-Rail north to Broward and Palm Beach Counties, and

south to downtown Miami.

REGION 4

OPPORTUNITY

An opportunity exists to connect to the proposed Memorial Trail. Because of its complex form, the Golden Glades Interchange creates numerous land parcels of unusual shapes, particularly in its southwest quadrant. The triangle that is formed by State Road 9, I-95, and the Biscayne River Canal (See *Memorial Trail*) can be developed as an open green space serving as a rest stop for users of both the Gold Coast Trail and the Memorial Trail.

REGION 5

OPPORTUNITY

The Gold Coast Trail creates an alternate route along Northwest 27th Avenue. This region's alternate link will provide Gold Coast users a non-motorized transportation route through the industrial and residential areas along Northwest 27th Avenue (Unity Boulevard).

CONSTRAINT

Constraints occur as bicyclists and pedestrians encounter conflicts with motorized vehicles at the junction of the Gold Coast Trail with Northwest 27th Avenue. A service road paralleling the South Florida Rail Corridor between Northwest 22nd Avenue and Northwest 27th Avenue, can provide alternate access along Northwest 27th Avenue. As Gold Coast Trail users travel on the adjacent service road, it turns south at its junction with Northwest 27th Avenue.

REGION 6

OPPORTUNITY

The opportunity exists to link the Gold Coast Trail with the North Campus of Miami Dade Community College. At the juncture of the South Florida Rail Corridor service road and Northwest 27th Avenue, the Gold Coast Trail follows a southerly path to Northwest 119th Street (Gratigny Drive) serving the western perimeter of Miami Dade Community College. This link will also provide a non-motorized transportation alternative for the employees of the adjacent CSX Industrial Park, and to other employment and recreation facilities within the area.

REGION 7

OPPORTUNITY

The Gold Coast Trail creates a greenway along Northwest 32nd Avenue between Northwest 119th Street and Northwest 79th Street. Recognized as a "Proposed Short-Range On-Road Bicycle Facility" by the *Metro-Dade Bicycle Facilities Plan*, the Northwest 32nd Avenue corridor will serve as a linkage between the residential areas encompassing this Gold Coast Trail segment, and the shopping amenities along Northwest 79th Avenue.[2]

CONSTRAINT

Constraints result from proposed bicycle and pedestrian use along the road easement of Northwest 32nd Avenue. This greenway segment of the Gold Coast Trail can serve both as a model community improvement project and as a viable amenity to the community of Northside. Among the benefits of a greenway facility in this neighborhood is the provision for a safe means of movement for students of Madison Junior High and Broadmoor Elementary schools.

REGION 8

OPPORTUNITY

The opportunity exists to form a loop at Northwest 79th Avenue (East 25th Street in Hialeah) under the existing Metrorail easement. This will connect the two alternate routes of the Gold Coast Trail, and create a linear community park for the residents along Northwest 79th Street.

CONSTRAINT

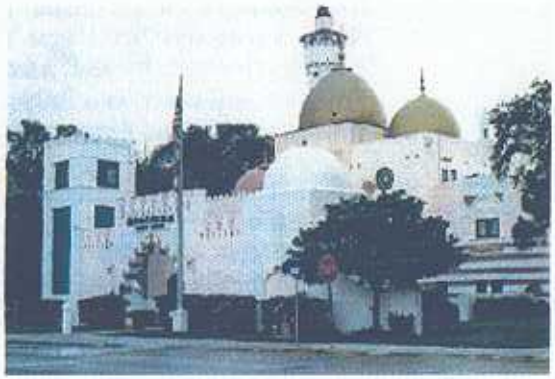
Constraints occur as the Gold Coast Trail encounters vehicular conflicts as it crosses to the south side of Northwest 79th Street at the intersection of Northwest 32nd Avenue. Additional constraints occur within the south road easement of Northwest 79th Street. An open green space – varying in width from fifty feet to one hundred feet – exists between a five foot sidewalk and mobile homes along Northwest 79th Street. A cooperative agreement between governmental entities and property owners can result in the removal of an existing chain-link fence and the widening of the existing path along

Northwest 79th Avenue, yielding a well-landscaped linear greenway.

REGION 9

OPPORTUNITY

The Gold Coast Trail offers the opportunity to link to historical downtown Opa-Locka. As the Gold Coast Trail divides, the eastern route connects at Sharazad Boulevard at Northwest 27th Avenue, along which are located the historic Opa-Locka City Hall, and other significant buildings. Sharazad Boulevard is deemed "suitable" for bicyclists and pedestrians by the Metro-Dade Bicycle and Pedestrian Program.[3] As the Gold Coast Trail curves south along Sharazad Boulevard, it comes perpendicular with Ali Baba Avenue and turns southwest toward Le Jeune Road (Northwest 42nd Avenue).



REGION 10

OPPORTUNITY

The opportunity exists to develop ecological connectivity among the native landscaped areas along Gratigny Parkway. The Le Jeune-Douglas Connector is an appropriate corridor for the Gold Coast Trail's southwestern link. The eastern portion of this right-of-way ranges from fifteen to one-hundred feet in width and contains an existing five-foot pedestrian path. The removal of existing exotic vegetation along the Le Juene-Douglas Connector and its reforestation with native plant species will provide an ecological link with the vegetative patches that already exist in the area. The linking of remnant wooded patches in the vicinity of the Opa-Locka Airport and St. Thomas University will enhance the ecological viability of the entire region.

REGION 11

OPPORTUNITY

The Gold Coast Trail provides the opportunity to access Amelia Earhart Park and Golden Gate Memorial Park on Northwest 119th Street (Gratigny Drive). Amelia Earhart Park is a regional park that provides shower and restroom facilities, a swimming beach, pedestrian and bicycle facilities, picnic shelters, pony rides for children, and a petting zoo.

CONSTRAINT

A constraint occurs as Gold Coast Trail users attempt to cross Le Jeune Road. Special accent

paving at the intersection of Le Jeune Road and Northwest 119th Street can serve as a traffic calming initiative, and provide a safety-defined link to Amelia Earhart Park and Golden Gate Memorial Park. An existing equestrian trail on the south side of the two parks is contained in a thirty-foot easement intersecting the entrance drive to Amelia Earhart Park. A parallel asphalt bicycle and pedestrian path will provide an entrance to Amelia Earhart Park along Northwest 119th Street for Gold Coast Trail users.

REGION 12

OPPORTUNITY

The opportunity exists to connect to Unity Trail. As the South Florida Rail Corridor intersects Northwest 74th Street, Gold Coast Trail users will have the opportunity to travel east or west along the Unity Trail located within the FEC (Florida East Coast) Railway corridor. This will allow trail users access to the historic Hialeah Race Track and its adjacent gardens.

REGION 13

OPPORTUNITY

The southern terminus of the Gold Coast Trail offers the opportunity to travel to the Miami International Airport and the future Miami Intermodal Center (MIC). In light of the continued expansion of the Miami International Airport and the development of the Intermodal Center, increasing employment opportunities will develop within this area. Access to the Miami International Airport is proposed from the Gold Coast Trail, which is also one of the three trails that will serve the future MIC site.

CONSTRAINT

Constraints occur as the Gold Coast Trail crosses the Miami River, north of the MIC site. A pedestrian bridge adjacent to the existing railroad overpass will provide access to an existing green space north of the MIC site. Palmer Lake and its surrounding green space can serve as a rest stop and park for users of the Perimeter Trail, East-West Trail, Miami River Trail, and Gold Coast Trail, and will offer a variety of amenities.

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[1] Broward County Metropolitan Planning Organization. *Broward County Bicycle Facilities Network Plan* (Ft. Lauderdale: Metropolitan Broward County, June 1992) 3-19.

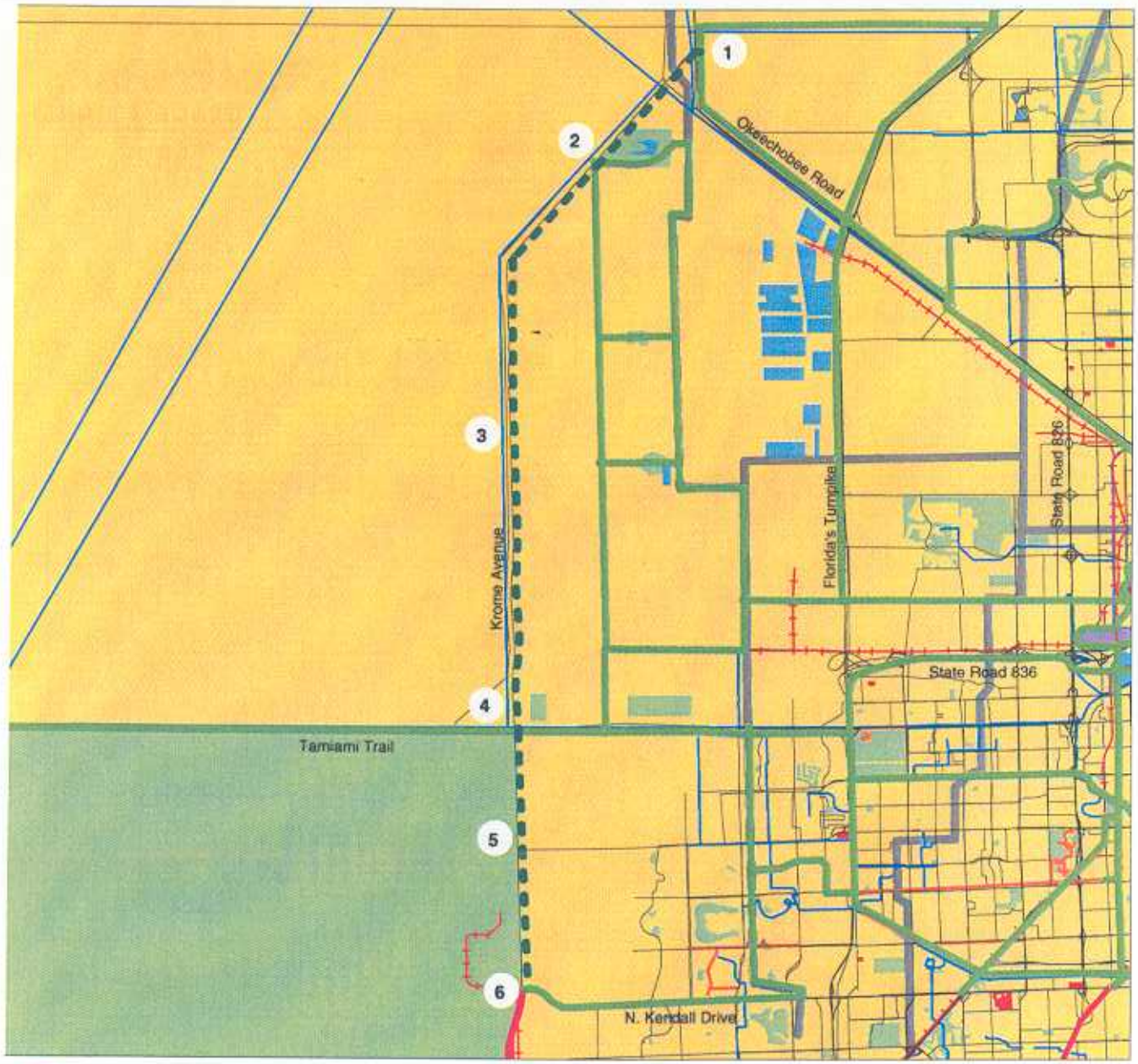
[2] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[3] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

KROME TRAIL

DESCRIPTION

Length:	19.4 miles
North Links:	Miami River Trail Snake Creek Trail
Intersecting Links:	Lake Belt Trail Miccosukee Trail
South Links:	West Kendall Trail
Description:	A greenway along the road easement of Krome Avenue in west Dade.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
South Dade Greenway Network
Other Proposed Trails
Krome Trail

Miles
0 .5 1 1.5 2

KROME TRAIL

REGION 1

OPPORTUNITY

The northern terminus of the Krome Trail along Krome Avenue, will connect to the Snake Creek Trail and the Miami River Trail in the vicinity of the intersection of Krome Avenue, Northwest 177th Avenue, and Okeechobee Road (U S Highway #27). This area will provide trail users with the opportunity to continue to north, northwest, and central Miami-Dade County, and to south Broward County. In addition to the connections to the Snake Creek and Miami River Trails, this area will include a connection to the west Miami-Dade Trails along the levee of the L-31N Canal. The canal levee trail is a short distance from Krome Avenue and is accessible via a service road that parallels the Snake Creek Canal, west of Okeechobee Road.

CONSTRAINT

The Krome Trail will occur along the east side of Krome Avenue in this vicinity, thereby accessing an intersection crossing at Okeechobee Road. Development of this crossing will create a connection to the Miami River Trail on the east side of Okeechobee Road, and a connection to the Snake Creek Trail terminus at the junction of the Snake Creek Canal and Okeechobee Road. Krome Trail users wishing to connect to the west Miami-Dade trails – beyond the limits of this study – along the L-31N canal levee will have to cross Okeechobee Road. An additional trail along the west side of Krome Avenue and Okeechobee Road will connect to the west Miami-Dade trails, or continue north into Broward County.

REGION 2

OPPORTUNITY

The Krome Trail will connect to M. E. Thompson Park on Krome Avenue. This existing park is a proposed trailhead facility that will allow trail users the opportunity to access the two main routes of the Lake Belt Trail that will occur throughout the Pennsuco Wetlands and the proposed Lake Belt Recreational Area. The vicinity of M. E. Thompson Park also allows for a connection to the west

Miami-Dade Trail along the L-31N Canal (see Additional Opportunities).

REGION 3

OPPORTUNITY

This area encompasses the northern portion of the Krome Trail, from the intersection of Okeechobee Road and Krome Avenue, to the intersection of Tamiami Trail (U S Highway #41). This 12.5 mile length of the Krome Trail will occur along the east side of the right-of-way, separating trail users from vehicular traffic. The trail offers expansive views of the sawgrass marshes of the Pennsuco Wetlands east of Krome Avenue. The existing right-of-way is of sufficient width to accommodate a 10 foot wide asphalt path that will occur adjacent to the drainage canal that parallels the roadway. Development of the trail facility should include the removal of Cajeput (*Melaleuca quinquinervia*) that dominates the canal bank and currently prohibits views to the open sawgrass marshes. The removal of this invasive species creates an opportunity for the ecological enhancement of the roadway corridor edge. The planting of indigenous wetland species will help to restore the ecological viability that has been displaced by the spread of invasives.

REGION 4

OPPORTUNITY

Krome Trail users can connect to the Miccosukee Trail at the intersection of Tamiami Trail (US Highway #41) and Krome Avenue. This mid-point in the Krome Trail will permit users to travel east to the urbanized areas of west Miami-Dade, or to continue west to the Miccosukee Indian Reservation and Everglades National Park. A proposed trailhead facility (Tamiami Trail Glades Range) exists east of the intersection of Krome Avenue and US Highway #41 for users wishing to access the southern portion of the Lake Belt Trail or the Miccosukee Trail.

CONSTRAINT

Constraints exist in the development of the intersection crossing, and the utilization of the existing bridge over the Tamiami Canal, which is currently unsuited for trail use. A new pedestrian bridge – or the renovation of the existing bridge – should occur to facilitate trail continuity.

REGION 5

OPPORTUNITY

The southern portion of the Krome Trail, from US Highway #41 to Kendall Drive (Southwest 88th Street), lies within this region. This 4.5-mile segment is located along the west side of Krome Avenue, as the drainage canal that abuts the road corridor along its east side limits

trail development in this region. The right-of-way contains ample width that would accommodate the development of a continuous asphalt path. The removal of Cajeput (*Melaleuca quinquinervia*) and other invasive exotics that impact the edges of the road corridor is a requirement of trail development. Landscape enhancement of the road corridor would improve the visual quality and ecological viability of this area. Krome Avenue's prominence as the westernmost north-south corridor in Miami-Dade, presents an opportunity to develop a road corridor landscape that reflects the native, rural, and agricultural characteristics of west Miami-Dade.

REGION 6

OPPORTUNITY

Krome Trail users may connect to the West Kendall Trail along Kendall Drive, and to the *South Dade Greenway Network*, at the intersection of Kendall Drive and Krome Avenue. These connections assure user access to areas of West Kendall, and to the agricultural areas of The Redland, Homestead, and Florida City. The southern terminus of the Krome Trail, this area is the connecting point to the South Dade Greenway Network. This location should include informational signage indicating points of access, connection, and trail information to the *South Dade Greenway Network*.

CONSTRAINT

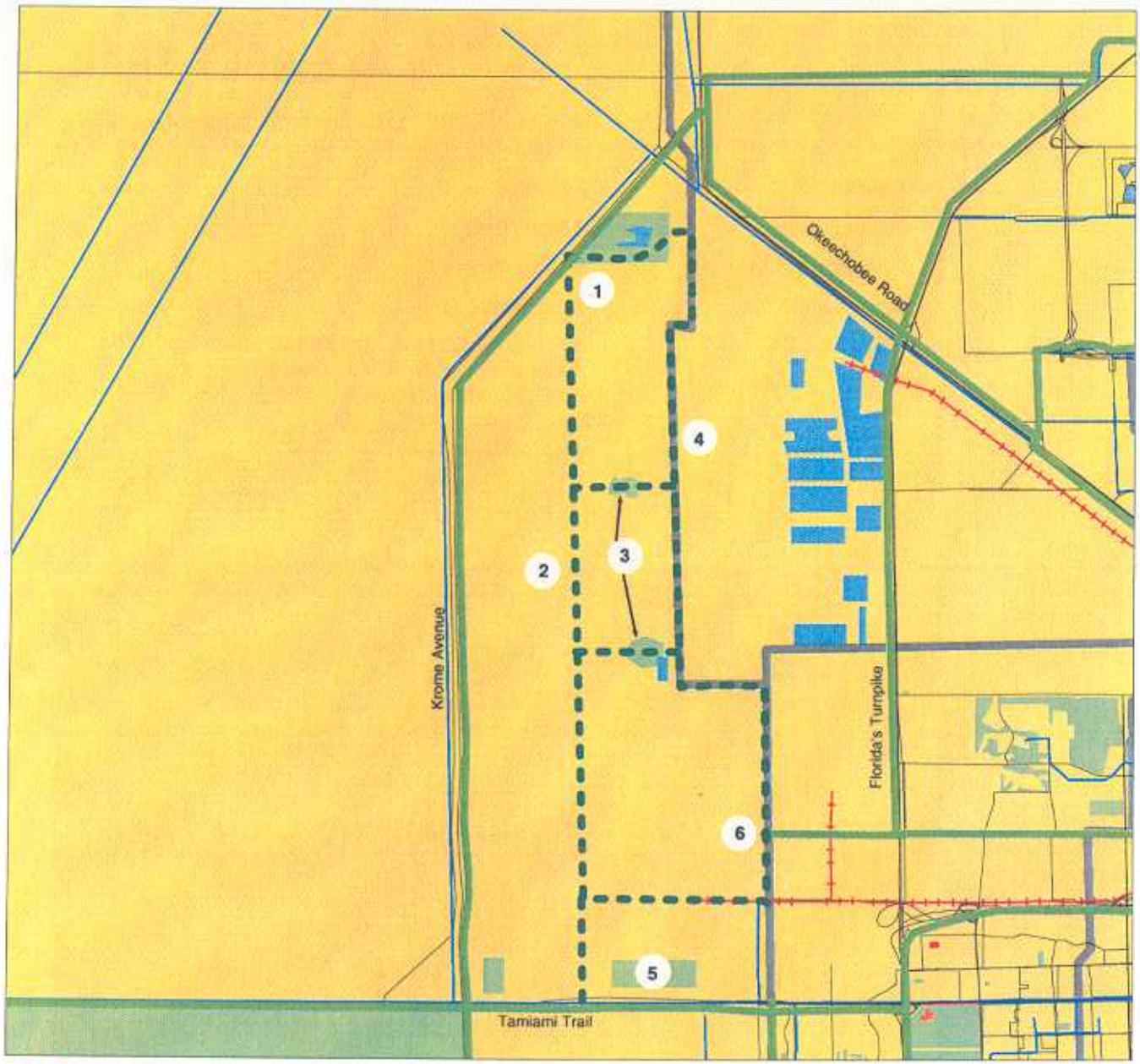
The intersection of North Kendall Drive and Krome Avenue will contain crossings that will permit Krome Trail users to connect to the West Kendall Trail, along the north side of the North Kendall Drive. Accommodated along the west side of Krome Avenue, the Krome Trail is currently under consideration as an off-road bike path along both the northbound and southbound lanes of Krome Avenue, from Southwest 168th Street to North Kendall Drive.[1]

[1] The Redlands Conservancy. *South Dade Greenway Network Master Plan* (Miami: November 1994).

LAKE BELT TRAIL

DESCRIPTION

Length:	31 Miles
North Links:	Krome Trail
Intersecting Links:	Beacon Trail
South Links:	Miccosukee Link
Objective:	A non-motorized multi-use path occupying the Dade / Broward Levee and FPL utility easement within the future Lake Belt Recreational Area in west Miami-Dade.



LAKE BELT TRAIL

REGION 1

OPPORTUNITY

The Lake Belt Trail will offer an expansion of M. E. Thompson Park and Campgrounds, located at the junction of the Krome Trail, the Miami River Trail, the Snake Creek Trail, and the Lake Belt Trail. The convergence of these four trails at the intersection of Krome Avenue and Okeechobee Road provides bicyclists and pedestrians a needed travel corridor and a variety of recreational opportunities. Already deemed part of a "mitigation zone" within the *Northwest Dade County Freshwater Lake Belt Plan*, M. E. Thompson Park and Campgrounds can serve as a rest stop with amenities including a ranger station, an interpretive center, snack bar, and restroom and shower facilities.[1]

CONSTRAINT

A constraint occurs where the two main north-south links – the Dade-Broward Levee and the FPL easement – meet at the southern edge of M. E. Thompson Park and Campgrounds. Construction of trails within this area of wetlands is required to provide access to these links from the park.

REGION 2

OPPORTUNITY

This ten mile long link utilizes the existing Dade-Broward Levee as one of the two main connectors within the Lake Belt Trail. This levee forms the eastern boundary of the Pennsuco Wetlands, and defines the western border the future Lake Belt Recreational Area. It will create the opportunity for expansive views of sawgrass marshes, tree island hammocks, a variety of habitats, and a diversity of wildlife.

REGION 3

OPPORTUNITY

Elevated boardwalks of the Lake Belt Trail traverse existing tree islands lying between the Dade-Broward Levee and the FPL easement. Development of these links allows for the creation of loops within the Lake Belt Trail, utilizing the tree island hammocks as rest areas and destination points offering environmental education opportunities for trail users.

CONSTRAINT

The primary constraint to the development of the Trail in this region is the creation of boardwalk links within wetland areas. The removal of the invasive Cajeput (*Melaleuca quinquinervia*) will enhance ecological integrity while providing access to the tree island hammocks.

REGION 4

OPPORTUNITY

The Lake Belt Trail creates a link along the FPL easement, extending 12 miles from a point just east of M.E. Thompson Park and Campgrounds, to US Highway #41 (Tamiami Trail). The FPL easement represents the western edge of the identified mitigation zone of the future Lake Belt Recreational Area, and an existing gravel road within this easement can be utilized as a trail link within the larger Lake Belt Trail system. The surrounding land is comprised of dense Cajeput *(Melaleuca quinquinervia)* growth that will be removed as rock mining continues within the Lake Belt Recreational Area. The easement allows the Lake Belt Trail to be integrated into the master plan for the Lake Belt Recreational Area.

CONSTRAINT

Constraints to development of the trail include land uses that are incompatible with recreational trails. These include rock mining activities – dredging, rock crushing, and hauling operations – and a Miami-Dade County correctional facility that are adjacent to the link proposed within the FPL easement.

REGION 5

OPPORTUNITY

The location and amenities of the existing Trail Glades Range Park enhance its utilization as a trail head facility. Although its future as a park for public use is uncertain, its location renders it ideally suited to serve other trails in the area, including the Miccosukee Link, Krome Trail, and West Dade Trails.[2] The Trail Glades Range Park is located twelve miles south of M.E. Thompson Park and Campgrounds, and its designation as a trail head facility will also serve the southern portion of the Lake Belt Trail.

CONSTRAINT

Constraints include access from M. E. Thompson Park and Campgrounds to the two main links of the Lake Belt Trail. Utilization of a portion of the Miccosukee Link, along the north edge of the canal adjacent to US Highway #41 will allow unimpeded access to both the Dade-Broward Levee link and the FPL easement link.

REGION 6

OPPORTUNITY

The Lake Belt Trail connects to the Beacon Trail along Northwest 25th Street as it intersects the FPL easement. The Beacon Trail will be accommodated within the future development of Northwest 25th Street and the Lake Belt Recreational Area.

[1] South Florida Water Management District. *Northwest Dade County Freshwater Lake Belt Plan: Making Wholes Not Just Holes* (Miami: SFWMD Visual Communications Division, 1997) 4.

[2] Kevin Asher, telephone conversation with Planning and Research, Miami-Dade County Parks and Recreation Department, 29 April 1997.

LEHMAN LINK

DESCRIPTION

Length:	3.6 miles (1.8 miles x 2)
West Links:	Flagler Trail
East Links:	Atlantic Trail
Objective:	A bicycle and pedestrian lane occupying the road right-of-way of the Lehman Causeway bridge.

Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Lehman Link

Miles
0 .1 .2 .3 .4

LEHMAN LINK

REGION 1

OPPORTUNITY

As an east-west segment, the Lehman Link connects the Flagler Trail and the Atlantic Trail at Biscayne Boulevard (U S Highway #1). This junction offers a northbound or southbound travel opportunity for users, creating a link to such attractors as Aventura Mall, The Promenade Shops, and Loehmanns Plaza Shopping Center.

CONSTRAINT

The Flagler Trail occupies the Florida East Coast Railroad (FEC) right-of-way west of Biscayne Boulevard, and the connection of this Trail to the Lehman Link requires a crossing at Biscayne Boulevard. Although an existing seven-foot median separates northbound traffic and southbound traffic at this location, additional traffic calming devices should be implemented. One such technique is border landscaping, which has been proven to encourage drivers in reducing vehicle velocity while enhancing the aesthetic value of an area.[1] Existing traffic control devices at the intersection of Biscayne Boulevard and the Lehman Causeway (Northeast 192nd Street) will provide additional protection for bicycle and pedestrian passage to the Lehman Link.

REGION 2

OPPORTUNITY

The Lehman Link will connect to the Don Soffer Fitness Trail, an existing bicycle and pedestrian path along West Country Club Drive in Aventura. This link creates an alternate route that occupies the open space easement located around the perimeter of the Turnberry Isle Golf Course. Site inventory of this district revealed an increase in the density of residences as one approaches the Turnberry Isle Golf Course. This is due to the large number of high-rise condominiums located north and south of the Lehman Causeway. The Lehman Link will offer residents a corridor to both the shopping amenities on Biscayne Boulevard and to Sunny Isles beach to the east. The Dade County Citizen's Transportation Advisory Committee in December 1996 passed a resolution stipulating the community's desire for a link from this residential area, east to the beaches. A divided bicycle and pedestrian path at the north and south sides of the causeway, from the Don Soffer Fitness Trail at West Country Club Drive to a point just east of the Intracoastal Waterway overpass, will address this need.[2]

CONSTRAINT

The Lehman Causeway is an elevated highway providing an overpass across Dumfounding Bay and the Intracoastal Waterway in northeast Miami-Dade County. The exit and entrance ramps located at both West Country Club Drive and East Country Club Drive create the opportunity to connect to the existing bicycle and pedestrian path at the Turnberry Isle Golf Course. Concurrently, such bicycle and pedestrian use poses conflicts with the vehicles that exit or enter the causeway on these ramps. Dedicated crosswalks properly demarcated, at both the beginning and terminus of each ramp, will create a mental stimulus allowing drivers to recognize a possible conflict with a bicyclist or pedestrian in these zones. Though the Lehman Causeway does not presently accommodate bicycle and pedestrian crossings within its corridor, the Lehman Link will occupy both the westbound and eastbound travel corridors of the right-of-way.

REGION 3

OPPORTUNITY

The Lehman Link provides an additional opportunity to connect to the east end of the Don Soffer Fitness Trail on East Country Club Drive. This alternative link is a scenic loop around the Turnberry Isle Golf Course.

REGION 4

OPPORTUNITY

The Lehman Link of the *North Dade Greenways* will provide access to the Atlantic Trail located on Ocean Boulevard (State Road A1A) at the Atlantic Ocean shoreline. The Atlantic Trail is a north-south corridor that utilizes the roadway easement of Ocean Boulevard from the Miami-Dade / Broward county line to the Lehman Causeway. South of the Lehman Causeway, the Atlantic Trail occupies a continuous corridor immediately west of the beach, to Haulover Park at Baker's Haulover Cut.

CONSTRAINT

Constraints occur as the Lehman Causeway descends in elevation to Ocean Boulevard. Separate two-lane ramps direct traffic to either southbound or northbound travel along Ocean Boulevard. Site investigation revealed that these descending ramps do not provide sufficient width for a bicycle and pedestrian facility within their corridors. Approximately four feet separate the vehicular travel lane from the safety barrier walls. A separate bicycle and

pedestrian amenity crossing over eastbound traffic on the Causeway, should link the bicycle and pedestrian facilities on either side of the Causeway. A similar element will provide a protected link from the elevated causeway to an existing at-grade sidewalk on Ocean Boulevard. An existing traffic control device and crosswalk at Northeast 192nd Street will provide access to the Atlantic Trail located on the east side of Ocean Boulevard.

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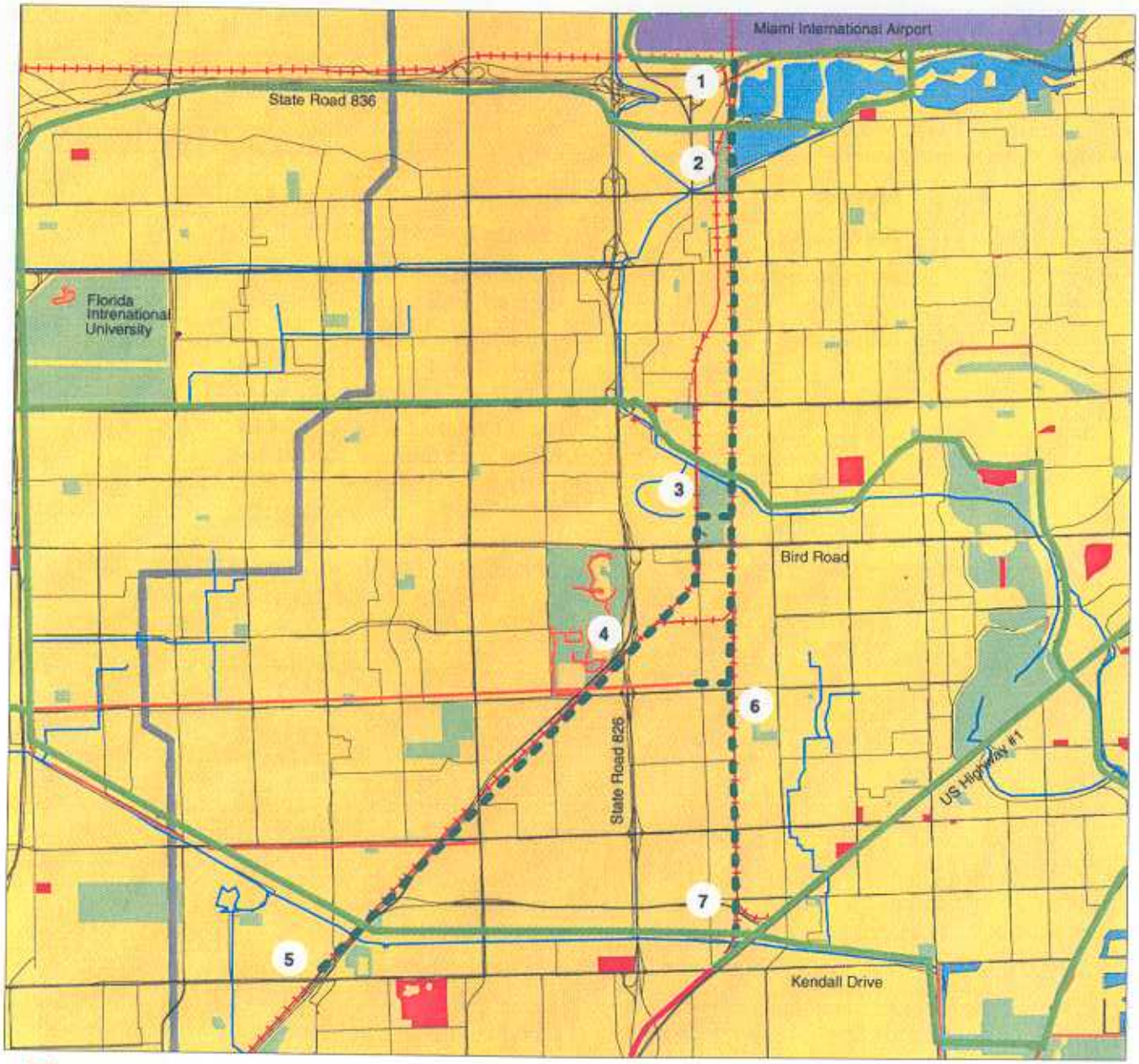
[1] Miami-Dade Public Works Department. *Street Closure Study Technical Memorandum 3: Traffic Calming Alternatives for Residential Traffic Control* (Miami: Fredric R. Harris, Inc., March 1996) Appendix A.

[2] Maurice K. Gan, CTAC Member. Request to Clinton Forbes, CTAC Coordinator, for a Resolution of Presentation (Miami: Office of the County Manager, 30 December 1996) 1.

LUDLAM TRAIL

DESCRIPTION

Length:	11 miles
North Links:	Perimeter Trail
Intersecting Links:	Merrick Trail East-West Trail
South Links:	Snapper Creek Trail M-Path Trail
Objective:	A path that occupies the FEC Railroad right-of-way parallel to Ludlam Road and the CSX right-of-way from Bird Road to North Kendall Drive.



LUDLAM TRAIL

REGION 1

OPPORTUNITY

The Ludlam Trail will offer the opportunity to develop a passive open space park at the junction of the Ludlam Trail and Perimeter Trail. This proposed park will create a destination point for those wishing to view approaching and departing aircraft at Miami International Airport.

CONSTRAINT

Constraints occur at vehicular crossings. Bicyclists and pedestrians must cross Perimeter Road to arrive at the park trailhead at the Perimeter Trail, and to travel east to the Ludlam Trail. The Ludlam Trail will provide access to those areas along the FEC railroad right-of-way, south of Miami International Airport. Vehicular / pedestrian conflict zones should be equipped with a traffic control device such as a pedestrian crosswalk and appropriate signage.

REGION 2

OPPORTUNITY

The opportunity exists for a connection to Robert King High Park / Carlos Arboleya Picnic Area and Campgrounds, located adjacent to the Ludlam Trail at Flagler Street. This region also offers a connect to the Metro-Dade Transit Agency's *Bikes-On-Bus* program.[1]

CONSTRAINT

Constraints occur as the Tamiami Canal creates an interruption, segmenting the Trail. A pedestrian bridge is required as the Ludlam Trail crosses the Tamiami Canal, providing access to Lake Mahar, currently used for recreational purposes. Additional constraints result from the absence of a direct link from the Trail to other amenities in the area, and a pedestrian railroad crossing must be employed at this point of conflict. Additionally, invasive vegetation along the corridor's edge does not allow access to Robert King High Park from the easement of the Tamiami Canal. Removal of these species and reforestation with native vegetation will promote species diversity and faunal movement along the corridor. A path along the easement parallel to Tamiami Canal will provide bicyclists and pedestrians a route into the Carlos Arboleya Picnic Area and Campgrounds. An alternative entrance to this site from the Ludlam Trail can be developed along Flagler Street.

REGION 3

OPPORTUNITY

A trail head at A. D. Barnes Park will serve the two southern branches of the Ludlam Trail. The Park will serve as a node linking the Ludlam Trail with the Merrick Trail along North

Waterway Drive. Set within the FEC corridor, the Ludlam Trail will connect at A. D. Barnes Park to its west branch within the CSX corridor. Vegetation within the park – hardwood hammocks and pinelands – are suited to environmental education programs, and for development of a model species list for reforestation within the *North Dade Greenways* system.

CONSTRAINT

Constraints occur as the Coral Gables Waterway bisects the Ludlam Trail, where a pedestrian bridge is required to cross the waterway. An additional conflict occurs when Ludlam Trail users traverse the CSX right-of-way to enter the Park.

REGION 4

OPPORTUNITY

The west branch of the Ludlam Trail occurs within the CSX right-of-way at the intersection of Miller Drive. By utilizing the existing wide sidewalk facility along the north side of Miller Drive, a connection to Tropical Park can be provided.

REGION 5

OPPORTUNITY

The opportunity exists to develop a trailhead at the Boy's and Girl's Club of Miami, at North Kendall Drive (Southwest 88th Street). The southern terminus of the west branch of the Ludlam Trail includes a connection to the Snapper Creek Canal, and a connection to the Boy's and Girl's Club Park lying east of State Road 874. As a trailhead, this site will connect to the west branch of the Ludlam Trail, and to the Snapper Creek Trail.

CONSTRAINT

A constraint occurs as the Snapper Creek Canal bisects the Ludlam Trail. A pedestrian bridge over the canal is required for the trail's extension south to North Kendall Drive. Additional constraints include the development of a connection to the Snapper Creek Trail, and improved bicycle and pedestrian facilities along North Kendall Drive.

REGION 6

OPPORTUNITY

The Ludlam Trail creates the opportunity for a linkage to Palmer Park, located on Ludlam Road (Southwest 67th Avenue). Palmer Park is the community park for the City of South Miami, located adjacent to South Miami Elementary and South Miami Middle schools. The park and the

elementary school abut and can be easily accessed from the rail corridor.

REGION 7

OPPORTUNITY

The Ludlam Trail creates the opportunity for an intermodal connection point at the Dadeland North Metrorail Station. The southern terminus of the Ludlam Trail occurs at the Dadeland Station retail complex, adjacent to the Dadeland North Metrorail Station. This node also includes a connection to the Snapper Creek Trail. Future development of the M-Path Trail would include its extension south from Southwest 67th Avenue to the Dadeland South Metrorail Station.

CONSTRAINT

Constraints occur at the intersection of the Snapper Creek and Ludlam Trails, and at the alignment of the Ludlam Trail with the Dadeland North Metrorail Station. The Ludlam Trail may occupy alternate local roads -such as Southwest 70th Avenue- in order to cross the Snapper Creek Canal, and to provide access to the Dadeland North Metrorail Station.

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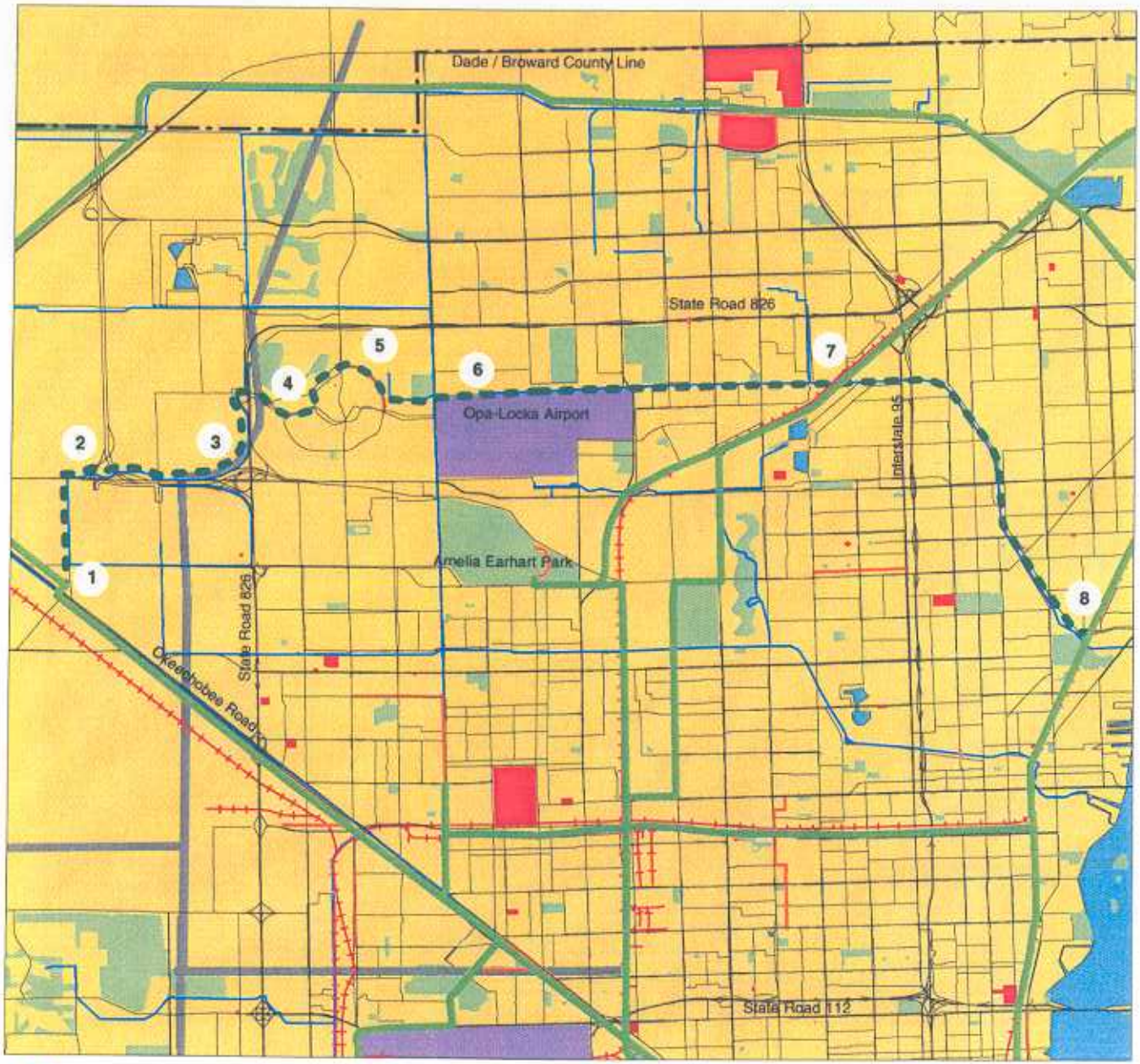
[1] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

MEMORIAL TRAIL

DESCRIPTION

Length:	16 miles
West Links:	Miami River Trail
Intersecting Links:	Gold Coast Trail
East Links:	Flagler Trail
Objective:	A facility occupying various local and collector roads in Hialeah Gardens and Miami Lakes, and the right-of-way of the Biscayne Canal in Opa-Locka and North Miami.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Memorial Trail

Miles
0 .2 .4 .6 .8

MEMORIAL TRAIL

REGION 1

OPPORTUNITY

The west segment of the Memorial Trail will occupy the north bank of the Biscayne Canal. It links the communities of Medley, Hialeah Gardens, Miami Lakes, Opa-Locka, Biscayne Gardens, North Miami, Biscayne Park, and Miami Shores. Located at the junction of Northwest 116th Way and Okeechobee Road (U S Highway #27), the western terminus of the Memorial Trail provides a connection to the proposed Miami River Trail. It is at this junction that the Miami River Trail crosses from the north side of the Miami River to its south side, within the Town of Medley. Mainly composed of light industrial and commercial sites, the Town of Medley provides employment opportunities for surrounding residential areas. The residential areas of Hialeah Gardens occur directly across the river, on the north side of Okeechobee Road. Equipped with a traffic control device at both its north and south entrances, the existing bridge over the Miami River at Northwest 116th Way is suitable for bicycle and pedestrian use.

CONSTRAINT

As the Memorial Trail crosses Okeechobee Road on Northwest 116th Way, conflicts with vehicles may occur. Okeechobee Road is a six-lane highway with an approximately 15 feet median. No appreciable vegetation exists within the corridors' approximate one hundred and fifty foot right-of-way, providing a mental stimulus for drivers to speed.[1] Although a traffic control device is located at this intersection, additional traffic calming initiatives are suggested in this region to reduce traffic velocities and provide a waiting zone from which bicyclists and pedestrians may safely negotiate the intersection. A demarcated crosswalk painted on the road surface will warn vehicles that they are approaching a potential conflict area. Additionally, the enhancement of the median strip with native plantings and a paved waiting area will provide a safe zone for those attempting to cross this six-lane highway.

REGION 2

OPPORTUNITY

The Memorial Trail provides eastbound and westbound non-motorized travel opportunities for the northwest sections of Hialeah Gardens and Hialeah. As the Biscayne Canal bends to the east at Northwest 97th Avenue and Northwest 138th Street in Hialeah, the Memorial Trail will occupy its north bank.

CONSTRAINT

Constraints occur as the Memorial Trail approaches the ramps that lead vehicles north to Interstate 75. The Biscayne Canal passes under two ramps of Interstate 75 at Northwest 138th Street and it is suggested that the Memorial Trail occupy alternate local roads in this region. Such a route utilizing one or more corridors – including Northwest 97th Avenue, Northwest 146th Street, Northwest 154th Street (Miami Lakes Drive), and Northwest 87th Avenue which contains an existing pedestrian bridge over Interstate 75 – are suitable for bicycle and pedestrian use.

REGION 3

OPPORTUNITY

The Memorial Trail offers the opportunity to connect to the industrial parks in the western portion of Miami Lakes. As the Biscayne Canal bends north to align with the Palmetto Expressway, the Memorial Trail will serve as a link between surrounding residential areas and the Miami Lakes Business Park, the Miami Lakes Industrial Park, and Miami Lakes Office Park located on Commerce Way.

CONSTRAINT

The north canal bank in this region does not provide substantial width for the inclusion of a bicycle and pedestrian path. Therefore, it is suggested that Palmetto Frontage Road accommodate the Memorial Trail within its infrequently traveled corridor. Several site visits along Palmetto Frontage Road revealed that recreational cyclists frequently utilize its corridor in part because of its low volume of vehicular traffic. Palmetto Frontage Road and other surrounding collector roads such as Commerce Way, offer a continuous loop route for recreational cyclists.

REGION 4

OPPORTUNITY

The Memorial Trail provides access to the community of Miami Lakes, and will occupy the road right-of-way of Northwest 154th Street (Miami Gardens Drive) at the northern terminus of Palmetto Frontage Road, where it will head east into Miami Lakes. Northwest 154th Street is deemed suitable by the Metro-Dade Bicycle and Pedestrian Program *Bike Map* of 1991.[2] Additional considerations for this roadway corridor are identified in the *Metro-Dade Bicycle Facilities Plan*, where it is programmed for a "Proposed Long-Range On-Road Bicycle Facility".[3]

REGION 5

OPPORTUNITY

The Memorial Trail will link to the existing bicycle and pedestrian facility on East Lakeway Drive. An extension to the existing bicycle and pedestrian facility will provide area residents with an alternate transportation module to the east, along the easement of Biscayne Canal.

REGION 6

OPPORTUNITY

The Memorial Trail provides a link for users to the Biscayne Canal at the open green spaces of the Opa-Locka Airport. This greenway will offer an alternate transportation corridor for such attractors as the Miami Lakes Industrial Park, the Palmetto Lakes Industrial Park, Florida Memorial College, and St. Thomas University. It will also offer the opportunity to

link together the remnant pine forest patches located just north of the Opa-Locka Airport. The bicycle and pedestrian path in this region will continuously occupy the south bank of the Biscayne Canal to the point of the trail's eastern terminus. A connection to Metro-Dade Transit Agency's *Bikes-On-Bus* program is located on the corner of East Miami Lakes Drive and Northwest 57th Avenue (Red Road).[4]

CONSTRAINT

Vehicular conflicts occur as bicyclists and pedestrians attempt to cross Northwest 57th Avenue (Red Road). Current reconstruction of Northwest 57th Avenue includes the enhancement of traffic flow through the installation of traffic control devices as well as the widening of the surface area of the corridor to provide a divided six lane road.

A traffic control device on Northwest 154th Street enables vehicles to utilize a left-turning lane that will guide the vehicles to the extreme left lane of Northwest 57th Avenue. The two right lanes on Northwest 57th Avenue are not affected. No allocation of a pedestrian crossing was made during the design and construction of Northwest 57th Avenue, from Northwest 138th Street to Northwest 158th Street.

Memorial Trail users will traverse Northwest 57th Avenue at the traffic light on Northwest 154th Street, to reconnect to the trail within the Biscayne Canal easement, while right-lane traffic is not halted by an encumbrance at this intersection. A pedestrian crossing must be constructed at this or a suitable adjacent intersection that will allow a bicycle / pedestrian crossing of Northwest 57th Avenue. Once this crossing occurs, a northward link from Northwest 154th Street to the canal is accommodated along the Northwest 57th Avenue roadway easement and sidewalk, located at the Opa-Locka Airport's west property line. Additional constraints to the development of the trail occur as the Biscayne Canal's easement coextends the airport's north property line. An active runway located just 500 feet from the proposed location of the Memorial Trail may create opposition from airport interests.

REGION 7

OPPORTUNITY

The Memorial Trail will link to the proposed Gold Coast Trail, which occupies the South Florida Rail Corridor – currently used by TriRail – extending from the Miami International Airport north to the Miami-Dade / Broward county line. This connection will provide the opportunity to travel north and south through the neighborhoods of North Miami Beach, Opa-Locka, Hialeah, Miami, and Miami Springs. A progression along the Memorial Trail will offer the opportunity to travel southeast through Biscayne Gardens, North Miami, and Biscayne Park.

CONSTRAINT

Conflicts in the development of the Memorial Trail occur as this extensive east-west link intersects several major thoroughfares. As the Memorial Trail travels east from St. Thomas University, it approaches State Road 9 at its junction with the Gold Coast Trail, U S Highway #441, and Interstate 95. Even though the constraining highways are elevated, the canal

right-of-way does not lend sufficient width for greenway development. Additionally, residential development along the south and north sides of the canal from Northwest 135th Street to Northeast 6th Avenue reduces right-of-way width. Therefore, it is suggested that roadway corridors paralleling the Biscayne Canal – such as South Biscayne River Drive or Griffing Boulevard – include the greenway facility within their alignments. As the greenway corridor occupies these minor collector roads, the aforementioned conflicts with intersecting major thoroughfares are diminished as these collector roads offer passage beneath the expressways.

REGION 8

OPPORTUNITY

At its terminus, the Memorial Trail offers the opportunity to link to the Flagler Trail in the vicinity of the open green areas surrounding the Miami Shores Golf and Country Club. This will allow Memorial Trail visitors to travel north and south along the FEC right-of-way that is parallel to Biscayne Boulevard (U S Highway #1). The Flagler Trail corridor will offer a continuous non-motorized transportation facility within the FEC fenced corridor that runs diagonally through the Miami Shores Golf and Country Club. This connection will allow a bicycle and pedestrian corridor from the Memorial Trail north to the Miami-Dade / Broward county line, and south to downtown Miami.

CONSTRAINT

Although Biscayne Canal Road and Griffing Road terminate at Northeast 6th Avenue, and the easement width increases as it moves eastward, the Memorial Trail cannot reoccupy the canal easement. As the north and south easement of the Biscayne Canal moves east from Northeast 6th Avenue, it enters the private property of the Miami Shores Golf and Country Club. An existing pedestrian bridge on the Country Club's grounds – located parallel to the FEC Railroad right-of-way – can serve the Flagler Trail over the Biscayne Canal. Therefore, it is suggested that the Memorial Trail occupy the right-of-way of Griffing Boulevard within this area, in order to connect the Flagler Trail at the northwest quadrant of the Miami Shores Golf and Country Club.

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[1] The U. S. Department of Transportation and the Federal Highway Administration. Bicycle Safety-Related Research Synthesis (McLean: Turner-Fairbank Highway Research Center, April 1995) 37.

[2] Bicycle and Pedestrian Program. Bike Map (Miami: Metropolitan Planning Organization, September 1991).

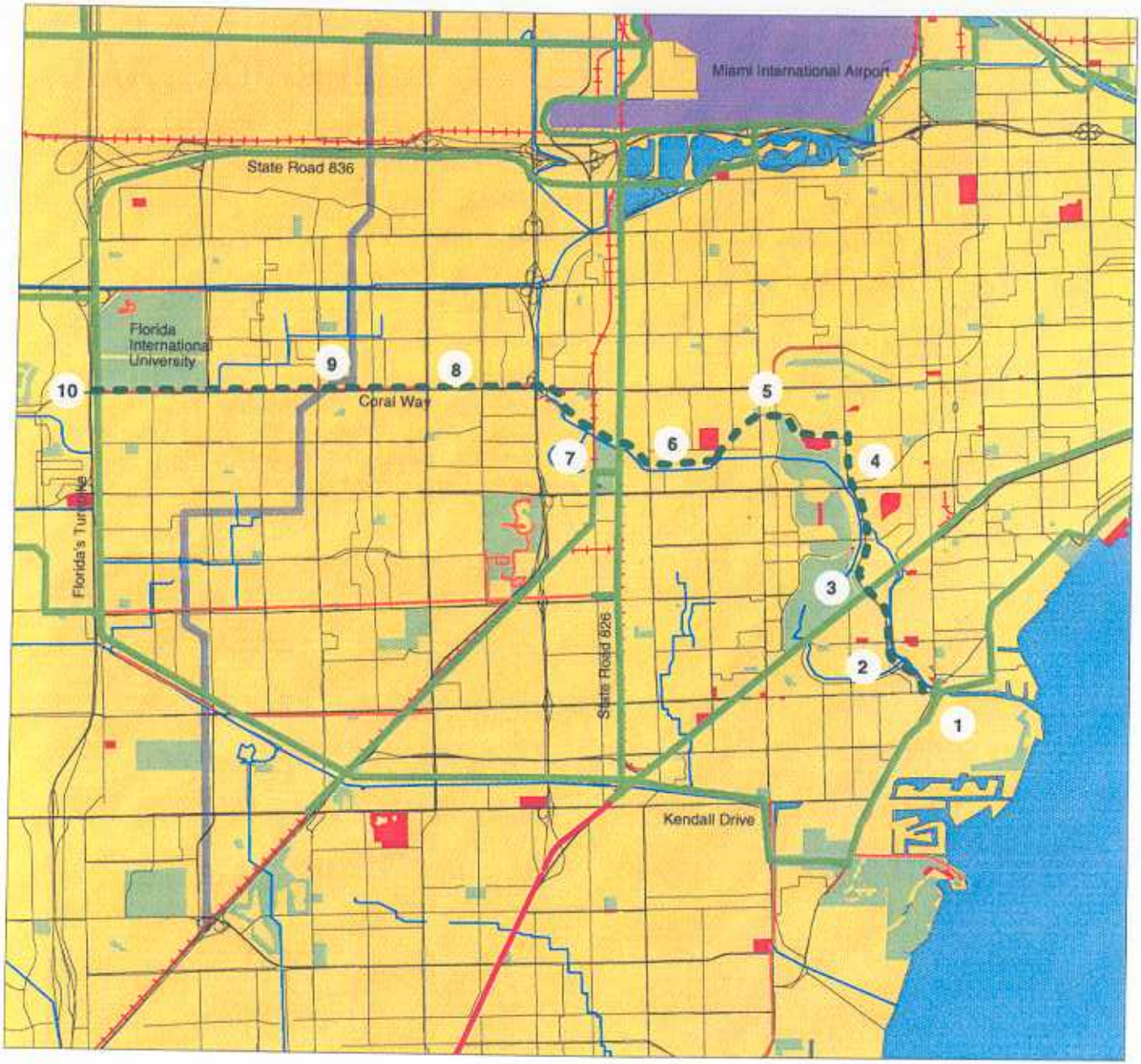
[3] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[4] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

MERRICK TRAIL

DESCRIPTION

Length:	10.4 miles
West Links:	Snapper Creek Trail
Intersecting Links:	Ludlam Trail M-Path Trail
East Links:	Commodore Trail
Objective:	A facility encompassing an eastward extension of the existing path on Coral Way, with a continuation along the right-of-way of the Coral Gables Waterway.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
South Dade Greenway Network
Other Proposed Trails
Merrick Trail

Miles
0 2 4 6 8

MERRICK TRAIL

REGION 1

OPPORTUNITY

The eastern terminus of the Merrick Trail occurs in the vicinity of Cartegena Plaza at Cocoplum Circle, at the intersection of Sunset Drive (Southwest 72nd Street), Old Cutler Road, and Le Jeune Road (Southwest 42nd Avenue). The area, currently used as a trailhead facility, will provide to Merrick Trail users the opportunity to connect to the Commodore Trail along Old Cutler Road. Cartegena Plaza will serve as an improved trailhead facility supporting both the Commodore Trail and the Merrick Trail. The connection to the trailhead facility will occur along the north right-of-way of Sunset Drive, from Granada Boulevard to Old Cutler Road.

CONSTRAINT

The development of the link along Sunset Drive requires modification to the existing sidewalk. A small parklet along the Coral Gables Waterway requires modification, and an intersection crossing of Le Jeune Road is necessary for users to connect to the trailhead facility.

REGION 2

OPPORTUNITY

Within this region, the Merrick Trail will occur along Granada Boulevard in the City of Coral Gables as an on-road facility, from Sunset Drive to Tamiami Trail. This portion of Granada Boulevard has been identified as a bikeway route in the *City of Coral Gables Bikeway Route Map,* and includes a link on The Mall (a short southeast / northwest road alignment), southeast of Ponce de Leon Middle School.[1] Granada Boulevard is rated "less suitable" in the *Bike Miami Map*, but with necessary upgrading could facilitate trail development due to the ample right-of-way width.[2] The trail link along The Mall will permit a connection from Ponce de Leon Middle School southeast to Granada Boulevard, identified as a "Proposed Short-Range On-Road Bicycle Facility" within *Metro-Dade's Bicycle Facilities Plan.*[3]

REGION 3

OPPORTUNITY

The Merrick Trail will connect to the M-Path Trail within the Metrorail corridor, at the intersection of Granada Boulevard and US Highway #1. This connection point will allow Merrick Trail users to access the M-Path, by creating a direct connection to the University of Miami. A trail spur to the University of Miami campus and Doctor's Hospital would improve

connectivity between the university and the Merrick Trail.

REGION 4

OPPORTUNITY

This region refers to that portion of the Merrick Trail existing on Granada Boulevard, from the intersection of US Highway #1 to the intersection of Anastasia Avenue. This region includes an on-road trail facility and is similar to Region 2, where ample right-of-way width is sufficient to accommodate trail development.

CONSTRAINT

A small bridge over a branch of the Coral Gables Waterway limits trail width, but could accommodate bike lanes. The intersection of Bird Road, University Drive, and Granada Boulevard presents a constraint to the continuity of the trail. An intersection crossing is required, allowing users to continue on Granada Boulevard, or to access either University Drive or Bird Road.

REGION 5

OPPORTUNITY

This region refers to the part of the Merrick Trail along Anastasia Avenue and Sevilla Avenue, from the intersection of Anastasia Avenue and Granada Boulevard to the intersection of Sevilla Avenue and Red Road (Southwest 57th Avenue). This portion of Anastasia Avenue is included as a Bikeway Route within the City of Coral Gables' *Comprehensive Development Master Plan*.[4] This link presently includes an existing on-road trail. Both Anastasia Avenue and Sevilla Avenue are rated as suitable within the *Bike Map*.[5] This portion of the trail includes several historic places – such as the Biltmore Hotel – offering amenities along the Merrick Trail. Further enhancement of the City of Coral Gables Bikeway Plan will help to connect the trail to other significant Coral Gables sites including DeSoto Fountain, Miracle Mile, Venetian Pool, Country Club Prado, and Alhambra Circle.

CONSTRAINT

The intersection of Sevilla Avenue and Anastasia Avenue presents an obstacle to trail development. Intersection crossings must be developed to accommodate trail users, and additional signage indicating the existence of both the Merrick Trail and the Coral Gables Bikeway Plan should be employed to identify links to other routes and places of interest within the area.

REGION 6

OPPORTUNITY

This region of the Merrick Trail will occur from the intersection of Sevilla Avenue and Red Road (Southwest 57th Avenue) to the Merrick Trail connection with the Ludlam Trail at North Waterway Drive. Development of the trail in this region will occur along Red Road, Southwest 34th Street, and North Waterway Drive. The trail will provide an east-west link between the City of Coral Gables and the residential communities west of Red Road. The Merrick Trail will contain a trail spur along Devonshire Boulevard that will link Miami Children's Hospital with the Merrick Trail in the vicinity of Schenley Park, at the intersection of Red Road and Sevilla. The Merrick Trail will include on-road or right-of-way improvements along Red Road, between the Sevilla Avenue intersection and Southwest 34th Street. A residential street, Southwest 34th Street is located adjacent to Coral Gables Wayside Park, a small open space site. It parallels the Coral Gables Waterway to the point of its connection to North Waterway Drive. The development of the trail along North Waterway Drive includes the utilization of the canal bank to facilitate trail connectivity between Southwest 34th Street and Southwest 67th Avenue. The existing canal bank is devoid of vegetation and can accommodate the trail and enhance the visual quality of the area. The development of the trail between Southwest 67th Avenue and the connection point of the Ludlam Trail along the FEC Railroad right-of-way will include on-road facilities along North Waterway Drive. Additionally, Merrick Trail provides a connection to Metro-Dade Transit Agency's *Bikes-On-Bus* program on Southwest 67th Avenue.[6]

CONSTRAINT

This region contains three constraints related to trail development. The first occurs at the intersection of Red Road, Sevilla Avenue, Devonshire Boulevard, and Southwest 28th Street, where development of an intersection crossing and descriptive signage should be employed to indicate the trail's change in direction. The perpendicular intersection of Southwest 34th Street with Red Road (Southwest 57th Avenues) also creates a change in the direction of the trail. Trail development in this area should utilize the existing open spaces of the Coral Gables Wayside Park to help in the transition to Southwest 34th Street. The intersection of Ludlam Road (Southwest 67th Avenue) and North Waterway Drive has separate alignments for vehicular traffic flow. Trail development will include an intersection crossing of Ludlam Road and alignment with either the northbound or southbound travel lanes of North Waterway Drive, west of Ludlam Road.

REGION 7

OPPORTUNITY

This region includes connection of the Merrick Trail and Ludlam Trail, along North Waterway Drive. Trail users may connect to A. D. Barnes Park by utilizing the Ludlam Trail along the FEC Railroad right-of-way. The Park is south of the Coral Gables Waterway, and is a short distance from the Merrick Trail along North Waterway Drive, the right-of-way of which is adequate to support the development of on-road facilities. The connection to the Park allows Merrick Trail users the ability to access the amenities of the park or to continue south along either of the Ludlam Trail branches. The Merrick Trail will continue along North Waterway Drive to Southwest 72nd Avenue, and then continue north along Southwest 72nd Avenue to Coral Way (Southwest 24th Street). The portion of the trail along Southwest 72nd Avenue is rated "suitable" within the *Bike Map*, and parallels the CSX right-of-way in this area.[7] Ample right-of-way exists for the development of on-road facilities from North Waterway Drive to Coral Way.

CONSTRAINT

The development of the connection to the Ludlam Trail occurs in an area where the existing rail line and trail are elevated above the surrounding areas. The restricted sight distance at the approach to the rail crossing limits visibility of approaching vehicles: consideration of this limitation will dictate final design of the Ludlam Trail along the FEC right-of-way. Additionally, the connection will be immediately adjacent to a pedestrian bridge that is required for Ludlam Trail users to cross the Coral Gables Waterway.

REGION 8

OPPORTUNITY

This region refers to the portion of the Merrick Trail along Coral Way from Southwest 72nd Avenue to Southwest 87th Avenue. This 1.5-mile section will occur in an area that contains varied land uses immediately adjacent to the trail, including commercial, educational, and residential. This 1.5-mile portion of the trail will be an extension of the existing wide-sidewalk facility (along the north side of Coral Way) that currently terminates at Southwest 87th Avenue. Development of the trail facility will allow connections to the Brothers to the Rescue Ballfield at the intersection of Coral Way and Southwest 72nd Avenue, West Miami Middle School, Westchester General Hospital, and the Westchester Shopping Center. The proposed trail will be a wide sidewalk facility between Southwest 72nd Avenue and the Palmetto Expressway. It will utilize an existing catwalk at the entrance / exit ramps to the

Palmetto Expressway and continue as an off-road trail (asphalt path) within an existing green space, along the north side of Coral Way from Southwest 78th Avenue to Southwest 87th Avenue.

CONSTRAINT

This portion of the Merrick Trail, contains several constraints to the development of a safe trail route. In the area between Southwest 72nd Avenue and Southwest 77th Avenue, commercial zoning abuts the trail corridor, and numerous driveway entrances pose a safety hazard to trail users. Adequate signage should be utilized and clear sight lines maintained, to improve visibility between motor vehicles and trail users. The vicinity of West Miami Middle School and the Palmetto Expressway also contains a number of constraints that hinder trail continuity. An existing drop-off lane in front of West Miami Middle School would require modification to facilitate trail development. Two other entrance drives would also require intersection crossings. The bridge over the Coral Cables Waterway is inadequate to support the development of a wide sidewalk or trail. Its renovation, or the construction of a separate pedestrian bridge, would help to facilitate trail continuity in this area. The bridge crossing is adjacent to the Palmetto Expressway overpass. The existing pedestrian sidewalk beneath the overpass should be modified to accommodate trail development. The portion of the Merrick Trail, from the Palmetto Expressway to Southwest 87th Avenue, will require six intersection crossings to accommodate trail development within the linear open space immediately north of Coral Way.

REGION 9

OPPORTUNITY

This region refers to the portion of the Merrick Trail along Coral Way from Southwest 87th Avenue to its connection with the Snapper Creek Trail along Southwest 117th Avenue. This region will utilize the existing wide sidewalk facility along the north side of Coral Way. The width of the existing facility is adequate to accommodate pedestrians and bicyclists. Places of interest along

this portion of trail include the West Dade Regional Library, and the Dade County Youth Fair, Tamiami Park, and Florida International University's University Park campus between Southwest 107th Avenue and Southwest 117th Avenue. The existing facility will be upgraded to include new signage, improved intersection crossings, and the relocation of accessory objects such as bus benches, that interfere with the clear space required for the wide sidewalk facility.

CONSTRAINT

A constraint is encountered at the Dade County Youth Fair entrance at Southwest 109th Avenue. The wide sidewalk facility is reduced to a 5-foot wide pedestrian sidewalk. A widening of this sidewalk will improve the connectivity of the trail and create a more appropriate connection to the main entrance of Tamiami Park, at Southwest 112th Avenue.

REGION 10

OPPORTUNITY

The western terminus of the Merrick Trail will occur at the intersection of Coral Way (Southwest 24th Street) and Southwest 117th Avenue. This terminus point allows trail users the opportunity to travel north or south along the Snapper Creek Trail. This terminus point is located a short distance from the planned terminus station of the *East-West Multimodal Transit Corridor* along Southwest117th Avenue on the University Park Campus of Florida International University.[8] An additional opportunity exists for the Merrick Trail to occur within Tamiami Park, from the entrance at Southwest 112th Avenue to Southwest 117th Avenue. This alternative route will allow trail users to access the existing amenities and open spaces of Tamiami Park and other public sites.

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[1] William Gray and David Plummer & Associates. *Comprehensive Development Master Plan for the City of Coral Gables* (Miami: February 1989) 2.13-4.

[2] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[3] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[4] William Gray and David Plummer & Associates. *Comprehensive Development Master Plan for the City of Coral Gables* (Miami: February 1989) 2.13-4.

[5] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[6] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

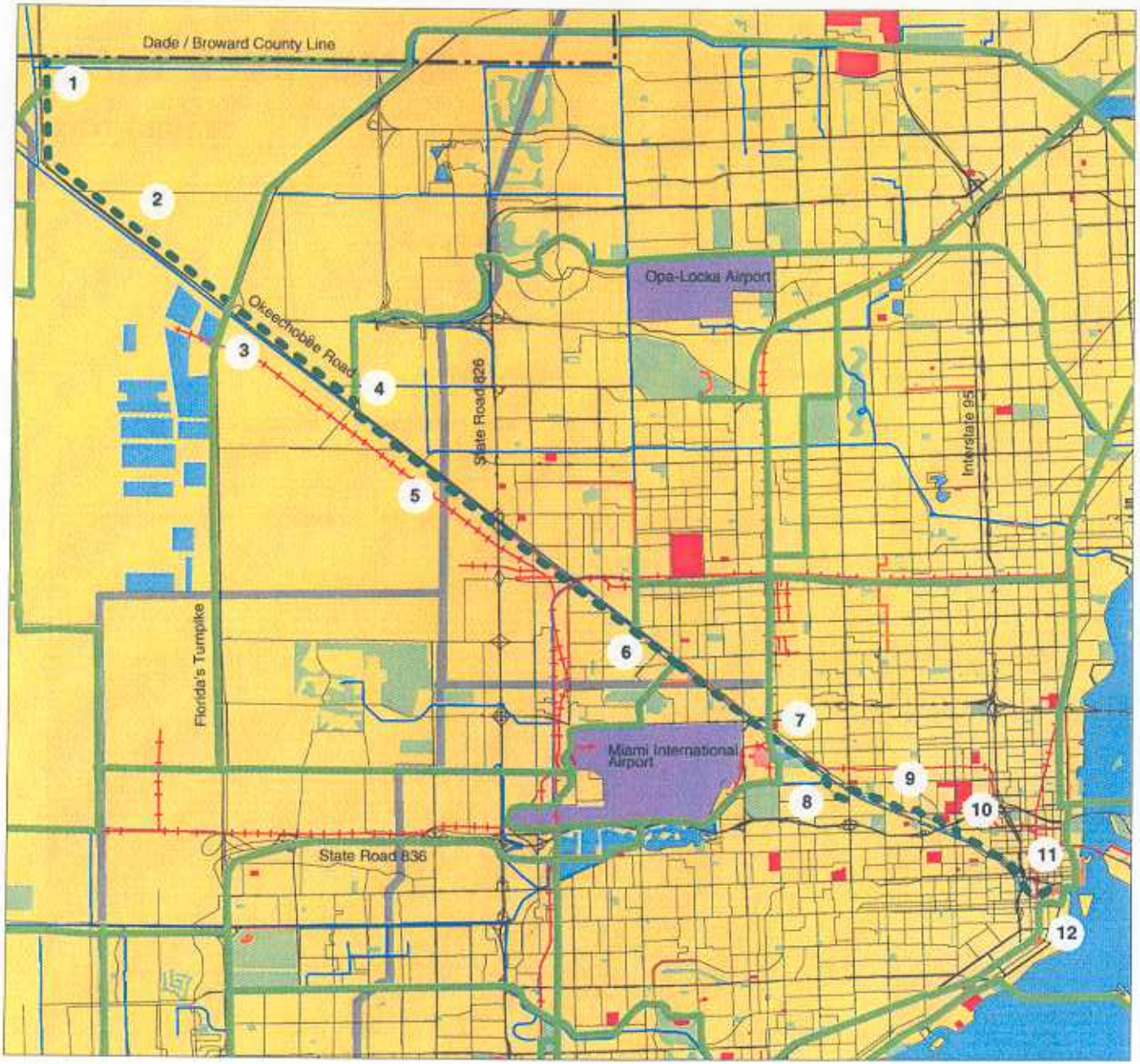
[7] *Ibid.*

[8] The Florida Department of Transportation and The Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995) 3.0.

MIAMI RIVER TRAIL

DESCRIPTION

Length:	20.9 miles
North Links:	Snake Creek Trail
Intersecting Links:	Krome Trail Turnpike Trail
South Links:	M-Path Trail
Objective:	A non-motorized multi-use greenway along the historic Miami River.



Points of Interest
Airports
Parks and Greenways
Miami Intermodal Center Site
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Miami River Trail

Miles
0 .5 1 1.5 2

MIAMI RIVER TRAIL

REGION 1

OPPORTUNITY

The northern terminus of the Miami River Trail will connect to the Snake Creek Trail and the Krome Trail in the vicinity of Okeechobee Road (U S Highway #27) and Krome Avenue (Northwest 177th Avenue). These two connections allow trail users access to areas of north and west Miami-Dade County. Additionally, this region is in close proximity to the northern portion of the Lake Belt Recreational Area, with access from M. E. Thompson Park, located on Krome Avenue south of the connection point. The Miami River Trail follows the north side of Okeechobee Road easement, which is of sufficient width to accommodate a trail that will accommodate two-way traffic.

CONSTRAINT

The constraint to this connection occurs at the intersection of Okeechobee Road and Krome Avenue. An intersection crossing and appropriate signage must be employed to insure safe access for trail users to the Krome Trail.

REGION 2

OPPORTUNITY

The opportunity exists to include an off-road trail along the south side of the Miami River, between the northward turn of Okeechobee Road and the Homestead Extension of Florida's Turnpike (H. E. F. T.). An existing gravel road along the Miami River right-of-way adjacent to the Lake Belt Recreational Area will provide view access to an open expanse of wetlands and marshes adjacent to the south side of the Miami River. The removal of Cajeput (*Melaleuca quinquinervia*) in this vicinity will open up vistas to the sawgrass marshes. Vegetative enhancement with native wetland species along both banks of the river will improve ecological viability and promote species movement along this riparian corridor. The revegetation of the river banks should be based on those species that are identified within the South Florida Water Management District's approved vegetation list.

CONSTRAINT

The development of the off-road portion of the trail responds to a lack of access from Okeechobee Road. The development of intersection / trail crossings and pedestrian bridges will establish a connection from the north side of Okeechobee Road. Two existing bridges may be suitable for this connection: one is in the vicinity of the northward turn of Okeechobee Road, while the other is in the vicinity of the H. E. F. T. The utilization of one or both of these bridges will allow trail users the opportunity to access both trails in this area.

REGION 3

OPPORTUNITY

Connection to the Turnpike Trail can occur at the junction of Okeechobee Road and the H. E. F. T. The proposed trail within the right-of-way of Florida's Turnpike will allow for the development of a commuter route along this heavily traveled highway. A connection to the Turnpike Trail from the Miami River Trail will allow for a trail link that will connect to the rapidly developing area of Southwest Broward.

CONSTRAINT

Constraints occur with the development of the trail at the intersection of the H. E. F. T. Entrance and exit ramps inhibit the continuity of the trail and necessitate the addition of intersection crossings that will enable trail users to access the Turnpike Trail, or to continue along the Miami River Trail.

REGION 4

OPPORTUNITY

The intersection of Northwest 87th Avenue allows trail users to connect to the City of Hialeah Gardens and the Memorial Trail. Additionally, the vicinity of Northwest 87th Avenue and Okeechobee Road is a transition point in the Miami River Trail. An intersection crossing will connect the trail along the north side of Okeechobee Road with the continuation of the trail along South River Drive, through the City of Medley.

CONSTRAINT

The constraints include the development of the intersection crossing of Okeechobee Road, construction of a pedestrian bridge, and the development of a connection to the trail along South River Drive.

REGION 5

OPPORTUNITY

The Miami River Trail will utilize South River Drive, through the City of Medley. This two-lane road provides ample space to accommodate an on-road trail facility. Development of the trail in this area would likely utilize a bike facility along the road's shoulder. The strictly enforced speed limit of 25 miles per hour will allow for safe use of the trail in this area. A connection to the Metro-Dade Transit Agency's *Bikes-On-Bus* program is located on the Northwest 74th Street Connector.[1]

CONSTRAINT

A few constraints are encountered in this area. One involves the location of building structures that abut the roadway in various locations: this presents a problem in the development of a separate on-road facility. The utilization of signage indicating "Bikes Sharing Roadway" should be employed where this occurs. An additional constraint involves the industrial land use that occurs throughout the City of Medley. The many manufacturing, light industrial, and warehouse operations and their associated traffic, requires special consideration in the development of a recreational trail.

OPPORTUNITY

The Miami River Trail will utilize an existing facility along North Royal Poinciana Boulevard, which will connect the Miami River Trail to the residential areas in Miami Springs. An existing catwalk across the Miami River in the vicinity of Northwest 57th Avenue allows trail users to connect to the Unity Trail. A nodal point intersection occurs in the vicinity of the Curtiss Parkway Circle, an area suitable for a trailhead location. This nodal point allows for a connection to the Perimeter Trail along Curtiss Parkway in Miami Springs. The Miami River Trail creates access to the Perimeter Trail, the central hub of the *North Dade Greenways* in the vicinity of Miami International Airport, allowing for connections to other trails. From the intersection of Curtiss Parkway with the Perimeter Trail, the Miami River Trail will continue east along South Royal Poinciana Boulevard, which has been rated as suitable within the *Bike Map*.[2] The development of a roadway facility along South Royal Poinciana Boulevard – serving residences that abut the Miami River – will connect to South River Drive in the vicinity of Le Jeune Road (Northwest 42nd Avenue).

CONSTRAINT

A constraint occurs at the intersection of South River Drive, Northwest 36th Street, Le Jeune Road, and State Road 112. This congested intersection currently precludes the development of a safe intersection crossing that would allow trail users to continue east along South River Drive. This area of conflict requires substantial further investigation to facilitate trail continuity. A solution may be found in the planning for a future State Road 112 and State Road 836 connector. This highway connector is a part of the East-West Corridor Study currently being undertaken under the auspices of the Florida Department of Transportation.[3] Designed to alleviate traffic congestion in the area, this connector should include the allocation of space for a trail within the improved right-of-way of South River Drive.

REGION 7

OPPORTUNITY

The Miami River Trail will connect to the planned Miami Intermodal Center (MIC) and the Gold Coast Trail in the vicinity of Palmer Lake Park and South River Drive. This junction is located immediately east of Miami International Airport. The connection will allow trail users access to the future mass transit facility within the MIC. Additionally, development of Palmer Lake Park as part of the MIC, will offer a rest area / open space for users of the Miami River Trail.[4]

REGION 8

OPPORTUNITY

The Miami River Trail will continue along South River Drive, from the vicinity of the MIC to Northwest 27th Avenue. The development of this facility can be accommodated within the route of the planned East-West Multimodal Corridor. This elevated rail transit system includes a bicycle and pedestrian path within its corridor that roughly parallels South River Drive before turning south in the vicinity of Northwest 27th Avenue. As the planned route of the East-West Corridor turns south, the Miami River Trail will utilize the Northwest 27th Avenue bridge to cross the Miami River and connect to North River Drive.[5]

REGION 9

OPPORTUNITY

The Miami River Trail will utilize North River Drive, from Northwest 27th Avenue to the Civic Center area, east of Northwest 14th Avenue. This portion of North River Drive has been identified as suitable within the *Bike Miami Map* [6] and is scheduled for "Proposed Long-Range Off-Road Bicycle Facilities" within the *Metro-Dade Bicycle Facilities Plan.*[7] This route also will allow for a connection to Gerry Curtiss Park in the vicinity of Northwest 24th Avenue.

REGION 10

OPPORTUNITY

The Miami River Trail will provide an opportunity for a trail connection between the Civic Center area and Downtown Miami. The route of the trail will utilize Northwest 11th Road from the State Road 836 overpass south of the Civic Center area, to Spring Garden Road (Northwest 8th Street). It will continue south along Northwest 7th Avenue to the intersection with North River Drive. Development of this trail facility will allow users the opportunity to visit the historic Spring Garden neighborhood, located between Northwest 11th Road and the Miami River.

CONSTRAINT

A constraint occurs in the portion of the trail that utilizes Northwest 7th Avenue, between Northwest 8th Street and North River Drive. Northwest 7th Avenue is deemed "not suitable" for use within the *Bike Map*.[8] Although a paved five foot sidewalk already exists, the development of an on-road facility or the utilization of signage indicating "Bikes Sharing Roadway" would be required to facilitate trail continuity in this area.

REGION 11

OPPORTUNITY

The portion of the Miami River Trail along North River Drive, from Northwest 7th Avenue to South Miami Avenue, offers trail users access to Lummus Park and the experience of many vistas along the Miami River within this area of downtown Miami. The development of any future riverfront or riverwalk proposals should include non-motorized access within this portion of the Miami River Trail. The trail will connect to the existing riverwalk facility located adjacent to the City of Miami office building, between South Miami Avenue and the Interstate 95 overpass.

REGION 12

OPPORTUNITY

The opportunity exists to connect to the proposed extension of the M-Path in the vicinity of Brickell Avenue and Southeast 4th Street. This two-block portion, between South Miami Avenue and Brickell Avenue, does not currently allow for suitable trail development. The existing vacant land along the north bank of the Miami River could accommodate a trail / riverwalk as part of any new development proposals. An alternate route could accommodate a facility and would allow for a connection to Brickell Avenue. Additionally, the development of a new entrance / exit ramp for Interstate 95 currently being planned by the Florida Department of Transportation, could be designed to accommodate the trail within this highly urbanized area of downtown Miami.

[1] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

[2] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[3] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995).

[4] The Florida Department of Transportation and the Federal Highway Administration. *Excerpt from the Miami Intermodal Center Study: Final Environmental Impact Statement (FEIS) – Bicycle and Pedestrian Facilities at the MIC* (Miami: 22 May 1997) 4.

[5] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995).

[6] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

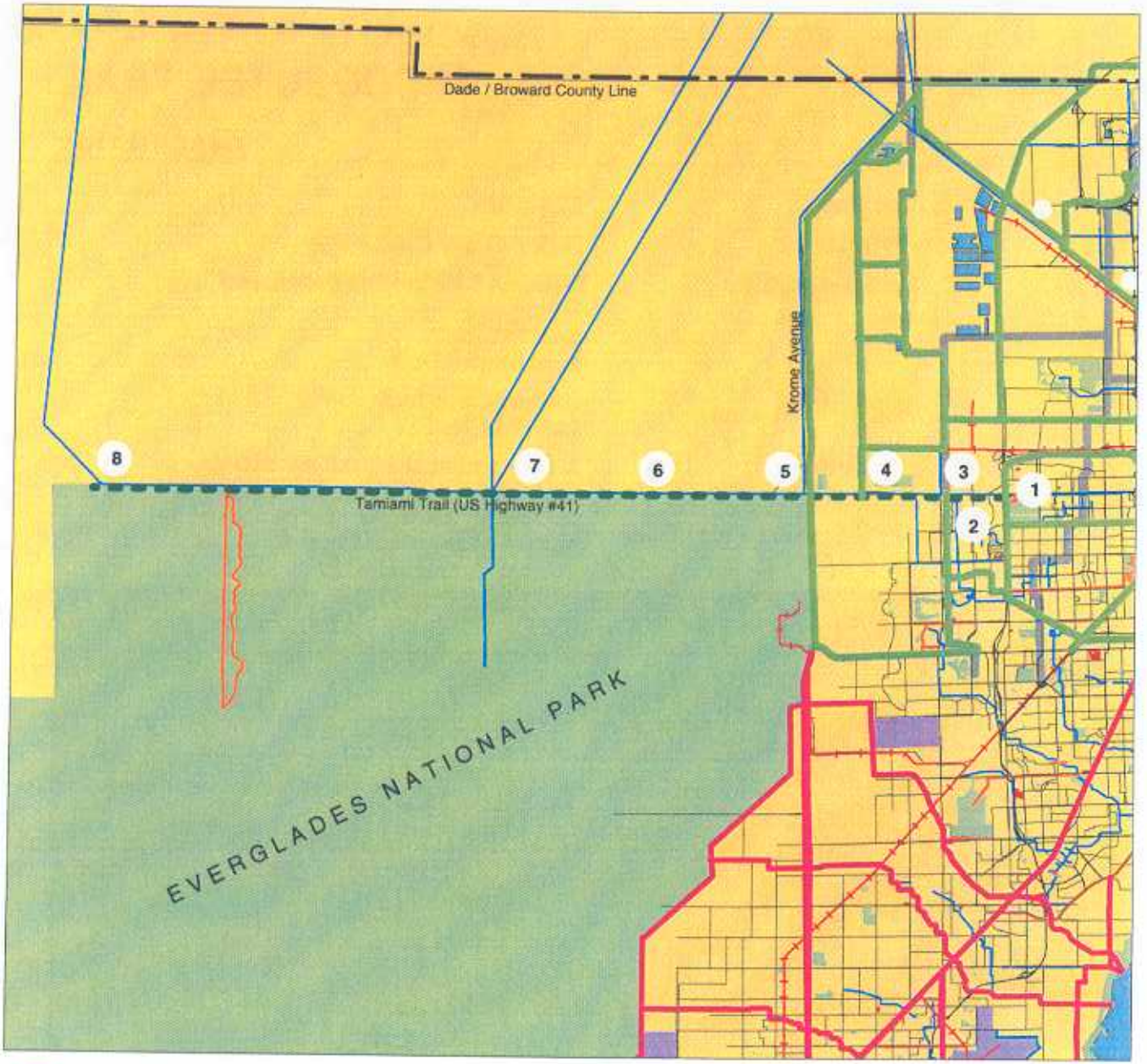
[7] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[8] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

MICCOSUKEE TRAIL

DESCRIPTION

Length:	27.8 miles
West Links:	Dade / Collier County Line
Intersecting Links:	Proposed Trail on West Dade Levees Krome Trail Lake Belt Trail West Kendall Trail
South Links:	Snapper Creek Trail East-West Trail
Objective:	A path within the road right-of-way of Tamiami Trail offering a connection from residential areas to the wetlands in western Miami-Dade County.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
South Dade Greenway Network
Other Proposed Trails
Miccosukee Trail

Miles
0 1 2 3 4

MICCOSUKEE TRAIL

REGION 1

OPPORTUNITY

The opportunity exists to utilize the University Park campus of Florida International University as a trailhead facility for the Miccosukee Trail along US Highway #41 (known also as Tamiami Trail, and Southwest 8th Street). This terminus offers ample open space and connections to other trails including the Snapper Creek, Merrick, and East-West Multimodal Corridor Trails. The trailhead facility will include a connection to the bike path along the north bank of the Tamiami Canal in the City of Sweetwater. This connection point at Southwest 109th Avenue will utilize the designated historic bridge to provide access from City of Sweetwater to the University Park Campus. The most westerly station of the East-West Multimodal Corridor, and the Snapper Creek Trail and Merrick Trail that terminate along Southwest 117th Avenue, will provide trail users access to the Miccosukee Trail from other areas of Dade County. The Miccosukee Trail will occur along the south side of U S Highway #41, and establish access to areas west of the Homestead Extension of the Florida Turnpike (H. E. F. T.).

CONSTRAINT

A constraint occurs with the development of the trailhead facility in the vicinity of the H.E.F.T. The entrance and exit ramps on both sides of the Turnpike necessitate the development of intersection crossings to enable trail users to safely cross these areas.

REGION 2

OPPORTUNITY

The Miccosukee Trail will utilize the existing sidewalk facility along the south side of U S Highway #41, from the H.E.F.T. west to Southwest 137th Avenue. The existing facility will be widened to include a pedestrian sidewalk and bike lanes within the right-of-way of U S Highway #41.

CONSTRAINT

Constraints occur in those locations where the trail is adjacent to commercial properties. Numerous driveway entrances and street crossings require intersection crossings and appropriate signage to ensure the safety of trail users.

REGION 3

OPPORTUNITY

The opportunity exists for a connection to the West Kendall Trail in the vicinity of Southwest 137th Avenue. This connection will allow trail users the opportunity to travel south to the residential areas of west Dade and West Kendall. Additionally, this area will include an intersection crossing of U S Highway #41 to link to the expanding residential development north of the Tamiami Canal.

CONSTRAINT

A constraint occurs as the Miccosukee Trail crosses U S Highway #41 at the intersection of Southwest 137th Avenue. The existing bridge across the canal is insufficient to accommodate

trail development. Bridge modification, or the construction of a separate pedestrian bridge must occur to enable trail users to access areas north of the Tamiami Canal.

REGION 4

OPPORTUNITY

The Miccosukee Trail will utilize the existing state-owned right-of-way along the north bank of the Tamiami Canal from Southwest 137th Avenue to Krome Avenue (Southwest 177th Avenue). This part of the trail will allow trail users to access the southern portion of the Lake Belt Trail at the Miami-Dade / Broward Levee. In addition to the access point at the Miami-Dade / Broward Levee, the Miccosukee Trail will connect to a proposed trailhead location at the Trail Glades Range (see Lake Belt Trail).

REGION 5

OPPORTUNITY

The Miccosukee Trail will intersect with the Krome Trail along Krome Avenue (Southwest 177th Avenue), allowing users the opportunity to travel north or south along Krome Avenue. The Miccosukee Trail will utilize the entrance drive of the Trail Glades Range to connect to an on-road facility that could be developed and pass through the intersection of U S Highway #41 and Krome Avenue. This on-road facility would be required for a distance of approximately one mile. This area allows for a connection to the southern portion of the L-31 canal that parallels Krome Avenue. The northern portion of the L-31 canal is accessible from an existing linear park to which access is gained across a water control structure spanning the Tamiami Canal. This open space is separated from the water control areas to the north by a levee which proceeds in a northeasterly direction before turning north, where it parallels Krome Avenue. The westward extension of the levee is parallel to U S Highway #41 and is located north of a gravel road on the north side of the Tamiami Canal.

REGION 6

OPPORTUNITY

The opportunity exists for the Miccosukee Trail to utilize the existing levee road along the north side of the Tamiami Canal from the area just west of Krome Avenue to its intersection with the L-67A and L-67C canals. As a part of the Miccosukee Trail, the levee separates trail users from vehicular traffic on U S Highway #41 and provides a continuous vantage point from which to view the extensive wetlands of the water conservation areas.

CONSTRAINT

The construction of new flow-ways, as part of the *South Florida Ecosystem Restoration Plan*, may present a conflict to trail continuity. Bridges and walks spanning the flow-ways should be an integral part of planning, design, and construction, and should be designed to accommodate trail users.[1]

REGION 7

OPPORTUNITY

The Miccosukee Trail will connect to the L-67A and L-67C canals that are included as off-road trails as "Additional Opportunities" within the *North Dade Greenways.*

REGION 8

OPPORTUNITY

The opportunity exists to extend the Miccosukee Trail from its junction with the L-67 canal, to Shark River Valley within Everglades National Park. This segment of the trail will utilize the north portion of the right-of-way of U S Highway #41. The right-of-way is of substantial width and can accommodate a trail that will parallel the canal bank and be separated from the roadway. This extension of the Miccosukee Trail will allow users to connect to Shark River Valley, which contains asphalt trails for bicyclists and pedestrians to explore the unique landscape of the area. Additionally, the Miccosukee Trail will continue west of Shark River Valley to a terminus point at the Collier county line. This extension will allow trail users the opportunity to access the levee of the L-28 canal and access the Loop Road area within Everglades National Park.

CONSTRAINT

There are several constraints within this portion of the Miccosukee Trail. One of the constraints involves the location of water control structures that will require the development of on-road facilities where such structures exist. Additionally, a portion of the

Miccosukee Trail will occur within the Miccosukee Indian Reservation, and the construction of this facility will require the approval of the Miccosukee Tribal Council.

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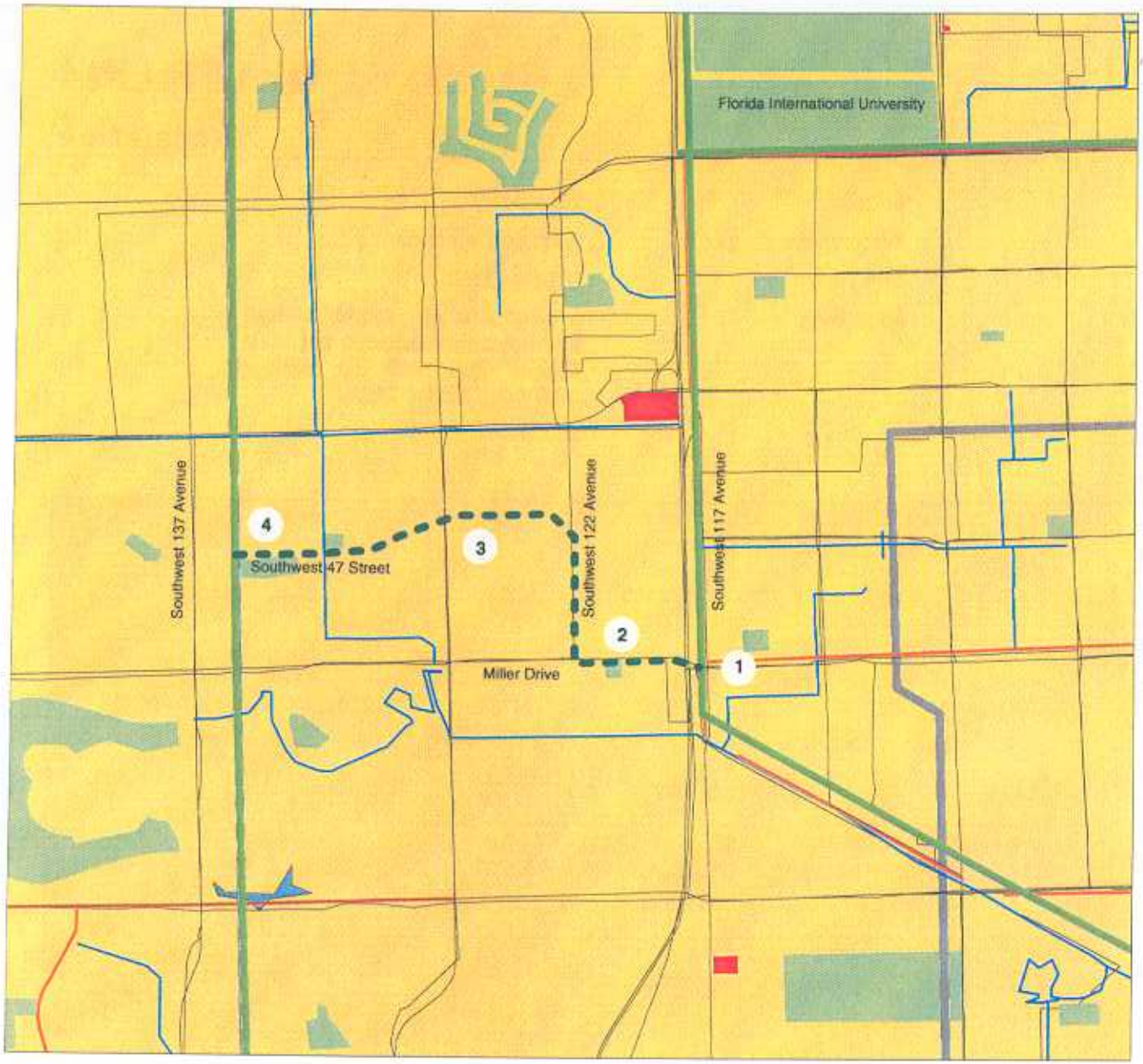
[1] South Florida Water Management District. South Florida Ecosystem Restoration Plan (West Palm Beach, November 1995) 39-57.

MILLER LINK

DESCRIPTION

Length:	2.5 miles
West Links:	West Kendall Trail
East Links:	Snapper Trail
Objective:	A path and an equestrian trail offering a link between the West Kendall Trail and the existing path along Miller Drive.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Miller Link

Miles
0 .1 .2 .3 .4

MILLER LINK

REGION 1

OPPORTUNITY

This terminus of the Miller Link at Southwest 117th Avenue, will connect with the Snapper Creek Trail along the Snapper Creek canal which is adjacent to the Homestead Extension of Florida Turnpike (H.E.F.T.). Trail users may either continue east from this connection using the wide sidewalk facility along Miller Drive, or may continue along the Snapper Creek Trail in either a north or south direction. An improved connection between the area west of the H.E.F.T. and the Snapper Creek Trail will assist equestrian riders in connecting to the Snapper Creek Trail from the area, commonly referred to as "Horse Country". The wide sidewalk facility along the north right-of-way of Snapper Creek Trail is continuous from Southwest 117th Avenue to Southwest 118th Avenue, west of the H.E.F.T. An extension of this facility to Southwest 112th Avenue should be considered for trail development. In an alternate configuration, the south right-of-way – encompassing a five foot pedestrian sidewalk and parallel five foot sod strip – would be minimally suitable as an equestrian trail: this narrow parkway space is continuous beneath the H.E.F.T. overpass. Signage would help define the right-of-way open space as a dedicated equestrian trail.

CONSTRAINT

The development of the wide sidewalk facility along the north right-of-way would require a modification of the existing 5 foot wide sidewalk. The development of the equestrian trail would require modification to the right-of-way open space. These modifications are needed to clearly define the open area of the equestrian trail. Numerous fences abut the space in some areas, helping to define the right-of-way limit. Modifications may include relocation of utility fixtures or other objects such as posts, vegetation, and other objects within the right-of-way.

REGION 2

OPPORTUNITY

This nodal point of the Miller Link occurs near the intersection of Miller Drive and Southwest 122nd Avenue. The area represents a change in the direction of the trail and includes an extension of the wide sidewalk facility and the equestrian trail facility along Miller Drive. The Miller Link will occur along Southwest 122nd Avenue, from Miller Drive to Southwest 47th Street. The intersection at Miller Drive will allow trail users to connect to either of these two facilities along Miller Drive. An extension of the proposed equestrian

trail from Southwest 122nd Avenue to Southwest 127th Avenue will create an east-west route for those riders currently limited to the right-of-ways along Southwest 120th, Southwest 123rd, and Southwest 125th Avenues, south of Miller Drive. Equestrians will utilize this facility to continue east to the Snapper Creek Trail, and north along Southwest 122nd Avenue. The development of the wide sidewalk facility will accommodate bicyclists and pedestrians and connect to Southwest 127th Avenue, which includes existing bike lanes from Miller Drive to Kendall Drive.[1] The development of this half mile segment of the Miller Link along Southwest 122nd Avenue will occur in an area that contains numerous horse ranches and plant nurseries. This trail should occur within the west side of the right-of-way of Southwest 122nd Avenue, as a dedicated equestrian trail facility. The development of bike lanes along the northbound and southbound travel lanes will create a facility that can be extended north of Southwest 47th Street.

REGION 3

OPPORTUNITY

This portion of the Miller Link will occur along Southwest 47th Street between Southwest 122nd Avenue and the West Kendall Trail, located within the FPL easement east of Southwest 137th Avenue. Development of this portion of the Miller Link will allow trail users the opportunity to access the West Kendall Trail form Horse Country, east of Southwest 127th Avenue. The corridor will contain an equestrian trail along the south portion of right-of-way, and improved bicycle facilities along the two lane collector roadway. This segment will pass through residential and agricultural uses, linking to Miller's Pond Park, and connecting to the West Kendall Trail.

CONSTRAINT

The intersection of Southwest 127th Avenue and Southwest 47th Street requires modification to accommodate a trail crossing. These modifications will include traffic calming devices

such as pedestrian crosswalks, to insure the safety of trail users. In some locations, existing right-of-way conditions are not conductive to trail development. Between Southwest 127th Avenue and Southwest 132nd Avenue, the south portion of the right-of-way intersects numerous driveways that hinder the continuity of a trail. Additionally, the location of mailboxes and vegetation currently interfere with the space necessary for the equestrian trail facility. Significant roadway modifications are required to develop this equestrian portion of the Miller Link. On the west side of Southwest 132nd Avenue on-street parking lanes exist adjacent to the sidewalk, and a lack of green space within the right-of-way is apparent. Modifications to this one block segment are required to create a suitable space for the continuation of the equestrian facility.

REGION 4

OPPORTUNITY

This region represents the western terminus of the Miller Link. It occurs in the vicinity of Miller's Pond Park and includes a connection to the West Kendall Trail, which is within the FPL easement two blocks east of Southwest 137th Avenue. This terminus provides the opportunity for trail users to continue north or south along the West Kendall Trail. It provides access to the Miccosukee Trail along U S Highway #41 and connections to the existing bicycle and pedestrian facilities throughout the Kendale Lakes area: the equestrian portion of the Miller Link terminates at this point. The West Kendall Trail includes an equestrian trail as part of its development plans. The proposed bike lanes along Southwest 47th Street will be extended to Southwest 137th Avenue, accommodating those trail users who wish access either to the Miller Link or the West Kendall Trail from residential areas west of Southwest 137th Avenue. Additionally, Miller's Pond Park presents the opportunity for development as a trailhead facility. Its location on the south side of Southwest 47th Street accommodates the equestrian trail within the park's limits, while providing access to parking and rest stop areas by users of both the Miller Link and West Kendall Trail.

CONSTRAINT

The right-of-way adjacent to the park contains a pedestrian sidewalk, parkway strip, and on-street parking lane adjacent to Southwest 147th Street. An improved right-of-way will accommodate the trail and enhance the edge of the park adjacent to the right-of-way.

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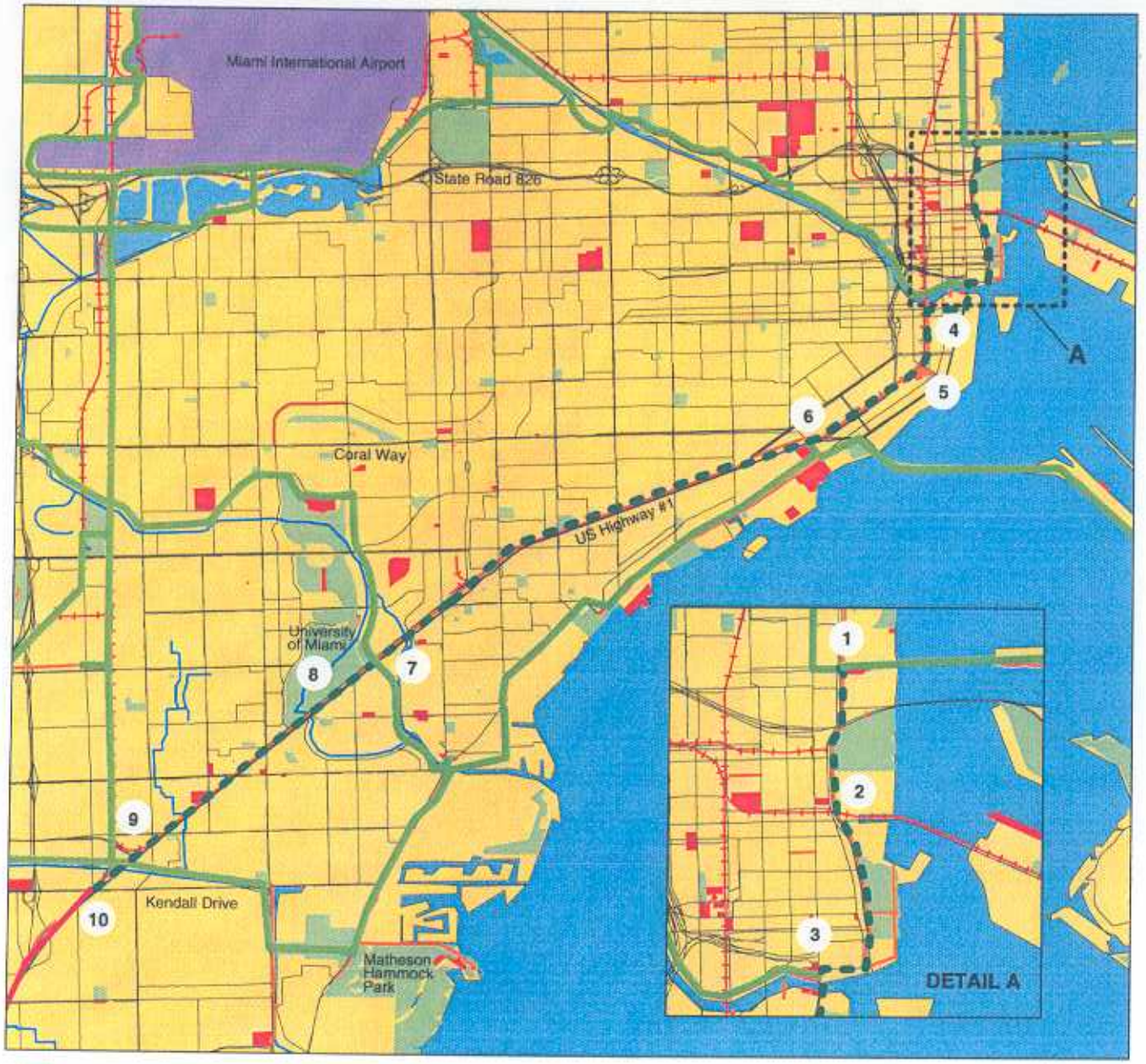
[1] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

M-PATH

DESCRIPTION

Length:	9.9 miles
West Links:	Snapper Creek Trail
	Ludlam Trail
Intersecting Links:	Merrick Trail
East Links:	Miami River Trail
	Flagler Trail
Objective:	Enhancement of existing segmented facility within various road rights-of-way and the Metrorail right-of-way.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
South Dade Greenway Network
Other Proposed Trails
M Path Trail

Miles
0 .2 .4 .6 .8

M-PATH TRAIL

REGION 1

OPPORTUNITY

The northern terminus of the M-Path Trail will link to the Flagler Trail and the Venetian Link in the vicinity of Biscayne Boulevard and Northeast 15th Street. These connections allow trail users to continue north on the Flagler Trail along Northeast 2nd Avenue, or to travel east to Miami Beach and access the Atlantic Trail. The connection point will occur in the Omni area of downtown Miami, and is adjacent to Metromover Stations. The terminus area will be located north of the Performing Arts Center to be located on Biscayne Boulevard.

CONSTRAINT

Constraints include the development of the facility along Biscayne Boulevard which presents a variety of conflicts, and the lack of a substantial open space to serve as a nodal point / rest area.

REGION 2

OPPORTUNITY

The opportunity exists for a connection to various destination points within the downtown Miami area. Development of the M-Path Trail along Biscayne Boulevard will allow trail users access to a range of public projects that include the Performing Arts Center, Bicentennial Park / Maritime Park, and the proposed Miami Arena. Additional points of interest include Bayside Marketplace, and Bayfront Park which will provide users a loop encompassing the bayfront walk along Biscayne Bay. Development of the M-Path Trail in this vicinity will utilize the existing wide sidewalk / promenade along Biscayne Boulevard designed by Roberto Burle Marx.

CONSTRAINT

The constraints associated with the development of the trail result from it's recognition as an important urban design element connecting a number of public facilities along this part of the trail. The diversity of these projects coupled with future private development, necessitates recognition of the trail as an important urban element.

REGION 3

OPPORTUNITY

The M-Path Trail creates the opportunity to link to the Miami River Trail, and to develop a link to the Brickell Financial District. The Miami River Trail will occur along the north bank of the Miami River, from North River Drive to Southeast 4th Street where it will intersect the M-Path Trail at Southeast 2nd Avenue. This point of access will allow trail users the opportunity to travel throughout downtown Miami, in all directions. The southern continuation of the M-Path Trail will utilize the recently reconstructed Brickell Avenue Bridge.

CONSTRAINT

Numerous constraints are involved in the creation of a trail in this area. The lack of ample clearance between the urban streets and pedestrian sidewalks limits the development of a separate trail facility. Additionally, traffic flow is in opposite directions on Southeast 3rd Street and Southeast 4th Street, thereby requiring separate facilities for eastbound and westbound trail users in this area. An enhanced pedestrian sidewalk facility and clearly demarcated bike lanes are the appropriate application within this area. Implementation of public information signage and directional signage will help enhance the pedestrian character of this area. The alignment of the trail and supporting infrastructure must be included within the various planning and redevelopment projects that are being proposed for this area. The M-Path Trail should be included in any future development plans for a riverwalk, Biscayne Boulevard Promenade, or other similar projects that are designed to take full advantage of this culturally significant area of Miami.

REGION 4

OPPORTUNITY

An opportunity exists to link new segments to the existing portions of the M-Path Trail. The existing M-Path Trail terminates at the Miami River, a short distance from Southeast 7th Street. Utilizing Southeast 7th and 8th Streets permits connections to the trail: the use of both streets is required as each supports one-way traffic flow. Development of on-road facilities within these two segments would facilitate connectivity to the Brickell Avenue and the existing M-Path.

CONSTRAINT

Limited clearance impacts the development of on-road facilities and will require street crossings to access the existing trail from both Southeast 7th and 8th Streets.

REGION 5

OPPORTUNITY

Simpson Park can be utilized both as a trailhead facility and as a model for ecological development of the greenway system. Bounded by Southwest 15th Road, Southwest 17th Road, South Miami Avenue, and the Metrorail/M-Path easement, a connector along Southwest 15th Road will link the M-Path Trail to Simpson Park, allowing trail users access to this park/hardwood hammock preserve, and its function as a trailhead facility. An additional opportunity is presented with the use of an existing trail spur at Southwest 15th Road and Bayshore Drive, which will accommodate a bay overlook/scenic vista. Located a short distance from Simpson Park, this area will provide an additional amenity for trail users. Characterized by it's tropical hardwood hammock landscape, Simpson Park is a remnant hammock containing plant species that typically occurred in the area prior to urban development. As such, it should serve as a model for the vegetative enhancement / reforestation of the open space within the Metrorail easement.

REGION 6

OPPORTUNITY

The opportunity exists to connect to the Commodore Trail along Southwest 26th Road. Southwest 26th Road provides a link to the Commodore Trail in the vicinity of the Rickenbacker Causeway entrance. This link will allow trail users to access Virginia Key and Key Biscayne to the east, or Coconut Grove to the south by continuing along the Commodore Trail. A parking facility at the junction of Brickell Avenue and the Rickenbacker Causeway entrance offers a much needed amenity.

CONSTRAINT

The constraints occur mainly with the development of an on-road facility capable of accommodating two-way travel or the use of dual facilities in coordination with traffic flow. Additionally, a heavily-congested area at peak travel exists at the entrance / exit ramp for I-95. An alternate or additional route along South Miami Avenue may better accommodate trail users.

REGION 7

OPPORTUNITY

The opportunity exists to connect the M-Path Trail to the Merrick Trail along Granada Boulevard in Coral Gables. The Merrick Trail will provide a connection to Coral Gables in the vicinity of the University of Miami. It will be an on-road facility that will intersect with the M-Path at the Granada Boulevard intersection. The intersection point will be located within the Metrorail easement between US Highway #1 and Ponce de Leon Boulevard.

CONSTRAINT

The constraints include the development of the intersection crossing at Granada Boulevard, and alignment to the Merrick Trail.

REGION 8

OPPORTUNITY

The opportunity exists to improve the connectivity of the M-Path Trail by completing the missing link between Stanford Drive and Sagua Avenue. This portion of trail was not developed during construction of the Metrorail, due to the positioning of the University Metrorail Station within the easement between U S Highway #1 and Ponce de Leon Boulevard. Development of on-road facilities within Ponce de Leon Boulevard would accommodate trail users in this area.

CONSTRAINT

Constraints involve the development of the on-road facilities within the limited space available. Modification of vehicular lane width and the development of bike lanes within the roadway will likely accommodate trail users.

REGION 9

OPPORTUNITY

The opportunity exists to extend the current M-Path from Ludlam Road to the Dadeland North Metrorail Station. The development of this portion is necessary to link the M-Path Trail with the Dadeland North Metrorail Station, *Bikes-On-Bus* on U S Highway #1 and

Southwest 67th Avenue,[1] and will allow trail users to connect to the Ludlam Trail and the Snapper Creek Trail.

CONSTRAINT

A constraint occurs at the entrance / exit ramp of the Snapper Creek Expressway (State Road 878): the ramp interrupts the continuity of the trail at its intersection with U S Highway #1. Development of an intersection crossing would accommodate trail users safely while insuring desirable vehicular flows within the intersection. An alternative to the development of this portion may be possible with a designated trail facility along Southwest 80th Street. This would provide a link to the Ludlam Trail along Southwest 70th Avenue that would allow trail users safe and direct access to the Dadeland Station retail complex and Dadeland North Metrorail Station.

REGION 10

OPPORTUNITY

The opportunity exists to connect to the Dadeland South Metrorail Station. By completing this link, from the Dadeland North station to the Dadeland South station, trail users can access the South Dade Trail of the *South Dade Greenways Network* (SDGN) at the Dadeland South Metrorail Station. This connection will provide the opportunity for trail users to access the south Miami-Dade area from this east Kendall.

CONSTRAINT

A few minor constraints occur within the Metrorail easement. Existing land uses, such as parking lots, prohibit trail development in some areas. However, minor realignment and design adjustments within these land uses can accommodate the development of the trail along the Metrorail easement.

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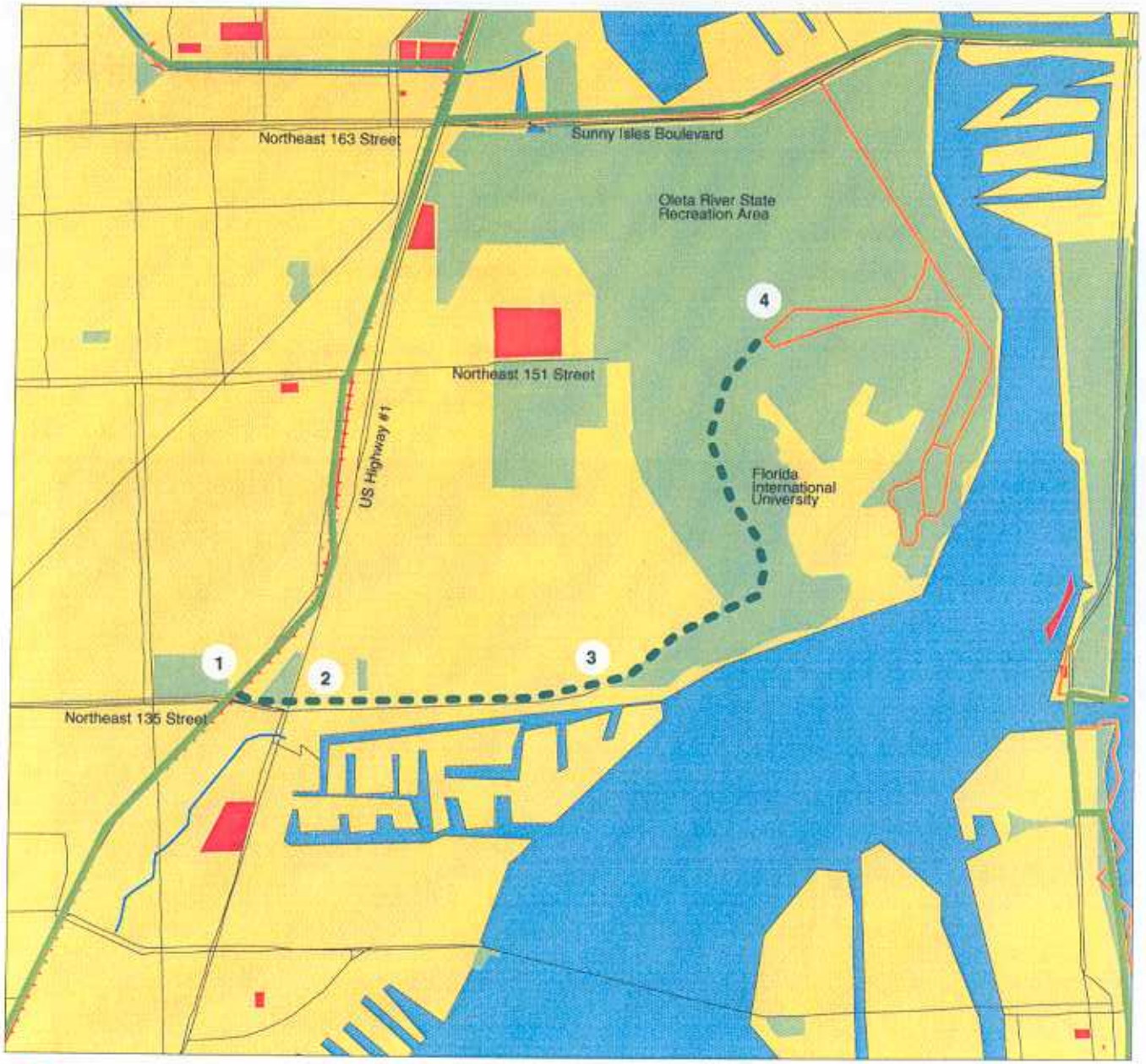
[1] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

OLETA LINK

DESCRIPTION

Length:	2.5 miles
West Links:	Flagler Trail
East Links:	Existing path in Oleta River State Park
Objective:	A greenway occupying the road right-of-way of Northwest 135th Street in North Miami.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Oleta Link

Miles
0 .1 .2 .3 .4

OLETA LINK

REGION 1

OPPORTUNITY

The Oleta Link on Northeast 135th Street offers the opportunity to link to the proposed Flagler Trail occupying the FEC right-of-way in the vicinity of the remnant hammocks in both Enchanted Forest Park and Arch Creek Park. The Flagler Trail will allow an alternate northbound or southbound route for users of the Oleta Link. As a valuable ecological focus, these sites provide habitat for many birds, fish, and small animals. North Dade County contains various patches of land that possess historical ecological value. The Oleta Link presents a valuable travel opportunity for both animal and human activity by linking the remnant patches at Enchanted Forest Park and Arch Creek Park at the west terminus of the trail, with those that remain in Oleta River State Park at the eastern terminus of the trail.

REGION 2

OPPORTUNITY

The Oleta Link offers the opportunity for bicycle and pedestrian access to the segment of Northeast 135th Street located west of Biscayne Boulevard (U S Highway #1). This segment of Northeast 135th Street is deemed "suitable" by the Metro-Dade's Bicycle and Pedestrian Program's *Bike Map*.[1] West of Biscayne Boulevard, Northeast 135th Street creates a link with the dense residential district of condominiums and apartment complexes. A bicycle and pedestrian facility on this dead-end collector road will provide residents with an opportunity to travel throughout North Dade.

CONSTRAINT

Vehicular conflicts may occur as bicyclists and pedestrians attempt to cross Biscayne Boulevard. A six-lane highway in this region with an existing seven-foot median that serves as a typical traffic calming device, the boulevard median provides a protected "waiting zone" for bicyclists and pedestrians. Although an existing traffic control device with a pedestrian crossing is situated at this intersection, it is suggested that further traffic calming initiatives take place on the boulevard. Gateway treatments at intersections with the right-of-way may provide a mental suggestion that potential conflict is imminent. Additionally, various two-lane slow points that will reduce the pavement width on the travel surface along each side of Biscayne Boulevard, will reduce the velocity of vehicles on the roadway and may indirectly reduce the volume of traffic on the boulevard.[2]

REGION 3

OPPORTUNITY

The Oleta Link will provide bicyclists and pedestrians with the opportunity to enter the North Campus of Florida International University. The university occupies the tract of land located south of Northeast 151st Street and north of Northeast 135th Street. Although its main entrance lies on Northeast 151st Street, a service road at the eastern terminus of Northeast 135th Street leads to the campus. This road is suitable for use by bicyclists and pedestrians, but a dedicated striped lane on this corridor will provide a scenic route through dense mangrove forests for visitors to the campus.

CONSTRAINT

The invasion of Australian Pine (*Casuarina equisetifolia*) and Brazilian Pepper (*Schinus terebinthefolius*), both exotic plants, is evident along this service road. The removal of exotics and reforestation with native coastal species in this vicinity will enhance the ecological viability of this nodal patch at the east end of the Oleta Link's greenway corridor.

REGION 4

OPPORTUNITY

The North Campus of Florida International University shares its property line with Oleta River State Recreational Area along Northeast 151st Street. The recreation facilities of Oleta River State Park include existing bicycle and pedestrian corridors as well as shower and restroom facilities, picnic areas, a water activities center, a snack bar, and spectacular vistas of mangroves and other coastal shoreline vegetation. An Oleta Link connection to the existing bicycle and pedestrian facilities within the Park will also provide access to the existing bicycle and pedestrian facilities to the north on Sunny Isles Boulevard (Northeast 163rd Street). The existing corridor on Sunny Isles Boulevard will, in turn, connect users of the Oleta Link to both the Atlantic Trail to the east, and the Flagler Trail to the west.

CONSTRAINT

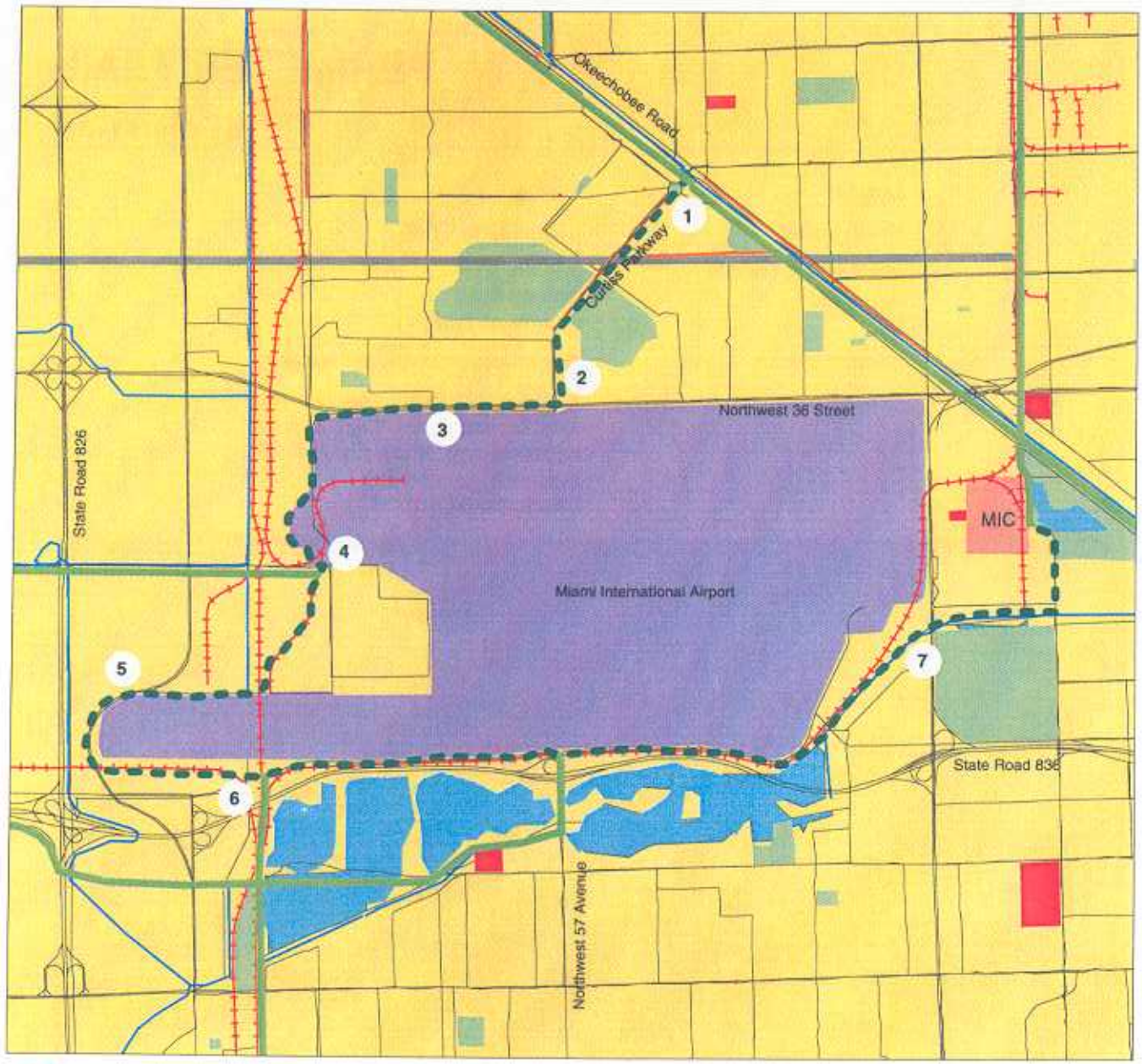
Constraints in the form of opposition to the development of a trail that connects the campus of Florida International University and Oleta River State Park may arise from park and/or university officials. An entrance fee is collected at the Northeast 151st Street gate of the Oleta River State Park. If a secondary entrance to the park is developed at the north end of the university's campus, a separate controlled entry gate will be necessary. Additionally, if travel corridors are intermingled between the park and university, management of any significant increase in visitors to the park and university campus may require greater monitoring.

[1] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).
[2] Miami-Dade Public Works Department. *Street Closure Study Technical Memorandum 3: Traffic Calming Alternatives for Residential Traffic Control* (Miami: Fredric R. Harris, Inc., March 1996) Appendix A.

PERIMETER TRAIL

DESCRIPTION

Length:	9 miles
North Links:	Miami River Trail
Intersecting Links:	Beacon Trail Ludlam Trail East-West Trail
South Links:	The Miami Intermodal Center
Description:	A path occupying the right-of-way of Perimeter Road and the rights-of-way of the FEC and CSX railroads circling Miami International Airport.



PERIMETER TRAIL

REGION 1

OPPORTUNITY

The Perimeter Trail provides an opportunity to connect to the proposed Miami River Trail on the north and south branches of Royal Poinciana Boulevard in the City of Miami Springs. The Perimeter Trail will utilize the existing bicycle and pedestrian path on Curtiss Parkway (Northwest 57th Avenue) to connect to the Miami River Trail at The Circle in Miami Springs.

CONSTRAINT

Vehicular conflicts may occur at The Circle in Miami Springs. The roundabout is a three-lane road with five radiating roads offering alternate routes to various locations in Miami Springs. The central focus of The Circle is a public park and plaza equipped with a gazebo for the residents. Holiday festivals are frequently held in this plaza even though there is no direct pedestrian link to the plaza: pedestrians must cross the three lane road in order to reach the plaza. Signage is posted around the perimeter of the plaza identifying a vehicular speed limit of 20 miles per hour. Although this traffic-calming device is implemented, the Perimeter Trail will follow the outer rim of The Circle, occupying the crosswalks that are located at the intersections of the radiating roads. This will allow Miami River Trail users to connect to the Perimeter Trail by traveling around The Circle in Miami Springs and, ultimately, connecting to the existing bicycle and pedestrian path on Curtiss Parkway.

REGION 2

OPPORTUNITY

The Perimeter Trail offers the opportunity to link the existing path on Curtiss Parkway to the Perimeter Road at the Miami International Airport. This would entail an extension of the existing bicycle and pedestrian path on Curtiss Parkway from the Miami Springs Golf Course south to Perimeter Road in the vicinity of Northwest 36th Street.

CONSTRAINT

The existing bicycle and pedestrian path along Curtiss Parkway terminates at the parking lot of the golf course. This is the result of a change in road right-of-way south of the parking lot, that converts from a four-lane road with a central 100 foot median, to a four-lane road with a variable median from three feet to six feet in width. Therefore, Perimeter Trail must employ the existing sidewalks on Curtiss Parkway for pedestrian use. Additionally, a dedicated lane located on Curtiss Parkway south of the Miami Springs Golf Course will provide access to Perimeter Road for bicyclists. Vehicular conflicts occur at the intersection of Northwest 36th Street and the proposed Perimeter Trail on Curtiss Parkway. A traffic light at this intersection provides passage for bicyclists and pedestrians to Perimeter Road. Additional traffic calming devices that already exist at this intersection include the raised

medians along Curtiss Parkway and Northwest 36th Street that – according to a *Street Closure Study* by the Miami-Dade Public Works Department – provide refuge for pedestrians.[1]

REGION 3

OPPORTUNITY

The Perimeter Trail offers the opportunity to provide within the road and railroad rights-of-way around the perimeter of the Miami International Airport, a bicycle and pedestrian greenway for use by airport and industrial park employees, adjacent residents, and visiting tourists.

CONSTRAINT

Recent beautification projects within the road rights-of-way at the north end of Perimeter Road do not offer pedestrian facilities for either employees of or visitors to the airport area. In some sections, the right-of-way of Perimeter Road in combination with parallel railway easements total more than 100 feet of accessible open space. New landscaping for sound attenuation walls in the road medians and along the airport property line at the north end of the airport do not provide bicycle and pedestrian facilities. A proposed path within these newly landscaped areas will create access for airport employees to the restaurants and fast food facilities along Northwest 36th Street.

REGION 4

OPPORTUNITY

The Perimeter Trail offers the opportunity to link to the proposed Beacon Trail located on Northwest 25th Street. The Perimeter Trail will also provide bicycle and pedestrian access to the international cargo bays and warehouses located on the western fringe of Miami International Airport. Recent expansion of Miami International Airport has included the development of warehouses that service international and domestic air and freight cargo companies. The Miami-Dade County Aviation Department – in conjunction with the Florida Department of Transportation – is currently constructing new roads to control the anticipated future traffic within the western portion of the Miami International Airport. These newly constructed roads include a connection to Northwest 25th Street, allowing westward travel to the industrial regions of west Dade. Additionally, a connection to Metro-

Dade Transit Agency's Bikes-On-Bus program is located on Milam Dairy Road (Northwest 72nd Avenue).[2]

CONSTRAINT

A continuous FEC right-of-way, ranging from 50 feet to 100 feet in width, is suitable to accommodate the Perimeter Trail. Constraints may occur as this railway crosses Perimeter Road in two locations, creating vehicular conflicts as Perimeter Trail users cross the two to four lane roads. Traffic calming initiatives such as raised medians, border landscaping, two-lane slow points, chokers, and semi-diverters should be considered for implementation as they will abate potential conflicts with vehicles at these crossings.[3]

REGION 5

OPPORTUNITY

As the FEC right-of-way enters airport property at runway 9-Right, the approaching aircraft provide a visual element of interest as the Perimeter Trail intersects Northwest 16th Street. The Perimeter Trail provides the opportunity to circumnavigate runway 9-Right, permitting bicycle and pedestrian passage to the southern regions of Miami International Airport.

CONSTRAINT

Because the FEC right-of-way enters the airport at Northwest 16th Street – a prohibited entry zone – the Perimeter Trail must continue along the road easement of Perimeter Road. A thirty-foot right-of-way exists along the segment of Perimeter Road that is south of Northwest 16th Street, and an enhanced greenway along its length will create a favorable non-motorized transportation corridor for airport employees.

REGION 6

OPPORTUNITY

Existing open areas at the junction of the Ludlam Trail at the FEC railway corridor south of Miami International Airport and the Perimeter Trail create the opportunity for a public park from which to view approaching and departing aircraft. A highly industrialized area envelops the airport, and recent statistics indicate a dramatic increase in employment opportunities at this facility, and in associated commercial zones west of MIA.[4] Perimeter Road offers an alternate east-west vehicular transportation route as opposed to the frequently congested State Road 836 corridor. Comestible vendors occupy the open niche south of MIA,

offering snacks to those viewing aircraft during work breaks and at lunch time. A public park in this open area will provide visitors with amenities such as picnic tables, restrooms, vehicular parking facilities, and vending areas. Canopy trees will create a cooling effect in a region of sparse vegetation.

CONSTRAINT

Conflicts may occur in the development of a public park adjacent to the airport's boundaries, as airport planners caution that park plantings must be considered with great care.[5] Additional constraints occur because users of the Perimeter Trail must cross Perimeter Road to enter the park. Perimeter Trail occupies the CSX Transportation right-of-way to the south, while the proposed site for the park is located to the north of Perimeter Road. Because the park will serve as a trailhead for both the Perimeter Trail and the Ludlam Trail, the implementation of a traffic control device will provide a crosswalk for bicycles and pedestrians.

REGION 7

OPPORTUNITY

The Perimeter Trail offers the opportunity to travel eastward to Melreese Golf Course and the residential communities of Fountainebleu, Flagami, and Grapeland Heights.

CONSTRAINT

Constraints occur as the CSX Transportation right-of-way enters areas of controlled access at the southeast quadrant of Miami International Airport. The airport's long-term "park-and-ride" lot is located just north of Glide Angle Lake at Northwest 14th Street. The Tamiami Canal parallels the CSX right-of-way at Tamiami Canal Drive. The proposed Perimeter Trail will occupy the road easement along Northwest 14th Street and connect to Tamiami Canal Drive. The Perimeter Trail will subsequently follow the canal in an eastward course to Northwest 20th Street, located north of the Melreese Golf Course.

REGION 8

OPPORTUNITY

The Perimeter Trail provides access to the proposed Miami Intermodal Center (MIC). The MIC is being designed as an intermodal project providing connections to other existing and proposed transportation modes within Dade County's metropolitan transit system. The proposed Perimeter Trail will deviate to the north at Northwest 37th Avenue in order to enter the MIC. The *Metro-Dade Bicycle Facilities Plan* has recognized Northwest 37th Avenue as a "proposed long-range on-road bicycle facility".[6] Additional proposals have yielded designs for pedestrian corridors on both Northwest 21st Street and Northwest 24th Street.[7] The *North Dade Greenways* study proposes the enhancement and expansion of a park located east of the MIC that would encompass Palmer Lake, serving as a trailhead for both the Perimeter Trail and the Gold Coast Trail.

[1] Metro-Dade Public Works Department. *Street Closure Study Technical Memorandum 3: Traffic Calming Alternatives for Residential Traffic Control* (Miami: Fredric R. Harris, Inc. March 1996) 9.

[2] Metro-Dade Transit Agency. *Bikes-On-Bus / Service Delivery in Dade County: Suitability and Feasibility* (Miami: Metropolitan Planning Organization, April 1995).

[3] *Ibid.*, Appendix A.

[4] The Florida Department of Transportation and the Federal Highway Administration. *East-West Multimodal Corridor Study: Draft Environmental Impact Statement / Major Investment Study* (Miami: December 1995) 3.0.

[5] Sunil Harmon, telephone conversation with Acting Chief of Planning, Metro-Dade Aviation Department, 18 October 1997.

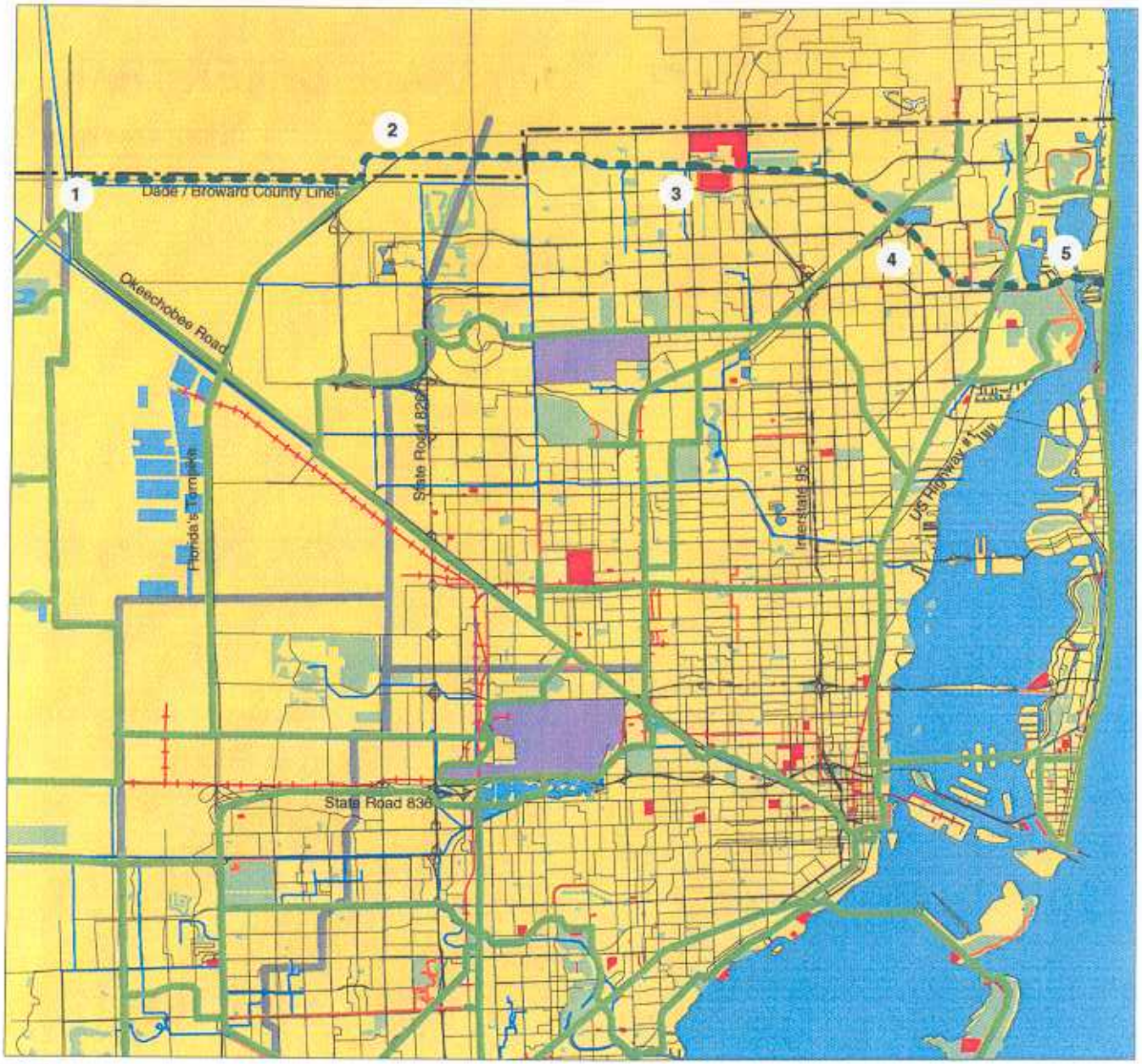
[6] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[7] The Florida Department of Transportation and the Federal Highway Administration. *Excerpt from Miami Intermodal Center Study: Final Environmental Impact Statement (FEIS) – Bicycle and Pedestrian Facilities at the MIC* (Miami: 22 May 1997) 4.

SNAKE CREEK TRAIL

DESCRIPTION

Length:	18.6 miles
West Links:	Krome Trail Miami River Trail
Intersecting Links:	Turnpike Trail Gold Coast Trail
East Links:	Flagler Trail
Objective:	A non-motorized multi-use path occupying the right-of-way of the Snake Creek Canal.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Snake Creek Trail
Study Area Boundary

Miles
0 .5 1 1.5 2

SNAKE CREEK TRAIL

REGION 1

OPPORTUNITY

The Snake Creek Trail will occupy the right-of-way of the Snake Creek Canal, at the northern boundary of Dade County. It will link segmented paths that currently exist within this right-of-way. The right-of-way ranges from one hundred to one-hundred fifty feet in width, for the length of the right-of-way. Although portions of the north bank of the Snake Creek Canal are situated at the southern limit of Broward County, it is suggested that bicycle and pedestrian paths located on both the north and south banks be developed. The western terminus of the Snake Creek Trail will link the Miami River Trail and the Krome Trail. The latter connection will in turn, offer the opportunity to link to the Lake Belt Trail located within the proposed Lake Belt Recreational Area.

CONSTRAINT

Broward County's "10 Year Horizon Bicycle Facility Network" does not recommend the development of a bicycle and pedestrian facility along the Snake Creek Canal.[1] A corridor nineteen miles in length, the Snake Creel Canal riparian corridor is well suited to development as a greenway. A direct link to the Miami River Trail will require a pedestrian bridge across the Snake Creek Canal. This will create for users a connection of the north bank greenway to the south bank greenway. The south bank's greenway will, in turn, connect to the Miami River Trail.

REGION 2

OPPORTUNITY

The Snake Creek Trail will offer a bicycle and pedestrian link to the proposed Turnpike Trail, which will provide a southbound connection to Miami Lakes. It will also offer the opportunity to travel further south to the commercial zones west of the Miami International Area.

CONSTRAINT

In this region, the Snake Creek Canal bends north and east into Broward County. Although this portion of the trail extends beyond the boundaries of the *North Dade Greenways* study area, the inclusion of this segment – located between Northwest 87th Avenue and Northwest 57th Avenue – is vital to the continuity of the Snake Creek Trail. A pedestrian bridge is required at the junction of the Snake Creek Trail and the Turnpike Trail, and an elevated

bridge traversing the Snake Creek Canal is required for north bank and south bank access. This bridge will allow direct link to the Turnpike Trail.

REGION 3

OPPORTUNITY

The Snake Creek Trail will link to the existing bicycle and pedestrian loop around the Calder Race Track at Northwest 7th Avenue. This existing facility is located in the residential neighborhoods of Carol City and Norland. In addition to offering a non-motorized travel opportunity for residents of the area, the Snake Creek Trail and the existing facility will provide a transportation amenity to Pro Player Stadium and the North Dade Golf Course and Country Club.

CONSTRAINT

The south bank of the Snake Creek Canal between Miami Gardens Drive and Northeast 169th Street is reduced to approximately two feet due to the residences that abut the canal in this vicinity. It is suggested that South Glades Drive, a local road that parallels the canal, serve as an alternate route for the southern portion of the Snake Creek Trail in this region.

REGION 4

OPPORTUNITY

The opportunity exists to extend the present segment of the bicycle and pedestrian facility along the Snake Creek Canal at Northeast 2nd Avenue. The Snake Creek Trail will also create a link to the proposed Gold Coast Trail. An existing pedestrian bridge at Miami Drive in North Miami Beach provides access to retail and civic facilities north and south of the Snake Creek Canal. This connection provides Snake Creek Trail users an alternate opportunity to link to the northwest areas of North Miami Beach and Golden Beach, and to the southwest areas of Uleta, Biscayne Gardens, and Opa-Locka.

CONSTRAINT

This existing segment of the Snake Creek Trail is sparsely vegetated. Enhanced reforestation along this corridor with native riparian species will ameliorate the scenic value of the greenway while providing valuable habitat for native bird and fish species. At the CSX right-of-way (Gold Coast Trail), a barrier to continuous bicycle travel occurs at the junction of the existing portions of the Snake Creek Trail and Interstate 95. A change in elevation along the right-of-way containing the path resulted in construction of steps under the Interstate. Either the reconfiguration of the path, removal of these existing steps and the addition of ramps – or the alternative of its alignment along local roads – is suggested.

REGION 5

OPPORTUNITY

The terminus of the Snake Creek Trail at the junction of the proposed Flagler Trail and the existing facility on Sunny Isles Boulevard (Northeast 163rd Street) creates travel opportunities along the FEC right-of-way. This will provide northbound access to attractors such as the Aventura Mall and its surrounding commercial region, Greynolds Park, and the Spanish Monastery. To the south, this linkage will provide a non-motorized travel opportunity to both the North Campus of Florida International University and Oleta River State Recreation Area.

CONSTRAINT

As the Snake Creek Canal enters the eastern portions of North Dade County, its right-of-way becomes overrun with a variety of exotic and invasive flora. The removal of these exotics will offer a forty-foot easement well-suited to a bicycle and pedestrian corridor.

[1] Broward County Metropolitan Planning Organization. *Broward County Bicycle Facilities Network Plan* (Ft. Lauderdale: Broward County, June 199) 3-19.

SNAPPER CREEK TRAIL

DESCRIPTION

Length:	10.5 miles
West Links:	Miccosukee Trail
Intersecting Links:	Merrick Trail Miller Link Ludlam Trail M-Path Trail
East Links:	Commodore Trail
Objective:	A bicycle and pedestrian path that occupies both Snapper Creek Canal and various road rights-of-way where required.

SNAPPER CREEK TRAIL

REGION 1

OPPORTUNITY

The Snapper Creek Trail offers the opportunity for a trailhead facility at Dante Fascell Park, a destination point at the intersection of North Kendall Drive (Southwest 88th Street) and Red Road (Southwest 57th Avenue). It is ideally situated to provide access to numerous points of interest within the immediate vicinity, allowing connection to the Matheson Hammock Nursery, and access to the Commodore Trail along Old Cutler Road at Matheson Hammock Park. The City of South Miami's commercial district is one-mile north of the proposed trailhead, and is accessible by utilizing Red Road. The City of South Miami's Bikeway Plan also recommends consideration of Southwest 58th Avenue as a suitable corridor.

CONSTRAINT

Trail development conflicts may occur within the canal right-of-way between Ludlam Road (Southwest 67th Avenue) and Dante Fascell Park: the alignment of this portion of trail will occur behind residences abutting the canal. A possible solution may be to identify parallel east-west roadways as alternate routes to accommodate a trail link between Ludlam Road and Dante Fascell Park.

REGION 2

OPPORTUNITY

The Snapper Creek Trail offers the opportunity to create an intermodal connection at the Dadeland North Metrorail Station. This connection will provide user access to Metrorail. Additionally, this area allows access to the southern terminus of the Ludlam Trail and will include a connection to the proposed extension of the M-Path Trail.

CONSTRAINT

Constraints include a trail crossing at South Dixie Highway (U S Highway #1). An existing pedestrian crosswalk and signal light

occurs at Southwest 68th Court, and could be utilized to accommodate trail users. Enhancement to the existing median and other traffic calming initiatives will enhance bicyclist / pedestrian safety within this intersection. Additional constraints involve the development of the trail within the station area, and its alignment with the Ludlam Trail, the M-Path Trail, and the westward extension of the Snapper Creek Trail.

REGION 3

OPPORTUNITY

The development of the trail facility along the north bank of the Snapper Creek Canal between the Dadeland North Metrorail Station and the Palmetto Expressway (State Road 826), will allow users to access Dadeland Mall by utilizing an existing pedestrian bridge across the canal. Land use adjacent to the trail is apartments, and residents will be able to easily access the trail from the surrounding common areas of these apartment complexes.

CONSTRAINT

A constraint occurs as the Palmetto Expressway crosses the Snapper Creek Canal. Recent reconstruction of the Expressway failed to provide suitable horizontal and vertical clearance for a trail beneath the Expressway overpass. Adequate open space at the east and west of the Expressway exists for development of pedestrian ramps and a bridge required to provide the necessary vertical clearance over the Expressway. An alternative solution would be to utilize existing roadways as links, connecting to either North Kendall Drive or Sunset Drive, to bypass the Expressway.

REGION 4

OPPORTUNITY

The Snapper Creek Trail connects to the Ludlam Trail, and accesses a trailhead facility at the Boy's & Girl's Club of Miami site on North Kendall Drive (Southwest 88th Street), just east of Southwest 97th Avenue. The Snapper Creek Trail intersects the west branch of Ludlam Trail along the CSX right-of-way, in the vicinity of State Road 874. Additionally, access to the Boy's and Girl's Club park can be accomplished with a pedestrian bridge across the canal.

CONSTRAINT

A constraint occurs as State Road 874 crosses the canal. In this vicinity, adequate clearance does not allow for trail development beneath the expressway overpass. The proximity of residences to both the canal easement and State Road 874 severely limits the suitability of a pedestrian overpass, such as that proposed for the Palmetto Expressway. An alternate solution would be to utilize the proposed pedestrian bridge across the Snapper Creek Canal. This would access the site of the Boy's and Girl's Club, and North Kendall Drive. This route allows for trail users to travel along North Kendall Drive to the terminus of the Ludlam Trail along the west side of State Road 874. From this point, trail users can travel north along the Ludlam Trail, a relatively short distance, until they reach the Snapper Creek Trail.

REGION 5

OPPORTUNITY

The Snapper Creek Trail offers the opportunity to connect to Sunset Drive (Southwest 72nd Street) and Southwest 107th Avenue. An at-grade crossing will be developed for trail users to cross Sunset Drive. The wide sidewalk facilities presently existing along Sunset Drive allow for connections to surrounding residential and commercial areas. Trail users can access Kendall Indian Hammocks Park, located one-half mile south of Sunset Drive, on Southwest 107th Avenue.

CONSTRAINT

Constraints to the construction of the Snapper Creek Trail include the development of improved bicycle and pedestrian facilities along Southwest 107th Avenue.

REGION 6

OPPORTUNITY

The Snapper Creek Trail offers the opportunity to enhance the existing trail facility between Southwest 107th Avenue and Southwest 117th Avenue. This two-mile portion of the Snapper Creek Trail includes an existing asphalt path / vita course as a part of a linear open space park donated by the South Florida Water Management District. This linear park would be further enhanced through the development of the Snapper Creek Trail. The widening of the existing asphalt path will accommodate a variety of users, and the existing sparse vegetation will be enhanced with species approved by the South Florida Water Management District that are conducive to the creation of a native ecological corridor.

CONSTRAINT

Constraints include a required pedestrian bridge across a small drainage canal and the development of the trail facility within a two-block gap of the existing trail.

REGION 7

OPPORTUNITY

The Snapper Creek Trail provides an opportunity for a greenway enhancement of the existing bike path along Southwest 117th Avenue. This portion of the Snapper Creek Trail occurs in an open space area bordered by Southwest 117th Avenue, the

Snapper Creek Canal, and the Homestead Extension of Florida's Turnpike (H. E. F. T.). The enhancement requires widening of the existing asphalt bike path and other facility improvements, and vegetative enhancement to accommodate native animal species and to enhance the general environmental quality of the area. This area also includes a connection to the Miller Link of the West Kendall Trail.

CONSTRAINT

Constraints occur at the intersection of Bird Road (Southwest 40th Street). The existing facility crosses Southwest 117th Avenue before terminating at Bird Road. Facility development will occur along the east side of Southwest 117th Avenue from Bird Road to the University Park Campus of Florida International University. This area contains numerous driveway entries that will impact the development of a trail.

REGION 8

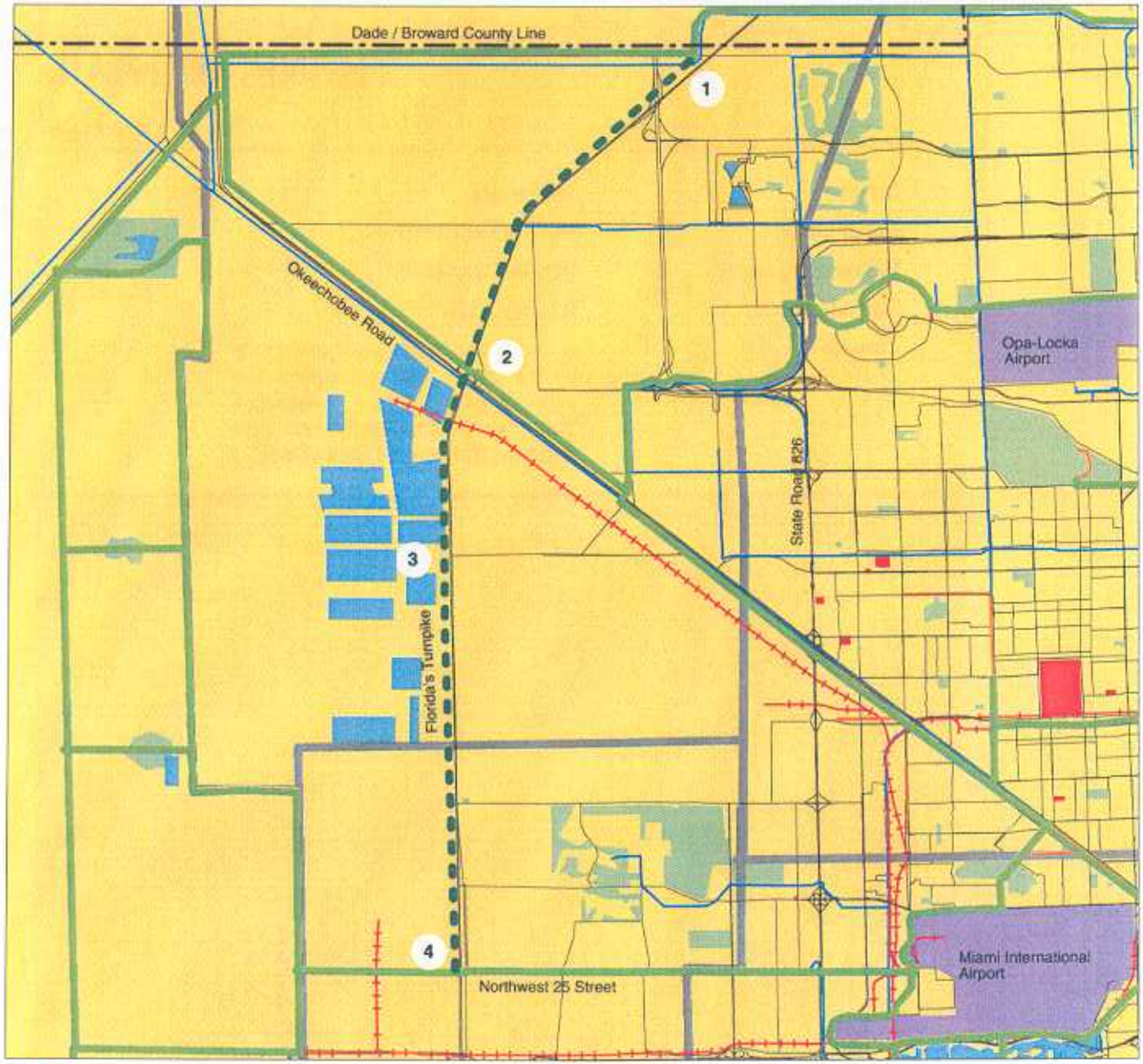
OPPORTUNITY

The Snapper Creek Trail offers the opportunity for an intermodal connection and trailhead facility at the University Park Campus of Florida International University. The western portion of the University Park Campus is the site of the terminus of the proposed East-West Multimodal Corridor. This facility will be linked to the Snapper Creek Trail, the Miccosukee Link, and the Merrick Trail. It will include facility development along Southwest 117th Avenue in the vicinity of Tamiami Park and the entrance to the multimodal center along Southwest 17th Street, within the University Park campus of Florida International University.

TURNPIKE TRAIL

DESCRIPTION

Length:	13.8 miles
North Links:	Snake Creek Trail
Intersecting Links:	Miami River Trail
South Links:	Beacon Trail
Objective:	A multi-use path and greenway buffer zone that occupies the right-of-way of Florida's Turnpike from Northwest 25th Street to the Snake Creek Canal.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Turnpike Trail

Miles
0 .2 .4 .6 .8

TURNPIKE TRAIL

REGION 1

OPPORTUNITY

The Turnpike Trail offers the opportunity to develop a non-motorized transportation route along the west portion of Florida's Turnpike. This opportunity will provide a link between the proposed Snake Creek Trail at the Miami-Dade / Broward county line and the proposed Beacon Trail at Miami International Airport. The Turnpike Trail corridor is located in a highly sensitive ecological area. Occupying the western fringes of urban development in Miami-Dade County, the greenway parallels Florida's Turnpike and will serve as a buffer zone to the urban sprawl that is endangering the fragile wetlands to the west. Furthermore, as recognized in Dade County's *Open Space Master Plan* of 1969, expressway easements offer the opportunity to create linear open spaces in an urban setting. "Expressways and major arterials carry thousands of people daily throughout the metropolitan area... Expressways are often physical barriers that divide neighborhoods" and, therefore, "should be given special landscaping and design consideration in a beautification program." The greenways concept along the Turnpike was recognized twenty-eight years ago by Miami-Dade County as possessing the potential to enhance "visual enjoyment and recreational opportunities."[1] Indeed, the successful development and use of recreational facilities and amenities beneath and immediately adjacent to high speed vehicular corridors within many urban areas establishes the precedent for this proposal.

CONSTRAINT

Situated parallel to a major thoroughfare, the Turnpike Trail may encounter opposition in its planning stages. Although the width of the area west of the paved roadbed surpasses one-hundred feet, vehicle velocities within the corridor require the development of a combined planting-structure buffer between the vehicle travel lanes and the proposed path. Additional vehicular conflicts occur as the Turnpike Trail approaches the exit and entrance ramps of

Florida's Turnpike. Ramps at Interstate 75, Okeechobee Road, and Northwest 41st Street pose unique challenges. As the proposed path and associated greenway arrive at an intersection with an exit or entrance ramp, it is suggested that the paved path parallel the ramp and terminate at the traffic control device that is located at grade, at the terminus of each ramp. This traffic control device must contain a demarcated crosswalk for bicyclists and pedestrians traversing its corridor. At this juncture, the path would continue with the flow of vehicular traffic on an entrance ramp right-of-way to join the greenway corridor that continues within the one-hundred foot wide west portion of the Turnpike right-of-way.

REGION 2

OPPORTUNITY

The Turnpike Trail will offer the opportunity to link to the proposed Miami River Trail. This will allow Turnpike Trail users the opportunity to travel northwest, to the future Lake Belt Recreational Area, or southeast to downtown Miami.

CONSTRAINT

Florida's Turnpike is an elevated structure over the Miami River Trail and its parallel roadway, Okeechobee Road. Because the right-of-way width of the Turnpike diminishes in this region, a separate elevated structure for bicyclists and pedestrians is needed to traverse the Miami River and Okeechobee Road. Such an elevated structure will offer spectacular vistas southwest into the Lake Belt Recreational Area.

REGION 3

OPPORTUNITY

The Turnpike Trail will enter the future Lake Belt Recreational Area. South of Okeechobee Road and north of Northwest 25th Street, the Turnpike Trail occupies the at-grade right-of-way of Florida's Turnpike located west of Miami-Dade County's Year 2050 Urban Development Boundary. The creation of a greenway that manifests the qualities of a reforested wetland, bordering significant urban growth will create a desirable ecological buffer zone. Local and state environmental officials have recognized the opportunity to create a matrix in which greenway corridors and riparian patches serve as both habitat and transportation routes for fauna within the Lake Belt region.[2] The addition of a greenway along the Turnpike corridor will extend such creative implementation to areas north of the current Lake Belt Study Area. This in turn, will connect to additional greenway trails that will provide species transport corridors throughout Miami-Dade County.

REGION 4

OPPORTUNITY

The Turnpike Trail offers the opportunity to connect to the proposed Beacon Trail. The Beacon Trail occupies the south canal bank on Northwest 25th Street. A connection to the Beacon Trail will allow a direct transition into the Lake Belt Recreational Area to the west, as well as a link to the Miami International Airport cargo area to the east. This junction will link residents of the communities of Medley, Doral, and Airport West to employment opportunities present at the Miami International Airport and surrounding areas.

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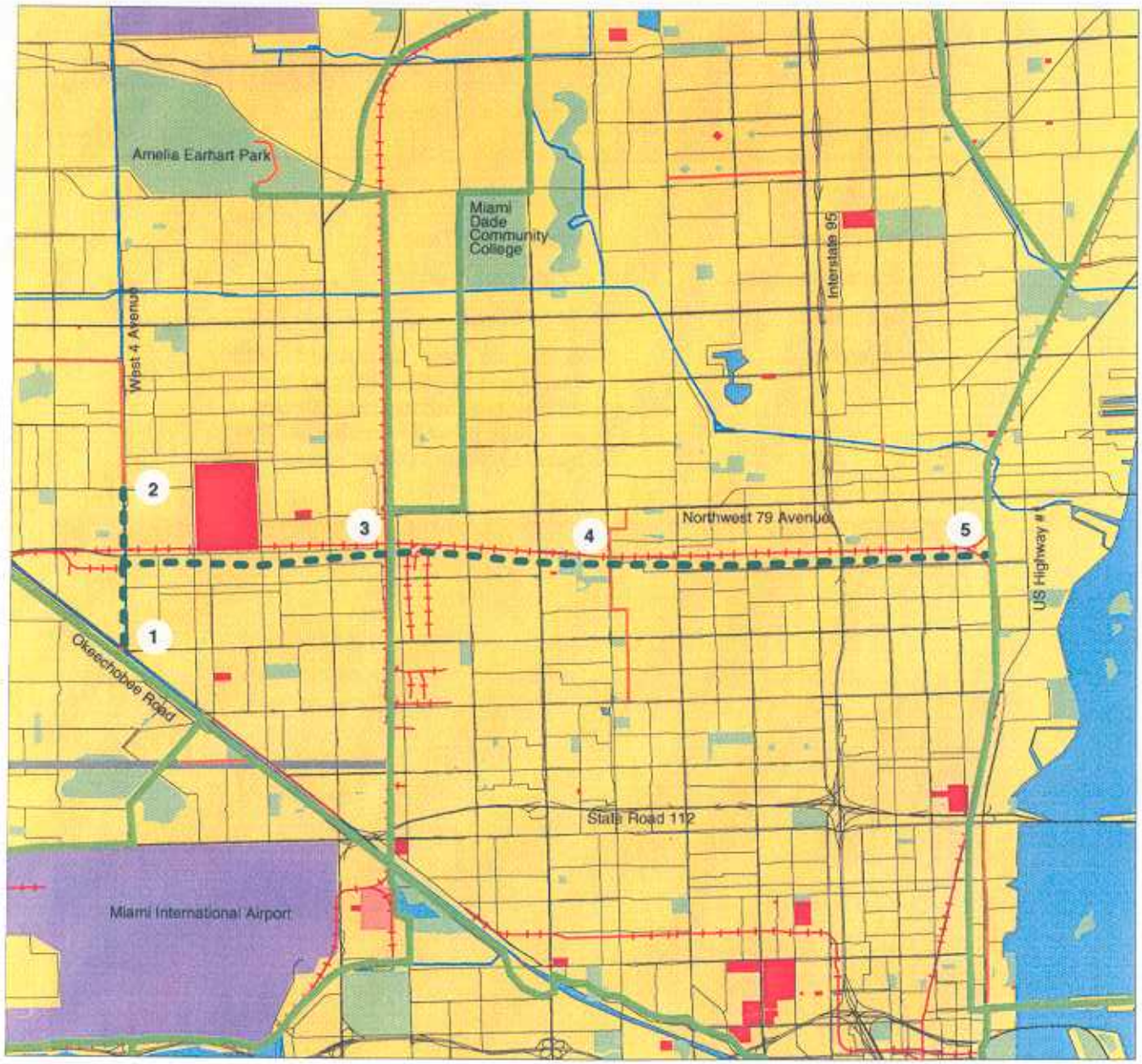
[1] Metropolitan Dade County Planning Department and Metropolitan Dade County Parks and Recreation Department. *Open Space and Recreation: Proposed Master Plan for Dade County, Florida* (Miami: Dade County, February 1969).

[2] South Florida Water Management District. *Northwest Dade County Freshwater Lake Belt Plan: Making Wholes, Not Just Holes* (Miami: SFWMD Visual Communications Division, 1997).

UNITY TRAIL

DESCRIPTION

Length:	7.5 miles
West Links:	Miami River Trail
Intersecting Links:	Gold Coast Trail
East Links:	Flagler Trail
Objective:	A bicycle and pedestrian path occupying the FEC Railroad right-of-way parallel to East 25th Street in Hialeah and Northwest 73rd Street in Miami-Dade County.


Amelia Earhart Park
Miami Dade Community College
West 4 Avenue
Interstate 95
Northwest 79 Avenue
US Highway #
Okeechobee Road
State Road 112
Miami International Airport
1
2
3
4
5
Points of Interest
Airports
Parks and Greenways
Miami Intermodal Center Site
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Unity Trail
Miles
0 .2 .4 .6 .8

UNITY TRAIL

REGION 1

OPPORTUNITY

The Unity Trail will create an east-west link to the proposed Miami River Trail at the junction of Okeechobee Road and West 4th Avenue (Northwest 57th Avenue) in Hialeah. It will occupy the existing canal right-of-way from Okeechobee Road in Hialeah, northward to the FEC right-of-way along West 21st Street in Hialeah.

CONSTRAINT

Vehicular conflicts occur as Unity Trail users attempt to cross Okeechobee Road at the southern terminus of West 4th Avenue. An existing overpass located at this intersection provides Unity Trail users access across Okeechobee Road and the Miami River, to the existing bicycle and pedestrian facility in Miami Springs along North Royal Poinciana Boulevard. Additional constraints occur within the canal right-of-way from West 21st Street to Okeechobee Road. The east bank of the canal offers an area five feet wide with guardrail, on the east bank of the right-of-way. The west segment offers expanses from five feet to fifty feet in width, accommodating greenway development through the majority of its corridor. The close proximity to some warehouses along the west side of the canal results in narrow-width corridor segments that are not conducive to trail development. In these instances, it is recommended that alternate local roads in the vicinity accommodate the Unity Trail.

REGION 2

OPPORTUNITY

The Unity Trail offers the opportunity to link to the existing bicycle and pedestrian facility at West 29th Street. This will create for Unity Trail users the opportunity to connect to the Cuban Exile Memorial located on West 44th Place in Hialeah, and to the abundant shopping amenities on West 49th Street (Northwest 103rd Street).

CONSTRAINT

The segment of Unity Trail from West 21st Street to West 29th Street is constrained by limited right-of-way widths. Warehouses continue to abut the canal along its west side. Alternate local roads – such as West 5th Avenue – should be considered when necessary to accommodate the Unity Trail.

REGION 3

OPPORTUNITY

The Unity Trail offers a link to the proposed Gold Coast Trail. A change in course from the Unity Trail to the Gold Coast Trail will allow *North Dade Greenways* users access to the north, to the intermodal facilities along West 25th Street (Northwest 79th Avenue) and Opa-Locka Airport, or south to the Miami International Airport.

REGION 4

OPPORTUNITY

The Unity Trail will connect to Gwen Cherry Park, Poinciana Park and Pool, and the existing bicycle and pedestrian facility along Northwest 22nd Avenue. Gwen Cherry Park contains shower and restroom facilities as well as vending machines for comestibles. An existing bicycle and pedestrian facility occurs at the eastern extremity of the park on Northwest 22nd Avenue. This existing path follows a north-south route along Northwest 22nd Avenue from Northwest 79th Terrace to Northwest 54th Street. This path provides a link to the community schools in the neighborhoods of Northwest Highland, Model Cities, and Partners. Enhancement to the existing bicycle and pedestrian path, and development guidelines for the Unity Trail should include the reforestation of the corridor with native flora that will supply much needed shade for trail users and habitat for wildlife. The entire expanse of Unity Trail from Hialeah to Northeast Miami provides a transportation corridor for students of over 22 public schools.

REGION 5

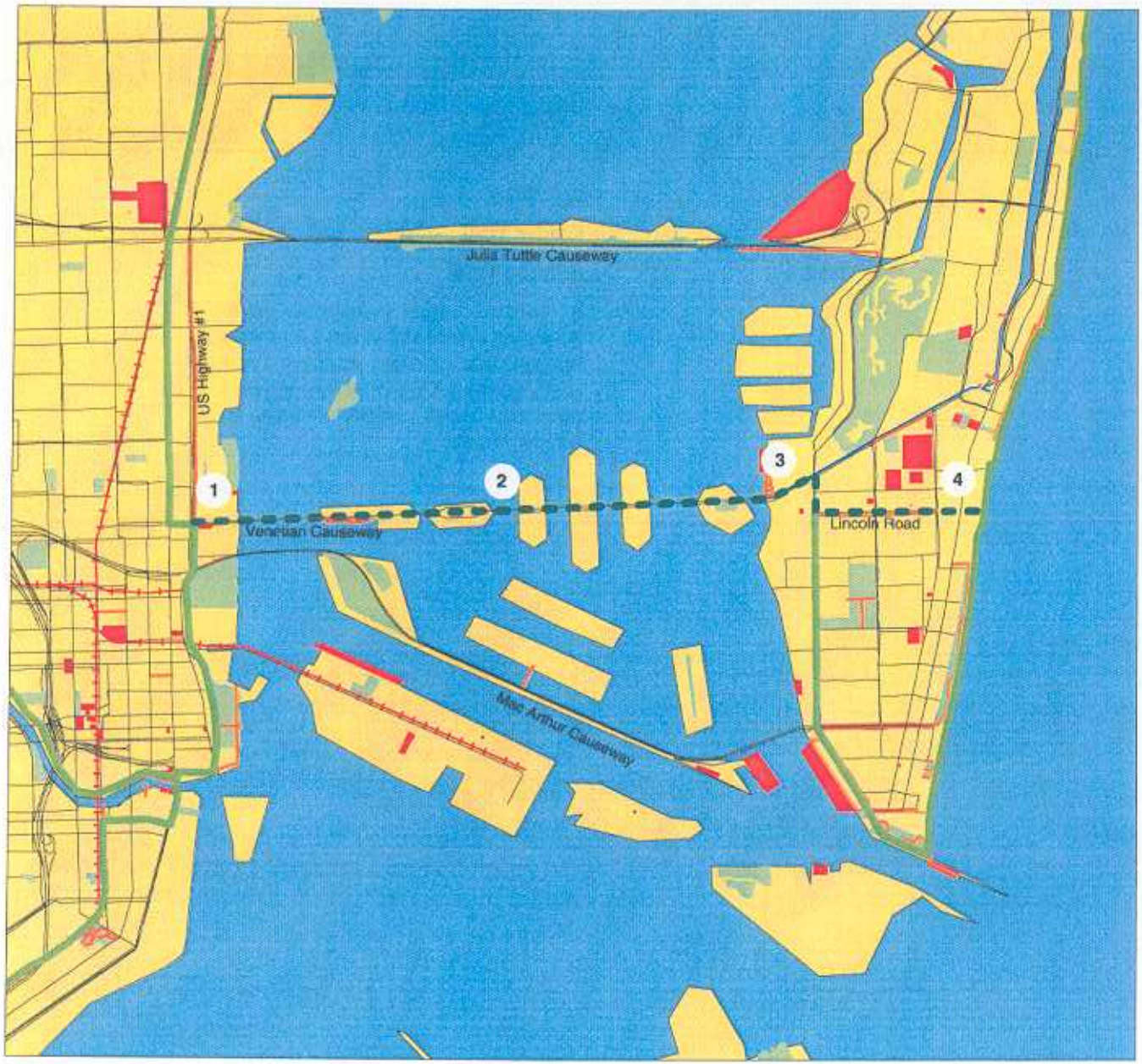
OPPORTUNITY

The Unity Trail will connect to the proposed Flagler Trail at the FEC right-of-way located on Northeast 4th Court in Miami. This proposed connection provides Unity Trail users the means to travel north to the Miami-Dade / Broward county line, or south into downtown Miami.

VENETIAN LINK

DESCRIPTION

Length:	4.1 miles
West Links:	Flagler Trail
East Links:	Atlantic Trail
Objective:	A bicycle and pedestrian lane occupying the Venetian Causeway bridge right-of-way, and a bicycle and pedestrian path within various collector road rights-of-way in Miami Beach.



Points of Interest
Airports
Parks and Greenways
FPL Easements
Canals & Lakes
Rail Right-of-Way
Existing Links
Roads
Other Proposed Trails
Venetian Link

Miles
0 .1 .2 .3 .4

VENETIAN LINK

REGION 1

OPPORTUNITY

The eastern terminus of the Venetian Link is located at Biscayne Boulevard (U S Highway #1), just south of the Omni International Mall. It connects at this point to both the Flagler Trail and the M-Path Trail. This connection allows bicycle and pedestrian travel either to the north or south along the existing facilities on Biscayne Boulevard. For those desiring a northerly route from the Venetian Link, the Flagler Trail will provide the opportunity to connect to the attractors in the Omni International Mall area such as the Pace Park, the Marriott Hotel and Marina, the Doubletree Grand Hotel, the Bacardi Art Museum, Trinity Episcopal Cathedral, and the future Performing Arts Center. To the south, a Venetian Link / M-Path Trail intersection creates a point of access to attractors located in the downtown Miami area. These trip generators include Maritime / Bicentennial Park, Bayfront Park, the ATT Amphitheater, Gusman Hall, and the Bayside festival retail complex. A new arena is also proposed for this area.

REGION 2

OPPORTUNITY

The Venetian Link creates the opportunity for non-motorized travel within the Venetian Causeway corridor, to the City of Miami Beach.

CONSTRAINT

The first phase of construction in renovating the bridges that connect the islands along the Venetian Causeway is currently underway. Existing bicycle and pedestrian facilities along Biscayne Island, San Marco Island, San Marino Island, Di Lido Island, and Rivo Alto Island presently do not link at the bridges, to provide continuous uninterrupted access. The bridges contain a four foot elevated easement that is used by pedestrians, but it is of insufficient width for bicycle travel. Cyclists are forced to ride between the striping that delineates the lanes on the roadway and the elevated pedestrian path. Current renovation

proposals include the allocation of a dedicated bicycle and pedestrian facility along the entire length of the Venetian Causeway, including the bridges.[1] When completed, this continuous bicycle / pedestrian facility along the Venetian Causeway will provide access to Miami Beach and Biscayne Boulevard.

REGION 3

OPPORTUNITY

The Venetian Link provides an opportunity to link to the existing bicycle and pedestrian facility along Dade Boulevard between Meridian Avenue and Washington Avenue in Miami Beach.

CONSTRAINT

A potential conflict with motorists on Alton Road may occur as users of the Venetian Link approach Dade Boulevard. Presently, traffic calming devices – such as an existing single-lane slow-point at the Dade Boulevard / Alton Road intersection – reduce vehicular velocities at these crossings. The provision of an additional traffic calming initiative, such as textured paving, will create pavement inconsistency, providing a mental suggestion to slow down through this area. Additionally, a proposed traffic barrier will restrict vehicular movement by redirecting traffic flow in specific, desired directions.[2]

REGION 4

OPPORTUNITY

The Venetian Link will connect the existing bicycle and pedestrian facilities along Dade Boulevard to the historic Lincoln Road Mall which provides numerous dining and shopping amenities. This historic Art Deco pedestrian mall has been recently renovated, and will serve as an attractor for both the Venetian Link and Atlantic Trail users, offering a variety of entertainment facilities including a thespian theater, a movie theater, outdoor cafes and bars, corporate offices, and retail facilities.

CONSTRAINT

Venetian Link visitors must connect with the Lincoln Road Mall via Alton Road, between Dade Boulevard and Lincoln Road. Vehicular conflicts arise in this heavily traveled four-lane arterial road. The Bicycle and Pedestrian Program of the Metropolitan Planning Organization deems this segment of Alton Road "less suitable"[3] for trail development. Although currently not suitable for bicycle and pedestrian use, this roadway corridor is recognized in the *1996–2000 Transportation Improvement Program* of the Metropolitan Planning Organization as a "Preliminary Engineering Stage Project".[4] This link is also

recognized by the *Metro-Dade Bicycle Facilities Plan* as a "Proposed Short-Range On-Road Bicycle Facility".[5] With these capital improvements currently proposed for construction by the year 2000, a connection from Dade Boulevard to Lincoln Road is highly plausible along this Alton Road segment.

REGION 5

OPPORTUNITY

The Venetian Link will connect to the proposed Atlantic Trail. This connection will allow cyclists and pedestrians to travel north or south along the Atlantic Ocean coastline. The historic South Beach Art Deco District lies just south of this junction between the Venetian Link and the Atlantic Trail. An existing bicycle and pedestrian facility along Ocean Drive from 15th Street to 9th Street provides a link to the dining and shopping amenities of this oceanfront promenade.

CONSTRAINT

Vehicular conflicts arise as Venetian Link visitors connect to the Atlantic Trail. An intersecting link will require passage across both Washington Avenue and Collins Avenue. Existing traffic signals and innovatively designed crosswalks at each intersection will provide a protected Venetian Link extension to the Atlantic Trail.

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[1] Amelia Johnson, interview with Transportation Coordinator of City of Miami Beach, 13 November 1996.

[2] Miami-Dade Public Works Department. *Street Closure Study Technical Memorandum 3: Traffic Calming Alternatives for Residential Traffic Control* (Miami: Fredric R. Harris, Inc., March 1996) Appendix A.

[3] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

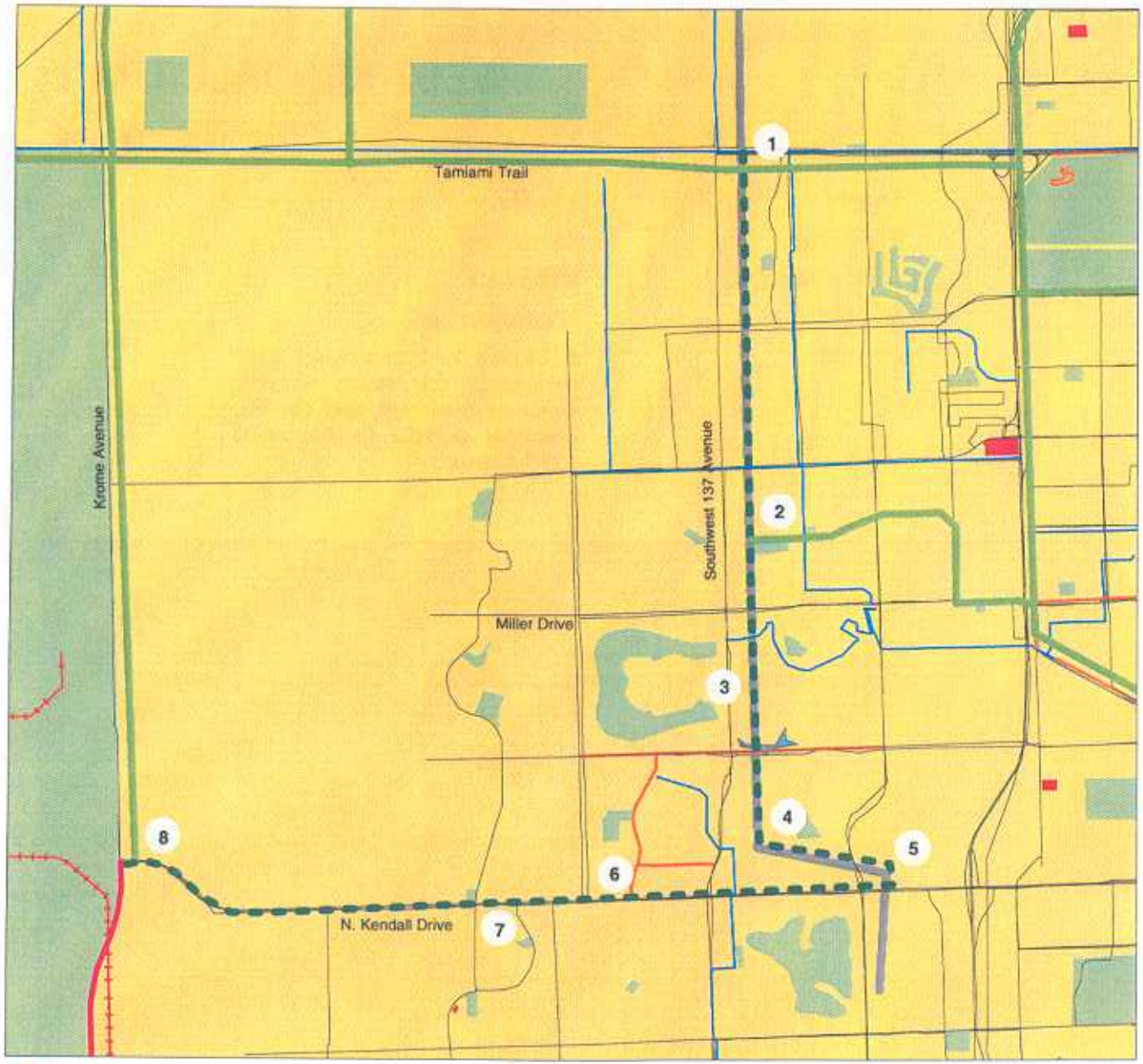
[4] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) Appendix A-7.

[5] *Ibid.*, 8-5.

WEST KENDALL TRAIL

DESCRIPTION

Length:	11 miles
West Links:	Krome Trail
Intersecting Links:	Miller Link
East Links:	Miccosukee Trail
Objective:	A bicycle and pedestrian path occupying the North Kendall Drive right-of-way, and the FPL easement parallel to Southwest 137th Avenue.



WEST KENDALL TRAIL

REGION 1

OPPORTUNITY

The West Kendall Trail will connect to the Miccosukee Link along Tamiami Trail (US Highway #41) in the vicinity of Southwest 137th Avenue. This connection will allow West Kendall Trail users the opportunity to access the Lake Belt Trail, Krome Trail, and the trails west of Krome Avenue. The West Kendall Trail will occur within Florida Power & Light's utility easement. This open space can accommodate both an asphalt path and a "soft" trail suited to trail riders, runners, and equestrians. Currently, the FPL easement is devoid of vegetation, and the West Kendall Trail provides the opportunity for landscape enhancement. Re-vegetation of the easement should include plant species that are indigenous to the area, are suitable for planting within the easement in compliance with FPL requirements, and that will provide an intermittent buffering for the residential areas adjacent to the easement.

CONSTRAINT

Constraints occur as arterial and collector roads intersect the FPL easement. These roads will require intersection crossings to enable trail users to cross safely. A pedestrian bridge will be required to cross a drainage canal, south of Bird Road (Southwest 40th Street).

REGION 2

OPPORTUNITY

The opportunity exists for a connection to "Horse Country," located between the Homestead Extension of the Florida's Turnpike (H.E.F.T.) and Southwest 127th Avenue, and between Bird Road (Southwest 40th Street) and Sunset Drive (Southwest 72nd Street). This link, referred to as the Miller Link, will utilize Southwest 47th Street to provide an off-road trail within the right-of-way, along the road shoulder. The Miller Link will allow equestrians the opportunity to connect to the West Kendall Trail from the Horse Country area, east of Southwest 127th Avenue.

REGION 3

OPPORTUNITY

The opportunity exists to connect to Kendale Lakes Drive and Kendale Lakes Circle. These circuitous roads occur on the east and west sides of the West Kendall Trail. They have been identified as "suitable" within the *Bike Map*,[1] and offer trail users the opportunity to travel throughout the area.

REGION 4

OPPORTUNITY

The opportunity exists to connect to Winston Park in the vicinity of Southwest 132nd Avenue. The FPL easement is parallel to a small lake and community park that could be connected to the trail, allowing access to additional recreational amenities for trail users and area residents. Additionally, the open areas of the easement and the lake edge offer the possibility for landscape enhancement in an area that is currently devoid of vegetation.

REGION 5

OPPORTUNITY

The opportunity exists to connect to Southwest 127th Avenue in the vicinity of North Kendall Drive (Southwest 88th Street). The FPL easement crosses Southwest 127th Avenue before it turns south, just north of North Kendall Drive. This will allow for a connection to Southwest 127th Avenue, which has been designated for bike lane improvements between North Kendall Drive and Miller Drive (Southwest 56th Street) in the "Non-Motorized Component – Unfunded Needs" section of Dade County's *TIP Plan.*[2]

REGION 6

OPPORTUNITY

The opportunity exists to develop the West Kendall Trail along North Kendall Drive, (Southwest 88th Street,) from Southwest 127th Avenue to Krome Avenue (Southwest 177th Avenue). This westward portion of the West Kendall Trail will link to numerous retail and commercial sites that occur along North Kendall Drive, and offer a non-motorized transportation option to the heavily traveled roadway. Development of the West Kendall Trail should be included in any future transportation plans for this area.

CONSTRAINT

Constraints include numerous intersection and driveway entrances and site furnishings, vending machines, and kiosks that present conflicts to the continuity of the trail. Some areas are of insufficient easement width and may prohibit the development of a separate trail facility. Possible solutions may be found either in the development of a wide sidewalk, or in an on-road facility: either will help maintain the continuity of the trail.

REGION 7

OPPORTUNITY

The opportunity exists to connect to the bikeways within The Hammocks, a residential community south of North Kendall Drive (Southwest 88th Street). A connection in the vicinity of Southwest 147th Avenue will allow trail users the opportunity to connect to the extensive bikeway system within The Hammocks. This will create a link that allows for a

further connection to the Black Creek Trail of the *South Dade Greenway Network*.[3]

CONSTRAINT

An intersection crossing must be developed at Southwest 147th Avenue and North Kendall Drive in order to access the bikeways within The Hammocks, south of North Kendall Drive.

REGION 8

OPPORTUNITY

The western terminus of the West Kendall Trail will allow trail users the opportunity to connect to the Krome Trail of the *South Dade Greenway Network* or that portion of the Krome Trail of the North Dade greenways in the vicinity of the intersection of Krome Avenue (Southwest 177th Avenue) and Kendall Drive.

CONSTRAINT

The intersection of North Kendall Drive and Krome Avenue presents a conflict to the development of trail connections. Intersection crossings must be developed to provide access for users of the Krome Trail.

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[1] Bicycle and Pedestrian Program. *Bike Map* (Miami: Metropolitan Planning Organization, September 1991).

[2] Metropolitan Planning Organization. *Transportation Improvement Program* (Miami: Metropolitan Dade County, 1997) 53-5.

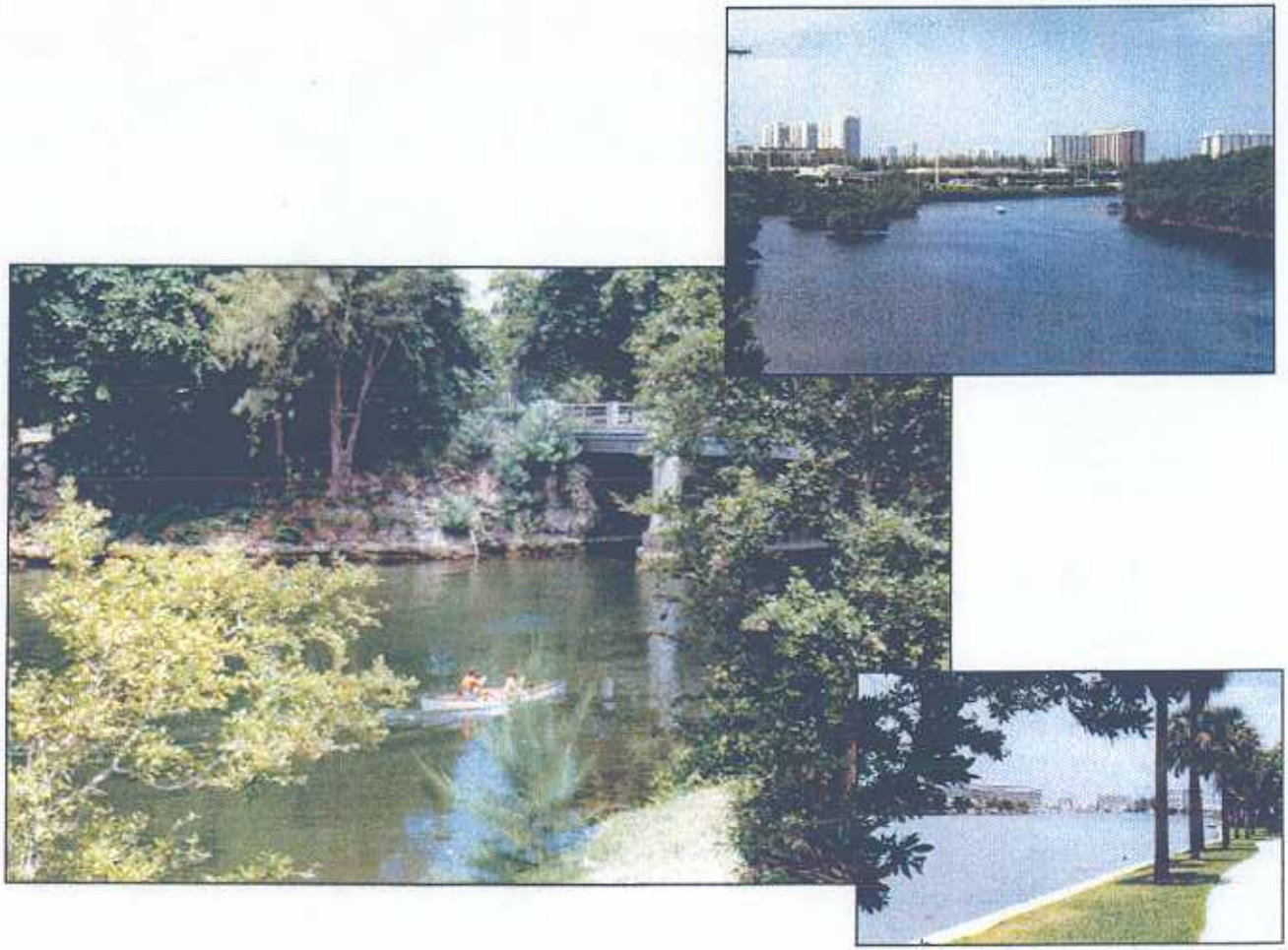
[3] The Redlands Conservancy. *South Dade Greenway Network Master Plan* (Miami: November 1994).

ADDITIONAL OPPORTUNITIES

MIAMI-DADE COUNTY'S URBAN GRID OF ROADS, UTILITY EASEMENTS, LEVEES, CANAL AND RAILROAD RIGHTS-OF-WAY OFFER AN INFINITE NUMBER OF GREENWAY POSSIBILITIES. ALTHOUGH NOT INCLUDED IN THE *NORTH DADE GREENWAYS* MASTER PLAN, THE FOLLOWING AREAS OFFER THE POTENTIAL FOR FUTURE GREENWAY DEVELOPMENT.

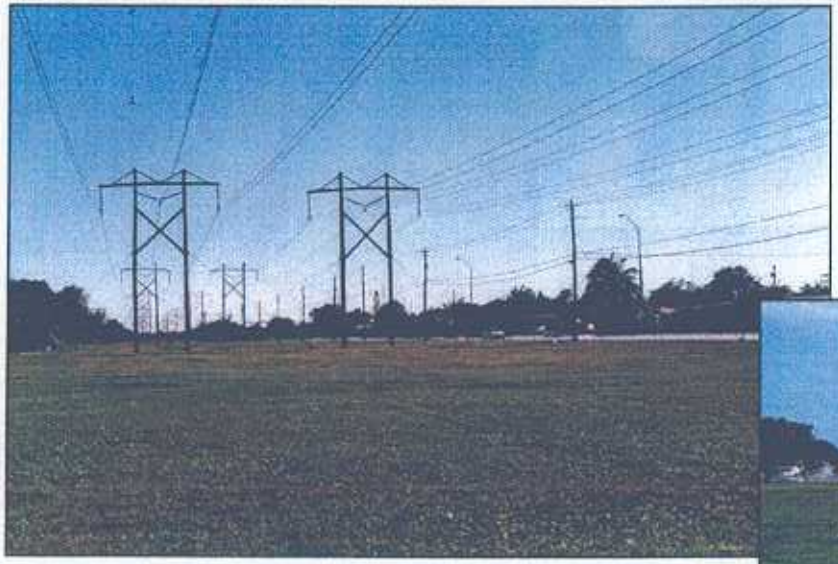
The Northeast 123rd Street Causeway provides an opportunity for a greenway link between the City of North Miami and the communities of Bay Harbor Islands and Indian Creek Village. The development of a bicycle and pedestrian route along the causeway will provide an east-west connection from the mainland to the oceanfront amenities in northeast Miami-Dade County. This link will also offer an opportunity to connect to the proposed Flagler Trail in North Miami and the proposed Atlantic Trail along the Atlantic Ocean shoreline.

The 79th Street Causeway presents an opportunity for an east-west greenway link between the Miami / Miami Shores / El Portal area and the North Bay Village / Miami Beach area. If a north-south heading is desired, this link will provide *North Dade Greenways* users a connection to both the Atlantic Trail, and the Flagler Trail that occupies the Florida East Coast Railroad right-of-way located parallel to U S Highway #1 (Biscayne Boulevard).



With an abundance of natural aquatic preserves and a sub-tropical climate, Miami-Dade County offers a complex waterway network of canal corridors that provide miles of recreational travel opportunities throughout the *North Dade Greenways* study area. Most canals fall under the jurisdiction of the South Florida Water Management District. As a state-funded environmental preservation agency, the South Florida Water Management District conducts greenway and blueway studies. Current blueway investigations by other entities such as the South Florida Regional Planning Council will continue to advance the concept of blueways within the public realm.

South Miami Avenue presents an opportunity for an alternate greenway route through the Brickell area of downtown Miami. This local roadway is parallel to Brickell Avenue and the M-Path Trail that occupies the Metrorail corridor. A bicycle and pedestrian link along South Miami Avenue would provide a direct connection between downtown Miami and the Rickenbacker / Key Biscayne Causeway at Southwest 25th Road. South Miami Avenue is especially suited to function as a greenway link because of its daily level of vehicular traffic is lower than that of Brickell Avenue. In addition, this avenue provides direct access to the City of Miami's Simpson Park, located at Southwest 13th Road. Users of the proposed *North Dade Greenways* may connect to South Miami Avenue via the M-Path Trail, Commodore Trail, or the Miami River Trail.



This FPL Easement provides an additional opportunity for a greenway trail within the neighborhoods of Fountainbleau Park, Westchester, Westwood Lakes, and Snapper Creek Lakes. The suitability of this easement as a greenway corridor is based on the fact that the surrounding land in use is primarily residential and very few obstructions exist to inhibit trail continuity. The northern terminus of the FPL easement is just south of State Road 836, within the Fountainbleau Park Golf Course. An existing golf cart path within the easement creates a link between State Road 836 and Flagler Street. An FPL substation facility exists at the intersection of Flagler Street and Southwest 92nd Avenue, requiring the proposed trail to utilize the right of way of Southwest 92nd Avenue from Flagler Street to Southwest 4th Street. In this vicinity the easement turns west for approximately two blocks then turns south until it crosses Southwest 8th Street. A pedestrian bridge across the Tamiami Canal will be required and a roadway crossing of Southwest 8th Street will be necessary for trail users to continue traveling south within the easement. Another pedestrian bridge will be required to cross a canal that is parallel with Southwest 16th Street. The proposed trail would connect to the West Dade Regional Library and the proposed Merrick Trail on Coral Way (Southwest 4th Street). Several plant nurseries currently occupy the easement in the Westwood Lakes area, between Coral Way and Miller Drive, hindering continuity but not prohibiting trail development. The southern terminus of the FPL Trail could allow for a connection to the Snapper Creek Trail along the Snapper Creek Canal in the vicinity of Southwest 102nd Avenue, just south of Sunset Drive (Southwest 72nd Street).

The Mac Arthur Causeway offers the opportunity for a greenway link that would connect downtown Miami to the southern tip of Miami Beach. A newly constructed bridge located at the western terminus of the causeway spans the Intercoastal Waterway and includes portions of pedestrian sidewalks that are separated from vehicular traffic. However, eastern portions of the causeway lack a bicycle / pedestrian facility. The opportunity exists to construct an outrigger on the south side of the causeway that will provide a recreational and utilitarian corridor for both bicyclists and pedestrians, while emphasizing the outstanding vistas of Government Cut and the Port of Miami, downtown Miami, and South Beach.

West of Florida's Turnpike, south Florida boasts a network of canals and levees that provide unpaved off-road paths with spectacular panoramas of wetland preserves and agricultural fields. The *South Dade Greenways Network* has taken advantage of such sites, by proposing the Everglades Trail. Although not included in the *North Dade Greenways* study area, the levees of west Miami-Dade offer recreational travel opportunities for equestrians, hikers, and off-road bicycle use. As a cost-efficient network of paths, the west Dade trails merely require directional and informational signage for implementation.

ACTION PROGRAM

COST ESTIMATES

THESE COST ESTIMATES HAVE BEEN DEVELOPED TO ASSIST IN THE FORMULATION OF GENERAL BUDGETS FOR THE PLANNING AND IMPLEMENTATION OF INDIVIDUAL TRAILS. THEY HAVE BEEN CALCULATED IN DECEMBER 1997 DOLLARS.

A VARIETY OF RESOURCES HAVE BEEN UTILIZED IN THE GENERATION OF THESE COST ESTIMATES, INCLUDING DATA FROM THE FLORIDA DEPARTMENT OF TRANSPORTATION; THE *MIAMI-DADE BICYCLE FACILTIES PLAN*; THE *SOUTH DADE GREENWAYS NETWORK*; *MEANS COST ESTIMATING HANDBOOK* (1997); VARIOUS SITE FURNISHING MANUFACTURERS; AND CURRENT "GREEN INDUSTRY" LANDSCAPE PRICING.

THESE COST ESTIMATES PROVIDE NEITHER A CONTINGENCY ALLOWANCE NOR AN ESCALATION ALLOWANCE, BOTH OF WHICH MUST BE FACTORED INTO ANY PROPOSED CONSTRUCTION BUDGET.

THESE COST ESTIMATES ARE ESTABLISHED AS GUIDES ONLY, AND MORE PRECISE COST ESTIMATES SHOULD ACCOMPANY THE DEVELOPMENT OF DETAILED CONSTRUCTION DOCUMENTS.

LENGTH:	**16.8 MILES (88,704 FT.)**
PAVEMENT:	
10 ft. path X 1.0 miles @ $25.75 / ln. ft.	$135,960.00
20 ft. path X 7.25 miles @ $48.00 / ln. ft.	$1,837,440.00
Upgrade existing X 6.72 miles @ $12.00 / ln. ft.	$425,779.00
ROADWAY CROSSINGS:	
5 major (60 ft.) @ $62.50 / ln. ft.	$18,750.00
STRIPING:	
16.8 miles @ $8.00 / ln. ft.	$709,632.00
7.25 miles @ $4.50 / ln. ft.	$172,260.00
INFRASTRUCTURE:	
Outrigger 1056 ft. X 10 ft. wide @ $165.00 / sq. ft.	$1,742,400.00
SIGNAGE:	
16 mile markers @ $79.00 ea.	$1264.00
10 stop signs @ $84.00 ea.	$840.00
10 vehicle warning signs @ $98.00 ea.	$980.00
5 directional / trail link signs @ $120.00 ea.	$600.00
15 information signs @ $475.00 ea.	$7125.00
BOLLARDS:	
30 bollards @ $180.00 ea.	$5400.00
GAZEBOS / PAVILIONS:	
4 water closets with fountains @ $5000.00 ea.	$20,000.00
SITE FURNISHING:	
8 bike racks @ $439.00 ea.	$3512.00
32 trash receptacles @ $305.00 ea.	$9760.00
16 benches @ $820.00 ea.	$13,120.00
LANDSCAPING:	
7.25 miles @ $109,200 per mile	$791,700.00
7.7 miles @ $15,880.00 per mile	$122,276.00
IRRIGATION:	
25% of landscape figure	$228,4944.00
SUBTOTAL:	**$6,247,292.00**
ALLOWANCES:	
Design and development @ 15% of total:	$937,093.00
Contractor's fees @ 15% of total:	$937,093.00
COST ESTIMATE:	**$8,121,478.00**
COST PER MILE:	**$483,421.00**

BEACON TRAIL

LENGTH:	**6.9 MILES (36,432 FT.)**
PAVEMENT:	
10 ft. path X 5.9 miles @ $25.75 / ln. ft.	$802,164.00
Bike lanes X 1.0 miles @ $38.25 / ln. ft.	$201,960.00
ROADWAY CROSSINGS:	
5 minor (30 ft.) @ $62.50 / ln. ft.	$9375.00
3 major (60 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
6.9 miles @ $8.00 / ln. ft.	$291,456.00
SIGNAGE:	
6 mile markers @ $79.00 ea.	$474.00
16 stop signs @ $84.00 ea.	$1344.00
16 vehicle warning signs @ $98.00 ea.	$1568.00
4directional / trail link signs @ $120.00 ea.	$480.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
36 bollards @ $180.00 ea.	$6480.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
6 bike racks @ $439.00 ea.	$2634.00
12 trash receptacles @ $305.00 ea.	$3660.00
6 benches @ $820.00 ea.	$4920.00
LANDSCAPING:	
6.9 miles @ $44,600.00 per mile	$307,740.00
IRRIGATION:	
25% of landscape figure	$76,935.00
SUBTOTAL:	**$1,746,365.00**
ALLOWANCES:	
Design and development @ 15% of total:	$261,954.00
Contractor's fees @ 15% of total:	$261,954.00
COST ESTIMATE:	**$2,270,273.00**
COST PER MILE:	**$329,025.00**

LENGTH:	**15.1 MILES (79,728 FT.)**
PAVEMENT:	
10 ft. path X 1.1 miles @ $25.75 / ln. ft.	$149,556.00
Bike lanes X 2.9 miles @ $38.25 / ln. ft.	$585,684.00
Upgrade existing brickwork X .2 miles @ $50.00 / sq. yd.	$97,750.00
ROADWAY CROSSINGS:	
4 minor (30 ft.) @ $62.50 / ln. ft.	$7500.00
2 major (60 ft.) @ $62.50 / ln. ft.	$7500.00
STRIPING:	
15.1 miles @ $8.00 / ln. ft.	$637,824.00
INFRASTRUCTURE:	
One bridge @ 100 ft.	$38,400.00
SIGNAGE:	
15 mile markers @ $79.00 ea.	$1185.00
12 stop signs @ $84.00 ea.	$1008.00
12 vehicle warning signs @ $98.00 ea.	$1176.00
3 directional / trail link signs @ $120.00 ea.	$360.00
10 information signs @ $475.00 ea.	$4750.00
BOLLARDS:	
26 bollards @ $180.00 ea.	$4680.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
6 bike racks @ $439.00 ea.	$2634.00
30 trash receptacles @ $305.00 ea.	$9150.00
15 benches @ $820.00 ea.	$12,300.00
LANDSCAPING:	
15.1 miles @ $22,500.00 per mile	$339,750.00
IRRIGATION:	
25% of landscape figure	$84,937.00
SUBTOTAL:	**$2,008,644.00**
ALLOWANCES:	
Design and development @ 15% of total:	$301,296.00
Contractor's fees @ 15% of total:	$301,296.00
COST ESTIMATE:	**$2,611,236.00**
COST PER MILE:	**$172,929.00**

LENGTH:	**7.9 MILES (41,712 FT.)**
PAVEMENT:	
10 ft. path X 6.6 miles @ $25.75 / ln. ft.	$897,336.00
Bike lanes X 1.04 miles @ $38.25 / ln. ft.	$210,030.00
STRIPING:	
7.9 miles @ $8.00 / ln. ft.	$333,696.00
INFRASTRUCTURE:	
One bridge @ 60 ft.	$20,400.00
One bridge @ 100 ft.	$38,400.00
SIGNAGE:	
7 mile markers @ $79.00 ea.	$553.00
12 stop signs @ $84.00 ea.	$1008.00
12 vehicle warning signs @ $98.00 ea.	$1176.00
5 directional / trail link signs @ $120.00 ea.	$600.00
4 information signs @ $475.00 ea.	$1900.00
BOLLARDS:	
28 bollards @ $180.00 ea.	$5040.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
7 bike racks @ $439.00 ea.	$3073.00
14 trash receptacles @ $305.00 ea.	$4270.00
7 benches @ $820.00 ea.	$5740.00
LANDSCAPING:	
7.9 miles @ $45,000.00 per mile	$355,500.00
IRRIGATION:	
25% of landscape figure	$88,875.00
SUBTOTAL:	**$1,990,097.00**
ALLOWANCES:	
Design and development @ 15% of total:	$298,514.00
Contractor's fees @ 15% of total:	$298,514.00
COST ESTIMATE:	**$2,587,125.00**
COST PER MILE:	**$327,484.00**

LENGTH:	**14.9 MILES (78,672 FT.)**
PAVEMENT:	
10 ft. path X 14.9 miles @ $25.75 / ln. ft.	$2,025,804.00
ROADWAY CROSSINGS:	
14 minor (30 ft.) @ $62.50 / ln. ft.	$26,250.00
19 major (60 ft.) @ $62.50 / ln. ft.	$71,250.00
STRIPING:	
14.9 miles @ $8.00 / ln. ft.	$629,376.00
INFRASTRUCTURE:	
4 bridges @ 100 ft.	$153,600.00
SIGNAGE:	
14 mile markers @ $79.00 ea.	$1106.00
66 stop signs @ $84.00 ea.	$5544.00
66 vehicle warning signs @ $98.00 ea.	$6468.00
6 directional / trail link signs @ $120.00 ea.	$720.00
8 information signs @ $475.00 ea.	$3800.00
BOLLARDS:	
136 bollards @ $180.00 ea.	$24,480.00
GAZEBOS / PAVILIONS:	
6 pavilions @ $11,250.00 ea.	$67,500.00
SITE FURNISHING:	
14 bike racks @ $439.00 ea.	$6146.00
28 trash receptacles @ $305.00 ea.	$8540.00
14 benches @ $820.00 ea.	$11,480.00
LANDSCAPING:	
14.9 miles @ $48,523.00 per mile	$722,992.00
IRRIGATION:	
25% of landscape figure	$180,748.00
SUBTOTAL:	**$3,945,804.00**
ALLOWANCES:	
Design and development @ 15% of total:	$591,870.00
Contractor's fees @ 15% of total:	$591,870.00
COST ESTIMATE:	**$5,129,544.00**
COST PER MILE:	**$344,264.00**

GOLD COAST TRAIL

LENGTH:	**18.7 MILES (98,736 FT.)**
PAVEMENT:	
10 ft. path X 14 miles @ $25.75 / ln. ft.	$1,902,925.00
Bike lanes X 4.7 miles @ $38.25 / ln. ft.	$949,212.00
STRIPING:	
18.7 miles @ $8.00 / ln. ft.	$789,888.00
INFRASTRUCTURE:	
2 bridges @ 60 ft.	$40,800.00
3 bridge @ 100 ft.	$115,200.00
SIGNAGE:	
18 mile markers @ $79.00 ea.	$1422.00
40 stop signs @ $84.00 ea.	$3360.00
40 vehicle warning signs @ $98.00 ea.	$3920.00
5 directional / trail link signs @ $120.00 ea.	$600.00
10 information signs @ $475.00 ea.	$4750.00
BOLLARDS:	
80 bollards @ $180.00 ea.	$14,400.00
SITE FURNISHING:	
9 bike racks @ $439.00 ea.	$3951.00
36 trash receptacles @ $305.00 ea.	$10,980.00
18 benches @ $820.00 ea.	$14,760.00
LANDSCAPING:	
18.7 miles @ $29,647.00 per mile	$554,398.00
IRRIGATION:	
25% of landscape figure	$138,599.00
SUBTOTAL:	**$4,549,680.00**
ALLOWANCES:	
Design and development @ 15% of total:	$682,452.00
Contractor's fees @ 15% of total:	$682,452.00
COST ESTIMATE:	**$5,914,584.00**
COST PER MILE:	**$316,287.00**

LENGTH:	**19.4 MILES (102,432 FT.)**
PAVEMENT:	
10 ft. path X 19.4 miles @ $25.75 / ln. ft.	$2,637,624.00
ROADWAY CROSSINGS:	
3 major (60 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
19.4 miles @ $8.00 / ln. ft.	$819,456.00
INFRASTRUCTURE:	
3 bridges @ 100 ft.	$115,200.00
SIGNAGE:	
19 mile markers @ $79.00 ea.	$1501.00
6 stop signs @ $84.00 ea.	$504.00
6 vehicle warning signs @ $98.00 ea.	$588.00
6 directional / trail link signs @ $120.00 ea.	$720.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
8 bollards @ $180.00 ea.	$1440.00
GAZEBOS / PAVILIONS:	
4 pavilions @ $11,250.00 ea.	$45,000.00
SITE FURNISHING:	
9 bike racks @ $439.00 ea.	$3951.00
38 trash receptacles @ $305.00 ea.	$11,590.00
19 benches @ $820.00 ea.	$15,580.00
9 emergency telephones @ $3500.00 ea.	$31,500.00
LANDSCAPING:	
19.4 miles @ $44,779.00 per mile	$868,712.00
IRRIGATION:	
25% of landscape figure	$217,178.00
SUBTOTAL:	**$4,783,219.00**
ALLOWANCES:	
Design and development @ 15% of total:	$717,482.00
Contractor's fees @ 15% of total:	$717,482.00
COST ESTIMATE:	**$6,218,183.00**
COST PER MILE:	**$320,524.00**

LENGTH:	**31 MILES (163,680 FT.)**
PAVEMENT:	
10 ft. path X 26.4 miles @ $25.75 / ln. ft.	$3,589,344.00
12 ft. elevated boardwalks X 2.8 miles @ $38.25 / ln. ft.	$565,488.00
STRIPING:	
26.4 miles @ $8.00 / ln. ft.	$1,115,136.00
INFRASTRUCTURE:	
One bridge @ 100 ft.	$38,400.00
Fill along FPL easement X 13.8 miles @ $9.00 / cu. ft.	$364,320.00
SIGNAGE:	
31 mile markers @ $79.00 ea.	$2449.00
5 directional / trail link signs @ $120.00 ea.	$600.00
7 information signs @ $475.00 ea.	$3325.00
BOLLARDS:	
12 bollards @ $180.00 ea.	$2160.00
GAZEBOS / PAVILIONS:	
6 pavilions @ $11,250.00 ea.	$67,500.00
6 water closets with fountains @ $7500.00 ea.	$45,000.00
SITE FURNISHING:	
8 bike racks @ $439.00 ea.	$3512.00
62 trash receptacles @ $305.00 ea.	$18,910.00
31 benches @ $820.00 ea.	$25,420.00
16 emergency telephones @ $3500.00 ea.	$56,000.00
LANDSCAPING:	
31 miles @ $45,000.00 per mile	$1,395,000.00
IRRIGATION:	
25% of landscape figure	$348,750.00
SUBTOTAL:	**$7,641,314.00**
ALLOWANCES:	
Design and development @ 15% of total:	$1,146,197.00
Contractor's fees @ 15% of total:	$1,146,197.00
COST ESTIMATE:	**$9,933,708.00**
COST PER MILE:	**$320,442.00**

LENGTH:	**3.6 MILES TWO-WAY (19,008 FT.)**
PAVEMENT:	
Bike lanes X 3.6 miles @ $38.25 / ln. ft.	$727,056.00
ROADWAY CROSSINGS:	
6 minor (30 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
3.6 miles @ $8.00 / ln. ft.	$152,064.00
INFRASTRUCTURE:	
15' wide pedestrian overpass X 350 ln. ft. @ $325.00 / sq. ft.	$1,706,250.00
SIGNAGE:	
4 mile markers @ $79.00 ea.	$316.00
12 stop signs @ $84.00 ea.	$1008.00
12 vehicle warning signs @ $98.00 ea.	$1176.00
4 directional / trail link signs @ $120.00 ea.	$480.00
10 information signs @ $475.00 ea.	$4750.00
BOLLARDS:	
20 bollards @ $180.00 ea.	$3600.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
2 bike racks @ $439.00 ea.	$878.00
4 trash receptacles @ $305.00 ea.	$1220.00
6 benches @ $820.00 ea.	$4920.00
LANDSCAPING:	
3.6 miles @ $13,475.00 per mile	$48,510.00
IRRIGATION:	
25% of landscape figure	$12,127.00
SUBTOTAL:	**$2,698,105.00**
ALLOWANCES:	
Design and development @ 15% of total:	$404,715.00
Contractor's fees @ 15% of total:	$404,715.00
COST ESTIMATE:	**$3,507,535.00**
COST PER MILE:	**$974,315.00**

LENGTH:	**11 MILES (58,080 FT.)**
PAVEMENT:	
10 ft. path X 11 miles @ $25.75 / ln. ft.	$1,495,560.00
ROADWAY CROSSINGS:	
8 minor (30 ft.) @ $62.50 / ln. ft.	$15,000.00
9 major (60 ft.) @ $62.50 / ln. ft.	$33,750.00
STRIPING:	
11 miles @ $8.00 / ln. ft.	$464,640.00
INFRASTRUCTURE:	
2 bridges @ 60 ft.	$40,800.00
2 bridges @ 100 ft.	$76,800.00
SIGNAGE:	
11 mile markers @ $79.00 ea.	$869.00
34 stop signs @ $84.00 ea.	$2856.00
34 vehicle warning signs @ $98.00 ea.	$3332.00
5 directional / trail link signs @ $120.00 ea.	$600.00
5 information signs @ $475.00 ea.	$2375.00
BOLLARDS:	
74 bollards @ $180.00 ea.	$13,320.00
GAZEBOS / PAVILIONS:	
3 pavilions @ $11,250.00 ea.	$33,750.00
SITE FURNISHING:	
11 bike racks @ $439.00 ea.	$4829.00
22 trash receptacles @ $305.00 ea.	$6710.00
11 benches @ $820.00 ea.	$9020.00
LANDSCAPING:	
11 miles @ $98,400.00 per mile	$1,082,400.00
IRRIGATION:	
25% of landscape figure	$270,600.00
SUBTOTAL:	**$3,557,211.00**
ALLOWANCES:	
Design and development @ 15% of total:	$533,581.00
Contractor's fees @ 15% of total:	$533,581.00
COST ESTIMATE:	**$4,624,373.00**
COST PER MILE:	**$420,397.00**

LENGTH:	**16 MILES (84,480 FT.)**
PAVEMENT:	
10 ft. path X 8.9 miles @ $25.75 / ln. ft.	$1,210,044.00
Bike lanes X 5.5 miles @ $38.25 / ln. ft.	$1,110,780.00
Upgrade existing X .8 miles @ $12.00 / ln. ft.	$50,688.00
ROADWAY CROSSINGS:	
22 minor (30 ft.) @ $62.50 / ln. ft.	$41,250.00
8 major (60 ft.) @ $62.50 / ln. ft.	$30,000.00
STRIPING:	
16 miles @ $8.00 / ln. ft.	$675,840.00
INFRASTRUCTURE:	
One bridge @ 100 ft.	$38,400.00
SIGNAGE:	
16 mile markers @ $79.00 ea.	$1264.00
60 stop signs @ $84.00 ea.	$5040.00
60 vehicle warning signs @ $98.00 ea.	$5880.00
3 directional / trail link signs @ $120.00 ea.	$360.00
7 information signs @ $475.00 ea.	$3325.00
BOLLARDS:	
124 bollards @ $180.00 ea.	$22,320.00
GAZEBOS / PAVILIONS:	
3 pavilions @ $11,250.00 ea.	$33,750.00
SITE FURNISHING:	
8 bike racks @ $439.00 ea.	$3512.00
32 trash receptacles @ $305.00 ea.	$9760.00
16 benches @ $820.00 ea.	$13,120.00
LANDSCAPING:	
16 miles @ $32,010.00 per mile	$512,160.00
IRRIGATION:	
25% of landscape figure	$128,040.00
SUBTOTAL:	**$3,895,533.00**
ALLOWANCES:	
Design and development @ 15% of total:	$584,329.00
Contractor's fees @ 15% of total:	$584,329.00
COST ESTIMATE:	**$5,064,191.00**
COST PER MILE:	**$316,511.00**

MERRICK TRAIL

LENGTH:	**10.4 MILES (54,912 FT.)**
PAVEMENT:	
10 ft. path X 1.9 miles @ $25.75 / ln. ft.	$258,324.00
Bike lanes X 5.6 miles @ $38.25 / ln. ft.	$1,130,976.00
Upgrade existing X 3 miles @ $12.00 / ln. ft.	$190,080.00
ROADWAY CROSSINGS:	
5 minor (30 ft.) @ $62.50 / ln. ft.	$9375.00
3 major (60 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
10.4 miles @ $8.00 / ln. ft.	$439,296.00
INFRASTRUCTURE:	
2 bridges @ 60 ft.	$40,800.00
SIGNAGE:	
10 mile markers @ $79.00 ea.	$790.00
16 stop signs @ $84.00 ea.	$1344.00
16 vehicle warning signs @ $98.00 ea.	$1568.00
4 directional / trail link signs @ $120.00 ea.	$480.00
5 information signs @ $475.00 ea.	$2375.00
BOLLARDS:	
36 bollards @ $180.00 ea.	$6480.00
GAZEBOS / PAVILIONS:	
One pavilion @ $11,250.00 ea.	$11,250.00
SITE FURNISHING:	
5 bike racks @ $439.00 ea.	$2195.00
20 trash receptacles @ $305.00 ea.	$6100.00
10 benches @ $820.00 ea.	$8200.00
LANDSCAPING:	
10.4 miles @ $9,086.00 per mile	$94,494.00
IRRIGATION:	
25% of landscape figure	$23,623.00
SUBTOTAL:	**$2,239,000.00**
ALLOWANCES:	
Design and development @ 15% of total:	$335,850.00
Contractor's fees @ 15% of total:	$335,850.00
COST ESTIMATE:	**$2,910,700.00**
COST PER MILE:	**$279,875.00**

LENGTH:	**20.9 MILES (110,352 FT.)**
PAVEMENT:	
10' path X 9.4 miles @ $25.75 / ln. ft.	$1,278,024.00
Bike lanes X 6.3 miles @ $38.25 / ln. ft.	$1,272,348.00
15' path X 2.7 miles @ $35.00 / ln. ft.	$498,960.00
Upgrade existing X 3.0 miles @ $12.00 / ln. ft.	$190,080.00
ROADWAY CROSSINGS:	
31 minor (30 ft.) @ $62.50	$58,125.00
9 major (60 ft.) @ $62.50	$33,750.00
STRIPING:	
20.9 miles @ $8.00 / ln. ft.	$882,816.00
INFRASTRUCTURE:	
2 bridges @ 100 ft. X $38,400.00	$76,800.00
SIGNAGE:	
20 mile markers @ $79.00 ea.	$1580.00
80 stop signs @ $84.00 ea.	$6720.00
80 vehicle warning signs @ $98.00 ea.	$7840.00
8 directional / trail link signs @ $120.00 ea.	$960.00
10 information signs @ $475.00 ea.	$4750.00
BOLLARDS:	
160 bollards @ $180.00 ea.	$28,800.00
GAZEBOS / PAVILIONS:	
5 pavilions @ $11,250.00 ea.	$56,250.00
SITE FURNISHING:	
10 bike racks @ $439.00 ea.	$4390.00
40 trash receptacles @ $305.00 ea.	$12,200.00
20 benches @ $820.00 ea.	$16,400.00
LANDSCAPING:	
20.9 miles @ $23,923.44 per mile	$500,000.00
IRRIGATION:	
25% of landscape figure	$125,000.00
SUBTOTAL:	**$5,055,793.00**
ALLOWANCES:	
Design and development @ 15% of total:	$758,368.00
Contractor's fees @ 15% of total:	$758,368.00
COST ESTIMATE:	**$6,572,529.00**
COST PER MILE:	**$314,475.00**

MICCOSUKEE TRAIL

LENGTH:	**27.8 MILES (146,784 FT.)**
PAVEMENT:	
10 ft. path X 25.5 miles @ $25.75 / ln. ft.	$3,466,980.00
10 ft. wide sidewalk X 2.3 miles @ $25.75 / ln. ft.	$312,708.00
ROADWAY CROSSINGS:	
2 minor (30 ft.) @ $62.50 / ln. ft.	$3750.00
3 major (60 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
27.8 miles @ $8.00 / ln. ft.	$1,174,272.00
INFRASTRUCTURE:	
2 bridges @ 100 ft.	$76,800.00
SIGNAGE:	
27 mile markers @ $79.00 ea.	$2133.00
8 stop signs @ $84.00 ea.	$672.00
8 vehicle warning signs @ $98.00 ea.	$784.00
5 directional / trail link signs @ $120.00 ea.	$600.00
5 information signs @ $475.00 ea.	$2375.00
BOLLARDS:	
20 bollards @ $180.00 ea.	$3600.00
GAZEBOS / PAVILIONS:	
4 pavilions @ $11,250.00 ea.	$45,000.00
SITE FURNISHING:	
13 bike racks @ $439.00 ea.	$5707.00
54 trash receptacles @ $305.00 ea.	$16,470.00
27 benches @ $820.00 ea.	$22,140.00
LANDSCAPING:	
27.8 miles @ $18,884.00 per mile	$524,975.00
IRRIGATION:	
25% of landscape figure	$131,243.00
SUBTOTAL:	**$5,801,459.00**
ALLOWANCES:	
Design and development @ 15% of total:	$870,218.00
Contractor's fees @ 15% of total:	$870,218.00
COST ESTIMATE:	**$7,541,895.00**
COST PER MILE:	**$271,291.00**

LENGTH:	**2.5 MILES (13,200 FT.)**
PAVEMENT:	
Bike lanes X 2.0 miles @ $38.25 / ln. ft.	$403,920.00
10 ft. wide sidewalk X .5 mile @ $5.50 / ln. ft.	$14,520.00
Equestrian path X 2.5 miles @ $2.00 / ln. ft.	$26,400.00
ROADWAY CROSSINGS:	
4 minor (30 ft.) @ $62.50	$7500.00
One major (60 ft.) @ $62.50	$3750.00
STRIPING:	
2 miles @ $8.00 / ln. ft.	$84,480.00
SIGNAGE:	
2 mile markers @ $79.00 ea.	$158.00
10 stop signs @ $84.00 ea.	$840.00
10 vehicle warning signs @ $98.00 ea.	$980.00
2 directional / trail link signs @ $120.00 ea.	$240.00
2 information signs @ 475.00 ea.	$950.00
BOLLARDS:	
10 bollards @ $180.00 ea.	$1800.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
One bike rack @ $439.00 ea.	$439.00
4 trash receptacles @ $305.00 ea.	$1220.00
2 benches @ $820.00 ea.	$1640.00
4 hitching posts @ $35.00 ea.	$140.00
2 water troughs @ $75.00 ea.	$150.00
LANDSCAPING:	
2.5 miles @ $26,400.00 per mile	$66,000.00
IRRIGATION:	
25% of landscape figure	$16,500.00
SUBTOTAL:	**$654,127.00**
ALLOWANCES:	
Design and development @ 15% of total:	$98,119.00
Contractor's fees @ 15% of total:	$98,119.00
COST ESTIMATE:	**$850,365.00**
COST PER MILE:	**$340,146.00**

M-PATH TRAIL

LENGTH:	**9.9 MILES (52,272 FT.)**
PAVEMENT:	
10 ft. path X 1.5 miles @ $25.75 / ln. ft.	$203,940.00
Bike lanes X 1.0 mile @ $38.25 / ln. ft.	$201,960.00
10 ft. wide sidewalk X .2 mile @ $5.50 / ln. ft.	$5808.00
Upgrade existing X 8.4 miles @ $12.00 / ln. ft.	$532,224.00
ROADWAY CROSSINGS:	
2 major (60 ft.) @ $62.50 / ln. ft.	$7500.00
STRIPING:	
9.9 miles @ $8.00 / ln. ft.	$418,176.00
INFRASTRUCTURE:	
15 ft. wide pedestrian overpass X 350 ln. ft. @ $325.00 / sq. ft.	$1,706,250.00
SIGNAGE:	
9 mile markers @ $79.00 ea.	$711.00
8 stop signs @ $84.00 ea.	$672.00
8 vehicle warning signs @ $98.00 ea.	$784.00
7 directional / trail link signs @ $120.00 ea.	$840.00
7 information signs @ $475.00 ea.	$3325.00
BOLLARDS:	
12 bollards @ $180.00 ea.	$2160.00
SITE FURNISHING:	
5 bike racks @ $439.00 ea.	$2195.00
18 trash receptacles @ $305.00 ea.	$5490.00
9 benches @ $820.00 ea.	$7380.00
LANDSCAPING:	
9.9 miles @ $28,803.00 per mile	$285,150.00
IRRIGATION:	
25% of landscape figure	$71,287.00
SUBTOTAL:	**$3,455,852.00**
ALLOWANCES:	
Design and development @ 15% of total:	$518,377.00
Contractor's fees @ 15% of total:	$518,377.00
COST ESTIMATE:	**$4,492,606.00**
COST PER MILE:	**$453,798.00**

LENGTH:	**2.5 MILES (13,200 FT.)**
PAVEMENT:	
10 ft. path X .2 mile @ $25.75 / ln. ft.	$27,192.00
Bike lanes X 2.3 miles @ $38.25 / ln. ft.	$464,508.00
ROADWAY CROSSINGS:	
One major (60 ft.) @ $62.50	$3750.00
STRIPING:	
2.5 miles @ $8.00 / ln. ft.	$105,600.00
SIGNAGE:	
2 mile markers @ $79.00 ea.	$158.00
2 stop signs @ $84.00 ea.	$168.00
2 vehicle warning signs @ $98.00 ea.	$196.00
One directional / trail link sign @ $120.00 ea.	$120.00
2 information signs @ $475.00 ea.	$950.00
BOLLARDS:	
2 bollards @ $180.00 ea.	$360.00
SITE FURNISHING:	
2 bike racks @ $439.00 ea.	$878.00
4 trash receptacles @ $305.00 ea.	$1220.00
2 benches @ $820.00 ea.	$1640.00
LANDSCAPING:	
2.5 miles @ $21,000.00 per mile	$52,500.00
IRRIGATION:	
25% of landscape figure	$13,125.00
SUBTOTAL:	**$672,365.00**
ALLOWANCES:	
Design and development @ 15% of total:	$100,854.00
Contractor's fees @ 15% of total:	$100,854.00
COST ESTIMATE:	**$874,073.00**
COST PER MILE:	**$349,629.00**

PERIMETER TRAIL

LENGTH:	**9 MILES (47,520 FT.)**
PAVEMENT:	
10 ft. path X 7.9 miles @ $25.75 / ln. ft.	$1,074,084.00
Bike lanes X .3 mile @ $38.25 / ln. ft.	$60,588.00
Upgrade existing X .8 miles @ $12.00 / ln. ft.	$50,688.00
ROADWAY CROSSINGS:	
11 minor (30 ft.) @ $62.50 / ln. ft.	$20,625.00
4 major (60 ft.) @ $62.50 / ln. ft.	$15,000.00
STRIPING:	
9 miles @ $8.00 / ln. ft.	$380,160.00
SIGNAGE:	
9 mile markers @ $79.00 ea.	$711.00
30 stop signs @ $84.00 ea.	$2520.00
30 vehicle warning signs @ $98.00 ea.	$2940.00
5 directional / trail link signs @ $120.00 ea.	$600.00
5 information signs @ $475.00 ea.	$2375.00
BOLLARDS:	
62 bollards @ $180.00 ea.	$11,160.00
SITE FURNISHING:	
4 bike racks @ $439.00 ea.	$1756.00
18 trash receptacles @ $305.00 ea.	$5490.00
9 benches @ $820.00 ea.	$7380.00
LANDSCAPING:	
9 miles @ $15,833.00 per mile	$142,500.00
IRRIGATION:	
25% of landscape figure	$35,625.00
SUBTOTAL:	**$1,814,202.00**
ALLOWANCES:	
Design and development @ 15% of total:	$272,130.00
Contractor's fees @ 15% of total:	$272,130.00
COST ESTIMATE:	**$2,358,462.00**
COST PER MILE:	**$262,051.00**

LENGTH:	**18.6 MILES (98,208 FT.)**
PAVEMENT:	
10 ft. path X 16.0 mile @ $25.75 / ln. ft.	$2,175,360.00
Upgrade existing X 2.6 miles @ $12.00 / ln. ft.	$164,736.00
ROADWAY CROSSINGS:	
8 minor (30 ft.) @ $62.50 / ln. ft.	$15,000.00
10 major (60 ft.) @ $62.50 / ln. ft.	$37,500.00
STRIPING:	
18.6 miles @ $8.00 / ln. ft.	$785,664.00
INFRASTRUCTURE:	
One bridge @ 60 ft.	$20,400.00
SIGNAGE:	
18 mile markers @ $79.00 ea.	$1422.00
36 stop signs @ $84.00 ea.	$3024.00
36 vehicle warning signs @ $98.00 ea.	$3528.00
6 directional / trail link signs @ $120.00 ea.	$720.00
9 information signs @ 475.00 ea.	$4275.00
BOLLARDS:	
72 bollards @ $180.00 ea.	$12,960.00
GAZEBOS / PAVILIONS:	
3 pavilions @ $11,250.00 ea.	$33,750.00
SITE FURNISHING:	
9 bike racks @ $439.00 ea.	$3951.00
36 trash receptacles @ $305.00 ea.	$10,980.00
18 benches @ $820.00 ea.	$14,760.00
3 emergency telephones @ $3500.00 ea.	$10,500.00
LANDSCAPING:	
18.6 miles @ $45,834.00 per mile	$852,512.00
IRRIGATION:	
25% of landscape figure	$213,128.00
SUBTOTAL:	**$4,364,170.00**
ALLOWANCES:	
Design and development @ 15% of total:	$654,625.00
Contractor's fees @ 15% of total:	$654,625.00
COST ESTIMATE:	**$6,739,060.00**
COST PER MILE:	**$362,315.00**

SNAPPER CREEK TRAIL

LENGTH:	**10.5 MILES (55,440 FT.)**
PAVEMENT:	
10 ft. path X 6.7 miles @ $25.75 / ln. ft.	$910,932.00
Upgrade existing X 1.7 miles @ $12.00 / ln. ft.	$107,712.00
ROADWAY CROSSINGS:	
8 major (60 ft.) @ $62.50 / ln. ft.	$30,000.00
STRIPING:	
10.5 miles @ $8.00 / ln. ft.	$443,520.00
INFRASTRUCTURE:	
One bridge @ 60 ft.	$20,400.00
One bridge @ 100 ft.	$38,400.00
15 ft. wide pedestrian overpass X 325 ln. ft. @ $325.00 / sq. ft.	$1,584,375.00
SIGNAGE:	
10 mile markers @ $79.00 ea.	$790.00
16 stop signs @ $84.00 ea.	$1344.00
16 vehicle warning signs @ $98.00 ea.	$1568.00
7 directional / trail link signs @ $120.00 ea.	$840.00
8 information signs @ $475.00 ea.	$3800.00
BOLLARDS:	
36 bollards @ $180.00 ea.	$6480.00
SITE FURNISHING:	
5 bike racks @ $439.00 ea.	$2195.00
20 trash receptacles @ $305.00 ea.	$6100.00
10 benches @ $820.00 ea.	$8200.00
LANDSCAPING:	
10.5 miles @ $48,660.00 per mile	$510,930.00
IRRIGATION:	
25% of landscape figure	$127,732.00
SUBTOTAL:	**$3,805,318.00**
ALLOWANCES:	
Design and development @ 15% of total:	$570,797.00
Contractor's fees @ 15% of total:	$570,797.00
COST ESTIMATE:	**$4,946,912.00**
COST PER MILE:	**$471,134.00**

LENGTH:	**13.8 MILES (72,864 FT.)**
PAVEMENT:	
10 ft. path X 13.8 mile @ $25.75 / ln. ft.	$1,876,248.00
ROADWAY CROSSINGS:	
3 major (60 ft.) @ $62.50 / ln. ft.	$11,250.00
STRIPING:	
13.8 miles @ $8.00 / ln. ft.	$582,912.00
INFRASTRUCTURE:	
2 bridges @ 100 ft.	$76,800.00
SIGNAGE:	
13 mile markers @ $79.00 ea.	$1027.00
6 stop signs @ $84.00 ea.	$504.00
6 vehicle warning signs @ $98.00 ea.	$588.00
3 directional / trail link signs @ $120.00 ea.	$360.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
16 bollards @ $180.00 ea.	$2880.00
GAZEBOS / PAVILIONS:	
One pavilion @ $11,250.00 ea.	$11,250.00
SITE FURNISHING:	
6 bike racks @ $439.00 ea.	$2634.00
26 trash receptacles @ $305.00 ea.	$7930.00
13 benches @ $820.00 ea.	$10,660.00
LANDSCAPING:	
13.8 miles @ $65,859.00 per mile	$908,854.00
IRRIGATION:	
25% of landscape figure	$227,213.00
SUBTOTAL:	**$3,722,535.00**
ALLOWANCES:	
Design and development @ 15% of total:	$558,380.00
Contractor's fees @ 15% of total:	$558,380.00
COST ESTIMATE:	**$4,839,295.00**
COST PER MILE:	**$350,673.00**

LENGTH:	**7.5 MILES (39,600 FT.)**
PAVEMENT:	
10 ft. path X 6.9 miles @ $25.75 / ln. ft.	$938,124.00
Bike lanes X .6 miles @ $38.25 / ln. ft.	$121,176.00
ROADWAY CROSSINGS:	
6 minor (30 ft.) @ $62.50 / ln. ft.	$11,250.00
10 major (60 ft.) @ $62.50 / ln. ft.	$37,500.00
STRIPING:	
7.5 miles @ $8.00 / ln. ft.	$316,800.00
SIGNAGE:	
7 mile markers @ $79.00 ea.	$553.00
32 stop signs @ $84.00 ea.	$2688.00
32 vehicle warning signs @ $98.00 ea.	$3136.00
3 directional / trail link signs @ $120.00 ea.	$360.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
72 bollards @ $180.00 ea.	$12,960.00
SITE FURNISHING:	
3 bike racks @ $439.00 ea.	$1317.00
14 trash receptacles @ $305.00 ea.	$4270.00
7 benches @ $820.00 ea.	$5740.00
LANDSCAPING:	
7.5 miles @ $38,704.00 per mile	$290,280.00
IRRIGATION:	
25% of landscape figure	$72,570.00
SUBTOTAL:	**$1,820,149.00**
ALLOWANCES:	
Design and development @ 15% of total:	$273,022.00
Contractor's fees @ 15% of total:	$273,022.00
COST ESTIMATE:	**$2,366,193.00**
COST PER MILE:	**$315,492.00**

LENGTH:	**4.1 MILES (21,648 FT.)**
PAVEMENT:	
Bike lanes X 1.0 miles @ $38.25 / ln. ft.	$201,960.00
Upgrade existing X 3.1 miles @ $12.00 / ln. ft.	$196,416.00
ROADWAY CROSSINGS:	
4 major (60 ft.) @ $62.50	$15,000.00
STRIPING:	
One mile @ $8.00 / ln. ft.	$42,240.00
SIGNAGE:	
4 mile markers @ $79.00 ea.	$316.00
8 stop signs @ $84.00 ea.	$672.00
8 vehicle warning signs @ $98.00 ea.	$784.00
3 directional / trail link signs @ $120.00 ea.	$360.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
12 bollards @ $180.00 ea.	$2160.00
SITE FURNISHING:	
2 bike racks @ $439.00 ea.	$878.00
8 trash receptacles @ $305.00 ea.	$2440.00
4 benches @ $820.00 ea.	$3280.00
LANDSCAPING:	
4.1 miles @ $15,804.00 per mile	$64,800.00
IRRIGATION:	
25% of landscape figure	$16,200.00
SUBTOTAL:	**$548,931.00**
ALLOWANCES:	
Design and development @ 15% of total:	$82,339.00
Contractor's fees @ 15% of total:	$82,339.00
COST ESTIMATE:	**$713,609.00**
COST PER MILE:	**$174,050.00**

WEST KENDALL TRAIL

LENGTH:	**11 MILES (58,080 FT.)**
PAVEMENT:	
10 ft. path X 7.9 miles @ $25.75 / ln. ft.	$1,074,084.00
10 ft. wide sidewalk X 3.7 miles @ $5.00 / ln. ft.	$97,680.00
Equestrian path X 5.8 miles @ $2.00 ln. ft.	$61,248.00
ROADWAY CROSSINGS:	
16 minor (30 ft.) @ $62.50 / ln. ft.	$30,000.00
8 major (60 ft.) @ $62.50 / ln. ft.	$30,000.00
STRIPING:	
11 miles @ $8.00 / ln. ft.	$464,640.00
INFRASTRUCTURE:	
3 bridges @ 60 ft.	$61,200.00
SIGNAGE:	
11 mile markers @ $79.00 ea.	$869.00
48 stop signs @ $84.00 ea.	$4032.00
48 vehicle warning signs @ $98.00 ea.	$4704.00
3 directional / trail link signs @ $120.00 ea.	$360.00
3 information signs @ $475.00 ea.	$1425.00
BOLLARDS:	
100 bollards @ $180.00 ea.	$18,000.00
GAZEBOS / PAVILIONS:	
2 pavilions @ $11,250.00 ea.	$22,500.00
SITE FURNISHING:	
5 bike racks @ $439.00 ea.	$2195.00
22 trash receptacles @ $305.00 ea.	$6710.00
11 benches @ $820.00 ea.	$9020.00
4 hitching posts @ $35.00 ea.	$140.00
4 water troughs @ $75.00 ea.	$300.00
LANDSCAPING:	
11 miles @ $49,957.00 per mile	$549,530.00
IRRIGATION:	
25% of landscape figure	$137,382.00
SUBTOTAL:	**$2.576,019.00**
ALLOWANCES:	
Design and development @ 15% of total:	$386,402.00
Contractor's fees @ 15% of total:	$386,402.00
COST ESTIMATE:	**$3,348,823.00**
COST PER MILE:	**$304,438.00**

DESIGN GUIDELINES

The automobile was once seen as a boon to American life, eradicating the pollution caused by horses and granting citizens new levels of personal freedom and mobility. But it was not long before the servant became the master – trolley and surface rail systems disappeared, and public spaces were designed and constructed to accommodate the automobile at the expense of the pedestrian.[1]

According to the National Bicycling and Walking Study of 1994, an estimated 131 million Americans regularly bicycle or walk for exercise, sport, recreation, or simply for relaxation and enjoyment of the outdoors.[2] Still millions more chose walking – especially within urban settings – as the primary means of access to both employment and cultural opportunities. As transportation officials nationwide enhance their awareness of the bicycle as a viable mode of transportation through conferences, symposia, and journals, the American Association of State Highway and Transportation Officials (AASHTO) Task Force on Geometric Design continues development of criteria for the design of bicycle facilities. AASHTO has recognized that the need for safety and convenience are essential considerations in the development of viable bicycle facilities that seek to encourage and enhance the bicycling experience.[3]

The planning of bicycle and pedestrian facilities must consider the needs of the two broad types of non-motorized facility users. Utilitarian users rely upon such systems for safe, convenient, and time-efficient access to a variety of destinations. While the utilitarian cyclist seeks to reach a specific destination quickly with few interruptions, the recreational user seeks a more diverse opportunity offering the potential for exercise coupled with other social and recreational experiences. Such opportunities may take the form of a leisurely ride for exercise and relaxation; a visit to a natural area such as the tree islands of the Lake Belt Recreational Area; or a visit to a cultural destination such as Vizcaya. For the recreational cyclist riding for pleasure, destination may be of less importance than to the utilitarian rider.[4] The location of proposed trail facilities must consider the requirements of the entire riding public, engaging both utilitarian and recreational riders. The proposed corridors of the *North Dade Greenways* recognize both the discrete demands of bicycle and pedestrian facility users related to destination points, and the varied riding abilities and locational preferences of these users.

Skilled bicyclists value the directness of their travel corridor and have the ability to ride safely and confidently in alignments shared with a high volume of vehicular traffic. However, the facilities proposed for the *North Dade Greenways* provide corridors for a broader range of non-motorized travelers, including less skilled and less experienced riders.

For example, the utilitarian bicyclist residing in South Miami may use the Ludlam Trail to link north to the employment center at Miami International Airport. This direct link provides a 10-mile path for the rider. A recreational user residing in South Miami may travel the Snapper Creek Trail and connect to the East-West Trail, in order to reach the airport area. This alternate loop for the recreational cyclist – also using the Snapper Creek Trail – offers a more varied visual experience on a 16-mile path accessing the aircraft viewing park proposed at the north terminus of the Ludlam Trail. A functional flexibility serving a broad range of users is thus achieved.

AASHTO's design standards for bicycle and pedestrian facilities include a wide range of considerations. Some address simple roadway improvements such as the amelioration of drainage grate inlets within rights-of-way, while others address the more complex issues associated with detailed design and construction of a path. In addition, the implementation of requirements of *American's with Disabilities Act* (ADA) of 1990, and those of the American National Standard Institute (ANSI), identify additional design criteria that will ensure access to the North Dade Greenways for all residents and visitors.

This chapter will review appropriate guidelines for the development of bicycle and pedestrian facilities as they relate to the proposed trails constituting the *North Dade Greenways* system.[5]

ROADWAY IMPROVEMENTS

All new highway construction in the United States, except where legally prohibited, should be designed and constructed for use by the bicyclist and pedestrian.[6] Florida Statutes, Section 335.055 supports this objective, noting that bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such ways into state regional planning and state transportation planning and programs.[7] Because most existing highways have not been designed with bicycle travel in mind, there are often many ways in which such corridors may be improved to more safely accommodate bicycle traffic. AASHTO suggests that local governments examine existing roadway environments for the purpose of insuring safe riding conditions for bicyclists. This objective can be most effectively accomplished through inventory and assessment of drainage structures, railroad crossings, pavements, curb cuts, and signage and signals that should be responsive to bicyclists.[8] Because utility covers and drainage grate inlets within roadways can create a potential safety hazard for cyclists, they should be located away from the expected path of the bicyclist and pedestrian. New construction within road corridors with bicycle access should implement curb inlets rather than drainage inlets. Of particular importance is that all utility covers be set flush with the road surface to avoid potential mishaps that may result from encounters with abrupt changes in elevation.

Bicycle / pedestrian corridors passing across railroad rights-of-way should be of uniform grade and flush, both with existing tracks and the surface of the intersecting roadway. These paths should bisect railroad crossing at a right angle whenever possible, to ensure maximum levels of safety. Deviating from this ideal angle of intersection will create increased danger for bicyclists, notably in the potential for the front wheel to be trapped in the flangeway causing a loss of steering control.[9]

AASHTO notes also that the amelioration of damaged or failing road surfaces is an important consideration in the development of bicycle and pedestrian facilities, as surface irregularities may pose hazards to bicyclists and pedestrians. For example, gaps between pavement slabs or drop-offs that parallel traffic flow can result in a trapped bicycle wheel that can cause a perilous loss of control.[10] Older existing pavements such as those within the Snapper Creek, Commodore, and Snake Creek Trails should be improved through complete re-paving, or by careful re-patching when appropriate.

The location and timing of traffic control devices where proposed bicycle and pedestrian corridors conflict with vehicular traffic should allow for safe passage: AASHTO design guidelines dictate the design of bicycle/pedestrian facilities adjacent to traffic control device locations. These guidelines recommend that a standard bicycle speed of 10 miles per hour and an anticipated reaction time of 0.5 seconds, should be used in the design of facilities intersecting, or in contact with vehicular corridors. Crossing aid devices such as detectors for traffic-actuated signals, or pedestrian-actuated buttons that do not require dismount, should be located immediately adjacent to and within easy reach of the bicyclist's expected path.[11]

BICYCLE LANES

One-way bicycle lanes are travel corridors that function as facilities carrying traffic in the same direction as adjacent motor vehicle traffic. As is the case within many existing facilities in Miami-Dade County – such as that along Crandon Boulevard on Key Biscayne – implementation of bicycle lanes may be desirable in those instances when it is necessary to delineate an existing roadway pavement for use by bicyclists. The appropriate and visible marking of bicycle lanes is a documented factor in increased bicyclist confidence that a motorist will not stray into the path of bicycle travel.[12] The design of two-way bicycle lanes within roadway pavements is generally unacceptable, as such facilities promote riding against the flow of motor vehicle traffic.

According to AASHTO, bicycle lanes should be limited to local roadway corridors where vehicle traffic volume is minimal and vehicle speed is less than 40 miles per hour. It is further noted that the minimum dimension of a bicycle lane should comprise a surface width ranging from four feet to five feet.[13] For example, the proposed Memorial Trail will include a bicycle lane on Palmetto Frontage Road, a suitable local road in Miami Lakes. The

right-of-way includes a 25-foot roadway pavement and an abutting 10-foot corridor with guardrail, adjacent to the Biscayne Canal. The design of a 5-foot bicycle lane within this infrequently traveled roadway, and its continuation through Northwest 154th Street is necessary to provide a connection to the existing path on East Lakeway Drive.

As a bicycle lane approaches an intersection, conflicts may occur. The confluence of the road pavement and bicycle lane may create doubt as to right-of-way, that may result in unnecessary but more complicated cyclist or vehicle movements. Because such lanes encourage bicyclists to stay right and motorists to stay left within the shared pavement, both operators are somewhat discouraged from merging in advance of turns.[14] Conflicts may occur as bicycles proceed straight and vehicles turn right. For example, as a bicycle lane proposed for Memorial Trail approaches a vehicle right-turn lane, the installation of striping and signage that informs both operators of the impending crossings in advance of the intersection is recommended. Such accommodations are preferable to those circumstances that force such crossings – often at the last moment and with inappropriate notice – within the immediate intersection.

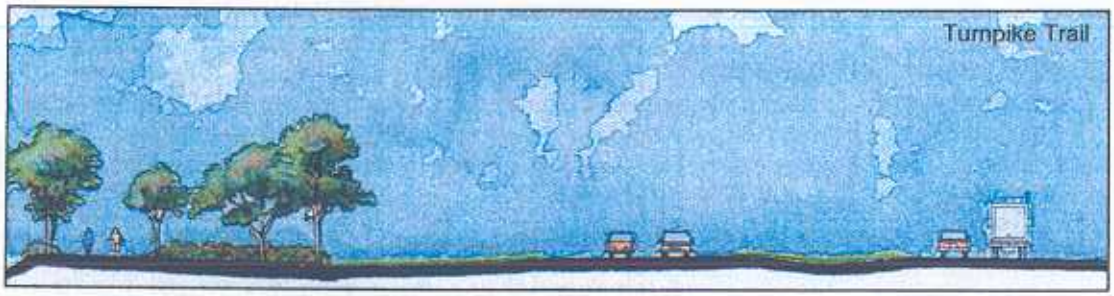
BICYCLE AND PEDESTRIAN PATHS

Bicycle and pedestrian paths are dedicated to the exclusive use of non-motorized travelers with minimal motorized vehicular cross-flows. Whenever possible, this configuration is the ideal for corridors within the *North Dade Greenways*. While serving a variety of purposes, such paths should be viewed as extensions of the highway system, intended for the exclusive use of bicycles in much the same way as freeways are intended for the exclusive use of motor vehicles.[15] In many ways, the criteria suited to planning and design of bicycle paths are similar to those for the planning and design of highways. Determinations related to horizontal alignment, sight distance, and signage and other information elements, must be carefully coordinated to insure the successful development of

a bicycle and pedestrian path. Because their operating characteristics are somewhat different, other criteria such as horizontal and vertical clearance, grade requirements, and pavement foundation and structure are generally different for bicycles and pedestrians than for motor vehicle facilities.

Several effective and creative design strategies that will encourage the development of a successful bicycle and pedestrian path are identified in the *Guide for the Development of Bicycle Facilities*. Among these guidelines are recommendations to:

- maintain a separation between bicycle paths and roadways;
- establish an appropriate width and clearance;
- identify a desired design speed;
- select desirable horizontal alignment and superelevation, sight distance, and slope;
- address intersection conflicts;
- formulate effective signing and marking, safe and easily-maintained pavement structure, timely positive drainage, highly aesthetic and functional lighting; and
- restrict motor vehicle traffic, and enhance multiple uses.[16]



SEPARATION BETWEEN BICYCLE PATHS AND ROADWAYS

In instances where two-way bicycle and pedestrian paths are located immediately adjacent to – but outside – the road pavement, some operational problems may occur. The most notable problem may arise at the point of termination of the path. AASHTO notes that bicyclists riding against traffic will tend to continue travel on the wrong side of the road, while bicyclists that approach a path often travel on the wrong side of the road to reach the path. Numerous bicycle / motor vehicle accidents result from such "wrong-way travel" and should at every opportunity be prevented through responsive planning and design.[17] To facilitate this objective, AASHTO suggests that bicycle lanes, wide curb lanes, and shared

roadways should occupy the corridor adjacent to roadways. *North Dade Greenways* identifies paths as appropriate in those areas where there is suitable width within a right-or-way, where provision of a vegetative buffer zone is possible, and where potential cross-flows are considered minimal. For example, the proposed Turnpike Trail provides an opportunity to establish a two-way bicycle and pedestrian path and greenway buffer zone that parallels Florida's Turnpike. A width of one hundred feet – with only three vehicular crossings along its proposed 13.8-mile length – enhances the opportunity to create within the Turnpike Trail a protected corridor for the bicyclist and pedestrian.

WIDTH AND CLEARANCE

The primary design consideration for the development of a bicycle and pedestrian path involves the paved and operating widths required for bicycle and pedestrian use. For most conditions, AASHTO recommends that the paved width for a two-directional bicycle path should be ten feet. Although a minimum of eight feet is acceptable, the following conditions must occur in such instances:

1. Bicycle traffic is expected to be low, even on peak days or at peak hours.
2. Pedestrian use of the facility is not expected to be more than occasional.
3. There will be appropriate horizontal and vertical alignment providing safe and frequent passing opportunities.
4. The path will not be subjected to maintenance vehicle loading conditions that would cause pavement or edge damage.[18]

In certain cases, it may be necessary or desirable to increase the width of a bicycle path to twelve feet. For example, the proposed Lake Belt Trail and Atlantic Trail will likely serve multiple uses, including bicycling by both utilitarian and recreational riders; jogging; walkers, sightseers, and birdwatchers; photographers and painters; and rollerbladers. In addition, because of its remote location and adjacent land uses, the Lake Belt Trail may also be designated for use by maintenance vehicles. Therefore, the Lake Belt and Atlantic Trails should provide a minimum of fifteen feet of paved surface to insure minimal conflict among these varied users.

The minimum recommended width for a one-directional path is five feet. However, such one-way bicycle paths will frequently function as paths serving two-way traffic. Thus, effective measures must be taken to assure one-way operation. The lack of such necessary enforcement fairly assures that one-way bicycle paths will be used as two-way facilities and should therefore be designed initially to accommodate two-way traffic.[19]

In those instances where existing grade – prior to construction – is below the finished grade of the proposed trail, a minimum 18 inche shoulder and adjacent uniform-sloped area two to three feet in width, must be provided on either side of the trail pavement to establish a safe transition from the pavement surface to adjacent existing grade. Additionally, if a path is less than five feet wide and is located adjacent to a roadway, a

physical divider measuring a minimum of 4.5 feet in height is required between the roadway and the path. In the vertical dimension, clearance to overhead obstructions should be a minimum of eight feet above finished trail pavement. However, in instances where service vehicles may occupy the path, a clearance of ten feet is preferred.[20]

Protruding objects along bicycle / pedestrian routes pose threats to those who may be unaware of such projections. The *Americans with Disabilities Act* notes that any element protruding a distance of 4 inches or more into a bicycle / pedestrian corridor must be placed no more than 27 inches above the ground plane. If an object protrudes into the corridor 4 inches or less, its bottom may be placed higher than 27 inches above the ground plane.[21] These accommodations are intended to provide safe passage through a corridor with a minimum of conflict.

DESIGN SPEED

Travel velocity among cyclists is the result of many factors that, in a variety of combinations, dictate to the cyclist notions – and the perception of – safety. The type and condition of the bicycle as well as the physical condition of the bicyclist, are as well major factors in this equation. Other considerations include the speed and the direction of the wind, the purpose of the trip, the condition and location of the bicycle path and other climatic factors. In general, the design speed for a path should be no less than 20 miles per hour. In instances on a down-slope -where the surface grade exceeds a slope of four percent- the path should be designed for thirty mile per hour travel. Logically, riders tend to travel more slowly uphill and on unpaved paths. Soft-paved paths may have a lower design speed of 15 miles per hour.[22]

HORIZONTAL AND VERTICAL (SUPERELEVATION) ALIGNMENT

The minimum radius negotiable by a bicycle is a function of the superelevation rate of a bicycle path surface (e), the coefficient of friction between the bicycle tires and the bicycle path surface (f), and the speed of the bicycle (V). The following formula, derived from AASHTO's *Guide for the Development of Bicycle Facilities*, will provide the minimum design radius of curvature for bicycle facilities proposed for the North Dade Greenways:

$$R = \frac{V}{15\,(e+f)}$$

The rate of superelevation for most bicycle path applications will vary from two percent to five percent. Two percent superelevation is necessary to promote proper water drainage, while a five percent superelevation is at the safety threshold. Especially in those areas where slow riders may be expected, maneuvering difficulty may occur on paths constructed at a steeper slope.[23]

According to federal design guidelines, the coefficient of friction is a function of the projected speed of the cyclist; the type, roughness, and condition of the surface; the type of tires on the bicycle; and degree of surface wetness or dryness. This friction derivative is especially important as it relates to the point at which the centrifugal force of the bicycle causes the rider to recognize a feeling of discomfort and thus reduce speed. This figure has been extrapolated by AASHTO from values applied to the design of highways, and it is suggested that design friction factors should be 0.30 for those paths projected for 15 mile per hour speed,[24] with proportional adjustment for paths designated for higher speeds.

GRADE

AASHTO recommends that grades on bicycle paths should be kept to a minimum, especially in areas of long inclines. Grades that surpass five percent are undesirable because most cyclists tend to exceed the speeds at which they are competent to safely operate the bicycle on such slopes.[25]

SIGHT DISTANCE

The minimum distances required to stop for various design speeds and grades are based by AASHTO upon a total perception and brake reaction time of 2.5 seconds and a coefficient of friction of 0.25 to "account for the poor wet weather braking characteristics of many bicycles".[26] Figures of minimum stopping sight distances, minimum length of vertical curves, and minimum lateral clearances on horizontal curves are outlined in AASHTO guidelines. In order to provide cyclists with an opportunity to see and react to the unexpected, paths should be designed with adequate stopping distances. Because they frequently ride next to each other on bicycle paths, bicyclists have the tendency to ride near the middle of the path. "For these reasons, and because of the serious consequences of a head-on bicycle accident, lateral clearances on horizontal curves should be calculated based on the sum of the stopping distances for bicyclists traveling in opposite directions around a curve." When this is not possible, areas where the path curves – affecting the sight distance of the cyclist- should be widened.[27]

INTERSECTIONS

Potential conflicts with vehicular traffic are the most prominent constraint to the development of bicycle and pedestrian corridors for the *North Dade Greenways*. Such conflicts are likely to occur most frequently at locations designed to control the movement of intersecting flows of vehicular traffic. Such locations usually occur where the needs of the bicyclist and pedestrian function as secondary components within designed corridors. Frequently, pedestrian crossings at wide intersections do not offer a "safe zone" between the opposing flows of traffic. Traffic calming devices in such instances – for example, a median of suitable width – will serve to calm traffic while providing a safe waiting area for non-motorized travelers attempting to traverse a vehicular corridor. Although such a median with dropped curb and paved waiting area may not be practical at every intersection, many major highways and arterial roads within the study area have sufficient

area and should be required to accommodate such a safe, demarcated waiting area for bicyclists and pedestrians.

Ramped curb cuts intended to accommodate the differently-abled, pedestrians, and bicyclists should have a minimum width of 5 feet and, when feasible, should be of more generous dimension. The implementation of continuous dropped curbed cuts at intersections should be considered within the arc from point of tangency to point of curvature.

SIGNING AND MARKING

Signage type, size, and location should conform to the *Manual of Uniform Traffic Control Devices*[28]. Such elements should also be provided in an aesthetically appropriate, uniform, and well-organized system that seeks to consolidate the effective delivery of information while reducing the visual clutter commonly associated with a multitude of traffic signage stanchions, and posts.

The *Manual on Uniform Traffic Control Devices* provides guidance on general signing and marking for bicycle and pedestrian paths, lanes, and routes. As an essential component on bicycle paths, signage and markings will alert bicyclists and motorists to potential conflicts. In addition to messages of caution, AASHTO recommends that signage should appropriately indicate directions, destinations, distances, route numbers, and names of crossing streets.[29]

Two-way bicycle paths should contain a four inch wide yellow centerline stripe to separate opposing bicyclists. This procedure has been proven effective in instances where a path services a heavy volume of bicycle traffic, in instances where curves restrict sight distances, and on unlighted paths where nighttime riding is expected.

PAVEMENT STRUCTURE

The similarity between design of bicycle paths and highways has been previously noted. Prior to design, data should be obtained to determine the load bearing capacity of soils. The design of pavements for bicycle paths should reflect their intended level of use. Although the load bearing of a path may be substantially less than that of a roadway, the path should be designed to sustain the loading of occasional emergency or service vehicles that may utilize the path. Since the weight of a motor vehicle on a path will tend to be concentrated along its edges, the width of the path can become narrowed from the splitting away and eventual deterioration of pavement at the edges of the path. Therefore, additional support along the edges of these paths will inhibit potential damage caused by deterioration and surface distress.

STRUCTURES

Constraints in the continuity of some trails of the *North Dade Greenways* has led to several recommendations for pedestrian bridges. Proposals for these elevated structures are necessary to allow a path to continue over a canal, highway, or -in the case of the Lake Belt

Trail- spanning sawgrass marshes of the East Everglades. These elevated structures should be equal in width to the adjacent paved paths, combined with an two foot wide additional clear area on either side of the bridge. This will provide a "minimum horizontal distance from the railing or other edge barrier and will provide needed maneuvering space to avoid conflicts with pedestrians and other bicyclists who are stopped on the bridge".[30] Vertical clearance from the underside of the bridge structure to the surface beneath the bridge will depend upon location and application. For example, while the overpass on the Snapper Creek Trail at the Palmetto Expressway must comply with FDOT standards, the "boardwalk bridge" of the Lake Belt Trail should allow unimpeded visibility, and be in close proximity to surface waters and vegetation. Railings, fences, or barriers on both sides of the bicycle path should be a minimum of 4.5 feet high, and comply with codes and standards. Smooth rub rails should be attached to the barriers at a handlebar height of 3.5 feet.[31] Although various canals have individual minimum clearance specifications, the South Florida Water Management District has established that bridges over those canals under its jurisdiction shall have a minimum clearance requirement of six feet. This minimum dimensional clearance is generally required above the seasonal high optimum water control elevation. A distance of two feet above the design water surface or natural ground is also used in some applications as an appropriate criterion, [32] and such bridges of the *North Dade Greenways* should maintain the minimum six foot clearance.

The *North Dade Greenways* is also comprised of corridors that propose the retrofit of a bicycle and pedestrian facility on existing vehicular bridges. AASHTO establishes three options that will provide non-motorized access across existing vehicular structures. These options include:

1. The rider carrying the bicycle from one end of the bridge to the other.
2. The bridge providing wide curb lanes or bicycle lanes over the bridge.
3. Use of existing sidewalks as one-way or two-way facilities.

Another possibility is the construction of a cantilevered outrigger in instances where narrow bridges with a substantial amount of vehicular traffic do not allow for the design of a safe bicycle lane on the travel surface. For example, at the point where the Atlantic Trail is proposed to cross Baker's Haulover Inlet in Bal Harbour, the existing bridge does not provide a safe passage zone for bicyclists. Although the bridge provides an elevated four foot curbed walkway for pedestrians, bicyclists must occupy the vehicular roadway when traversing the bridge. An outrigger connected to the superstructure of the bridge will offer bicyclists and pedestrians the opportunity to safely cross the waterway while enjoying a spectacular view of the Atlantic Ocean, and portions of the mangrove fringe of the Intracoastal Waterway.

DRAINAGE

It is recommended that bicycle and pedestrian paths maintain a minimum cross slope of two percent (1/4 inch per 12 inches) and a maximum cross slope of three percent (1/4 inch per 8.25 inches) for positive drainage. In instances where paths are 10 feet or

greater in width, it may be appropriate to elevate the crown, and to provide the recommended cross slopes from the centerline of the path in an outward direction to the two path edges. Drainage grates and manhole covers should be placed out of the intended path of bicycles, with the centerline of such structures a minimum of 24 inches from the closest edge of the path pavement.[33]

LIGHTING

Effective lighting will reduce potential conflicts on paths and at intersections between vehicles and path users. Complementary lighting will allow the user to see changes in the direction of the path, the conditions of the surface of the path, and any obstacles on the path. A desirable average maintained horizontal illumination is a level of 0.5 foot-candle to 2 foot-candles.[34] Light poles and fixtures should meet ADA horizontal and vertical clearances, and should be of low maintenance materials.

RESTRICTION OF MOTOR VEHICLE TRAFFIC

Bicycle paths should be designed with some form of physical barrier such as bollards, at those locations where paths intersect roadways. These bollards will prevent access by unauthorized vehicles to the path facility: typically, one or two lockable, removable bollards may be placed at the intersection. Bollards should be designed with surfaces having a reflective material or that are painted a bright color, for visibility at night.

MULTI-USE

Although AASHTO cautions against the design of paths for mixed use due to safety considerations, separate demarcated paths within the same facility -when properly designed- can achieve utilization and safety objectives concurrently.[35] For example, while the Atlantic Trail proposes varied use by joggers, bicyclists, rollerbladers, and strolling pedestrians, this diversity of use is viewed as feasible since the facility is proposed at a minimum width of fifteen feet. A facility of such width will provide two bicycle lanes in each direction, as well as a pedestrian and jogging lane. Appropriate signage and striping in concert with official enforcement is anticipated to minimize conflicts on such multi-use trails.

The *Guide for the Development of Bicycle Facilities* posits that sidewalk bicycle paths are unsatisfactory for a variety of reasons. Sidewalks are designed for pedestrian movement and thus maneuverability by cyclists is not usually a design consideration. Sidewalks are frequently wrought with obstacles including pedestrians, a variety of vending machines, public phones, parking meters, kiosks, bus benches, sidewalk cafes, traffic signage, and utility poles. The development of extremely wide sidewalks encourages bicycle riders to travel at higher speeds, a behavior that can increase potential conflicts both with pedestrians, and with motor vehicles at intersections.

Providing storage facilities for bicycles as well as parking facilities of adequate space from which vehicles may unload bicycles and wheelchairs, are both essential elements in promoting non-motorized modes of transportation. The corridors of the *North Dade Greenways* define the need for locations -at points of origin and termination of each path- for unimpeded accessibility. Because the proposed paths work as a complete system, longer trails create junctions with intersecting trails, allowing for the design of a node. These nodes – or trailheads – are usually designed as a park / plaza with motor vehicle and bicycle storage. The design of the system manifests the greenway concept of linking hubs, as the trails connect various points offering a variety of amenities including drinking fountains and restrooms. As the development and construction of corridors within the system occurs, the circuitry of the system will serve an ever-expanding population. As a complex system of corridors, the *North Dade Greenways* will provide students with a bicycle path to their elementary school around the corner, while offering the serious recreational cyclist an opportunity to complete a one hundred mile ride.

[1] Jane Holtz Kay. *Asphalt Nation: How the Automobile Took Over America and How We Can Take It Back* (New York: Crown Publishers, Inc., 1997) 5.

[2] U. S. Department of Transportation and the Federal Highway Administration. *The National Bicycling and Walking Study: Transportation Choices for a Changing America.* (Washington D. C.: U. S. Government Printing Office, 1994) 19.

[3] American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities* (Washington D. C.: U. S. Government Printing Office, 1991) 1.

[4] *Ibid.*, 5.

[5] *Ibid.*, 7.

[6] *Ibid.*, 12.

[7] Metropolitan Planning Organization. *Metro-Dade Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 1-2.

[8] American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities* (Washington D. C.: U. S. Government Printing Office, 1991) 12.

[9] *Ibid.*, 12.

[10] *Ibid.*, 13.

[11] *Ibid.*, 13.

[12] *Ibid.*, 16.

[13] *Ibid.*, 18.

[14] *Ibid.*, 19.

[15] *Ibid.*, 21.

[16] *Ibid.*, 21.

[17] *Ibid.*, 22.

[18] *Ibid.*, 23.

[19] *Ibid.*, 23.

[20] *Ibid.*, 25.

[21] Evan Terry Associates, PC. *American with Disabilities Act Facilities Compliance* (New York: John Wiley & Sons, 1993) 85.

[22] American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities* (Washington D. C.: U. S. Government Printing Office, 1991) 25.

[23] *Ibid.*, 26.

[24] *Ibid.*, 26.

[25] *Ibid.*, 27.

[26] *Ibid.*, 27.

[27] *Ibid.*, 27.

[28] *Ibid.*, 31.

[29] *Ibid.*, 32.

[30] *Ibid.*, 33.

[31] *Ibid.*, 33.

[32] South Florida Water Management District. *Criteria Manual for Use of Works of the District Permit Information Manual* (Tallahassee: SFWMD Visual Communications Department, Volume V) 21-2.

[33] American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities* (Washington D. C.: U. S. Government Printing Office, 1991) 34.

[34] *Ibid.*, 36.

[35] *Ibid.*, 36.

IMPLEMENTATION STRATEGIES

The State of Florida has recognized the impact of continued growth and has, through a number of comprehensive actions, sought to address the need to manage this population growth[1]. Concurrently, the State has sought to support a broad range of initiatives designed to serve the recreational needs of residents and tourists alike. Among these initiatives is the development of a statewide network of greenways that will benefit Floridians today and in generations to come.[2]

The agenda launched by the Florida Greenways Commission in 1994 is a strategic model for developing corridors that will protect environmentally sensitive lands and wildlife. This program is also intended to provide access to outdoor recreational opportunities and other utilitarian attractors.[3] The seven goals initiated by the Greenways Commission – that consider both public and private resources – are framed with the intention to integrate into a statewide system of natural areas, open spaces, trails, cultural and historic resources, and greenways for wildlife and people, all essential aspects of the natural and human-generated environments.[4] The trail network of non-motorized transportation linkages proposed for the *North Dade Greenways* is, in a number of ways, analogous to the Commission's concept of linking regional ecological hubs. Essentially, the implementation of these greenway corridors relies upon public support at all stages of planning and design, and in the subsequent processes through which funding sources are identified and funding for trail construction is secured.

To accomplish the statewide objective of an effective, efficient, safe, and attractive greenway system, the following goals of the Florida Greenways Commission must be achieved:

- The creation of an institutional framework in support of state and community greenway initiatives that seeks to coordinate government and private sector greenway efforts;
- Stimulate public and private sector awareness, involvement, and action in planning, creating and managing community greenways and greenways systems;
- Design and manage a statewide system of greenways providing essential ecological linkages that
  - (1) conserve critical elements of Florida's green infrastructure of native ecosystems and landscapes; and
  - (2) facilitate the ability of these ecosystems to function as dynamic systems, while maintaining the evolutionary potential that will facilitate their adaptation to future environmental changes;

- Design, develop, and maintain trails throughout Florida that provide public access to and promote appreciation, support, and conservation of the natural, cultural, and historical features within or associated with the state's greenways system;
- Educate and inform diverse audiences about the aesthetic, ecological, social, and cultural values and benefits of greenways, and the contributions that a statewide greenways system will offer;
- Fund the creation and maintenance of Florida's greenways system utilizing a combination of funding sources.[5]

PUBLIC EDUCATION

Community awareness of the benefits of greenways, and public participation in the planning process of greenways are the keys to any successful greenway initiative. Greenways provide connections between native ecosystems, landscapes, parks, historic sites, and residential areas, and they also provide a means of connecting people to their surrounding landscape.[6] By creating a "sense of place", people tend to collectively feel responsible for their environment, and thereafter, the community instinctively develops a sense of pride that will encourage the preservation of green urban spaces and the corridors that link them.

The importance of protecting and enhancing the environmental resources of Miami-Dade County is a policy imperative that is a cornerstone in maintaining Florida's sustainable future. The impact of such action reaches far well beyond the environmental context. The system of native landscapes and ecosystems that support clean air, water, fisheries, and other natural resources for the benefit of residents also is itself the scenic natural beauty that draws people to visit and settle in south Florida. This dense urban infrastructure consequently requires a healthy, dominating landscape that will support a sustainable economic future. Public knowledge of greenways benefits and their impacts on future resources for the residents of Miami-Dade will help provide the impetus to develop a countywide system of greenways for both recreation and utilitarian uses.

The on-going interests in the conservation of natural areas can be further accelerated if these areas are linked by greenway corridors. Ecological connectivity is the

objective of a sustainable landscape in which species diversity is enhanced by the successful movement of energy and species across the landscape. This is an even more critical consideration within densely populated urban areas. As ecological connectivity is enhanced and landscape corridors become more numerous and varied, areas for foraging and shelter from predators become more readily accessible to an increasing diversity of species.

As seen in the human depredations of the last century, the anthropocentric carpet of urban expansion is sweeping west toward south Florida's fragile wetlands at an alarming rate. As this urban sprawl moves westward, the area reserved for faunal foraging and shelter is minimized. The introduction of a greenways system for north Miami-Dade County will help protect, preserve, and conserve South Florida's unique ecosystems and landscapes by providing a viable, ecologically responsive fabric woven from the natural and man-made, creating a graded buffer zone along the Miami-Dade County Urban Development Boundary.

A current satellite image of South Florida reveals a marked impression of urbanization, and its chiseled effect on the fragile wetland edge.

The report of the Florida Greenways Commission notes that greenways serve three important ecological functions. They maintain:

(1) space to sustain the biodiversity of native plant and animal communities;

(2) connections to allow interchange between native plant and animal communities; and

(3) the health of native ecosystems and landscapes by sustaining their physical,

chemical, and biological processes.[7]

This overarching concept of connectivity is analogous to human communities that become more livable if they also are linked by greenway corridors. Interconnected native ecosystems provide a number of other important services. "They filter pollutants from the air, water, and soil; aid in cooling streams and soils through shading; protect and enhance the water quality of rivers and lakes; recharge groundwater aquifers; and buffer developed areas from floodwaters, saving lives and property."[8] Public knowledge of the economic benefits of a countywide system of greenways will make this greenway vision a reality.

Positive economic effects of greenways accrue in several ways. Taxable properties that are located adjacent to greenways often increase in value and generate a greater overall income for their community. "According to local surveys, homes located near greenways and trails commonly sell for more than similar homes in other areas."[9] The Rivers, Trails, and Conservation Assistance (RTCA) program of the National Park Service has produced a resource book – the *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors* – that addresses issues of appreciating real estate value. This resource text provides local-level planners with an understanding of how to communicate to the public the potential economic impacts a proposed or existing corridor project will have on a community. Among the many economic benefits outlined in this resource text is the fact that the quality of life in an area is increasingly cited as a major factor in corporate and business location decisions. "Quality of life for employees was the third most important factor in locating a business, according to an annual survey by Cushman & Wakefield in 1989."[10] Greenways are attractive to businesses and corporations. Office site locations adjacent to trails and greenways are also likely to be more attractive to prospective tenants than sites lacking such amenities. "Businesses are realizing the benefits of healthy employees, both in increased efficiency and decreased health insurance claims."[11] Greenways also help to promote employee fitness by providing convenient opportunities for exercise, such as walking, jogging, or exercise courses.

The *Florida Greenways Commission Report to the Governor* suggests other significant benefits attributable to greenways, including the conservation of historical and cultural resources, the opportunity for public recreation close to home, outdoor education, the protection of working landscapes, influencing urban form through growth management, and providing modes of transportation.[12] The corridors in the *North Dade Greenways* are proposed to offer non-motorized transportation corridors for commuting to work or school, bicycling or walking to local businesses and restaurants, and for both active and passive recreational experiences. If these forms of non-motorized transportation are made convenient by greenways, they can help reduce air pollution and road congestion as well.

"The objective is to inform Florida's citizens about greenway benefits so they will be inspired to create them in their own communities."[13] The Commission recommends the

following three-staged process to engage the public:

- *Awareness*, during which people learn that the issue exists, are aware that it is out there, but have no depth of knowledge;

- *Knowledge / Understanding*, during which people gain a broader understanding of the issue, how it affects them, and what needs to be done about it; and

- *Action*, during which people decide the issue is important enough to act on.[14]

Through the Florida Greenways Commission, the State of Florida is currently implementing an extensive educational program to inform the public about the benefits of a statewide greenways system. The five-step plan of the Commission includes encouraging:

- development and implementation of a comprehensive education program that will inform and educate the public.

- involvement of educational groups in the planning, developing, and implementing student / teacher education programs that promote the awareness, appreciation and understanding of greenways and how they aid in sustaining vital native ecosystems and landscapes.

- education of the business community and other landowners about the impacts of greenways that will address any concerns and foster support of greenway programs and projects.

- local public land managers and comprehensive planners to incorporate the concept of greenways and greenway linkages in open space / natural area planning and regulation.

- under-represented groups to become more active in greenways and persuade greenway leaders to include urban and rural areas in greenway planning.

Greenways: A Guide to Planning, Design, and Development (Schwartz) notes that in most successful greenways, local residents assisted in the planning process.[15] Every step in the implementation process for greenway development should involve the public. "Greenway leaders must be sure to make their efforts relevant to all ethnic and income groups in both urban and rural areas." The involvement of the public represented by neighborhood groups, civic associations, religious organizations, recreational and environmental entities, and other key groups will focus on neighborhood beautification and the development of recreational resources for children.[16]

The North Dade Greenways project identifies a number of transit corridors for multimodal use. Such recommendations are an outgrowth of community need and are in response to the limited consideration of alternative transport modes. Well conceived redevelopment within Miami-Dade County's urban areas and the inherent need for sustainable transportation systems that enhance "sense of place", have the combined potential to create a desirable community in which to live.

The neighborhood, community, regional, and interstate roadway network that facilitates travel is an American tradition. But the dependence upon this limited form of mobility has led to poor air quality, urban gridlock, crime and urban decay.[17] The discourse *Building the Urban Greenway: Greenway Transit Corridors for Multimodal Use* explores the origins of greenway funding sources and addresses the needs apparent in South Florida's communities, reflected in the following excerpt:

> "Greenway transit corridors for multimodal use, more simply referred to as urban greenways, are proposed in response to multiple needs: to provide effective transportation to communities who cannot or do not want to further increase their size, scope and carrying capacity of their road network; to provide an attractive and effective vegetative buffer between conflicting uses and densities; to promote pedestrian safety and healthy, active lifestyles; to enhance the environmental qualities of a community; to promote crime prevention through urban redesign; to facilitate urban redevelopment by replacing undesirable land use with a publicly desirable urban greenway; to increase property values adjacent to what effectively becomes a linear park; to provide alternative corridors for underground utilities associated with urban landfill and redevelopment efforts; and to make more accessible, at pedestrian speeds and human scale, the multitude of community assets – our parks, schools, historic facilities, libraries, museums, beaches, riverfronts, airports, Tri-Rail stations, bus terminals, port facilities, shopping and downtown areas. Urban greenways will let us connect our community assets so that as redevelopment occurs, the greenway connected urban community can become greater than simply a sum of its parts".[18]

Florida is clearly at the forefront of the greenways movement with its existing programs for land acquisition and its support of community conservation initiatives. A program titled "Preservation 2000" has made Florida a national leader in land conservation. With the addition of twenty other community-based environmental land acquisition programs, and recreation lands that are already in public ownership, the Florida Department of Transportation's ISTEA funding coupled with numerous other public and

private efforts to provide trails and greenways, causes Florida to stand out in the United States as realistically having the ability to create an integrated statewide system of greenways.[19]

Clearly, actively seeking public support and involvement in the implementation, design, and construction of greenway trails is foremost in both smaller community projects and countywide projects such as the *North Dade Greenways.* State and federal funding sources, as well as smaller privately awarded grants, will need to be initially identified and programmed to facilitate the research, design, construction, and maintenance of the proposed corridors.

The *1996 Transportation Improvement Program* of the Metropolitan Planning Organization of Miami-Dade County has allocated approximately $1.167 billion for ground transportation improvements, operation, and capital expenses for the next five years (1996-2000). Eight million dollars are reserved for bicycle and pedestrian facility improvement and construction in Miami-Dade County. According to the *Metro-Dade Bicycle Facilities Plan*, a combination of the Citizens Transportation Advisory Committee (CTAC), the Bicycle / Pedestrian Advisory Committee (BPAC), and the Transportation Plan Steering Committee are proposing that a higher percentage of the ground transportation funding – 1.5% - be reserved for bicycle transportation. "While a 1.5% allocation may seem a costly proposal to some, this figure not only under-represents the present redership – currently estimated to be from 5% to 10% -- but does not consider future ridership increase that will result from proper facilities enhancement and expansion."[20] The *National Bicycling and Walking Study* recommends the budgeting of one-half of this amount (.75%) for county bicycle and pedestrian facility improvements.[21]

FEDERAL FUNDING SOURCES

The National Trust for Historic Preservation and the Federal Highway Administration have developed a solid working relationship that seeks to provide benefit to all interests across the country. Under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the historic preservation and highway communities have new opportunities to enhance the American travel experience. This new law broadened the Federal transportation focus from constructing new roads, to providing diverse surface transportation options to help make communities more livable. "ISTEA not only authorized $155 billion to be made available through fiscal year 1997 for transportation activities – including highways, transit systems, scenic byways, and bicycle and pedestrian facilities – it also established funding and planning provisions aimed at improving community life and encourage public involvement in transportation decisions.[22]

ISTEA has authorized approximately $3 billion for Transportation Enhancement Activities (TEAs). The funding for these TEAs are limited to the following:

(1) facilities for bicycle and pedestrians,

(2) the acquisition of scenic easements and scenic historic sites,

(3) scenic or historic highway programs,

(4) landscaping and other scenic beautification,

(5) historic preservation,

(6) rehabilitation and operation of historic transportation,

(7) preservation of abandoned railway corridors,

(8) control and removal of outdoor advertising,

(9) archeological planning and research, and

(10) mitigation of water pollution due to highway runoff.

The TEAs are nestled within the larger Surface Transportation Program (STP) in ISTEA. Other targeted funding categories within ISTEA should include National Highway System (NHS) funding and the Congestion Management and Air Quality (CMAQ) Improvement Program.[23]

The Surface Transportation Program is a new funding category that is available for highway, transit, bicycle, and pedestrian projects. Therefore, ISTEA requires that each state's Department of Transportation reserve at least 10 percent of its STP funds for use only on Transportation Enhancements.[24] STP funds are highly flexible and are structured around the needs of larger urban areas. Bicycle and pedestrian projects may be approved for non-capital work such as educational programs and bikeway maintenance activities.[25]

Funds allocated to the National Highway System by ISTEA are available for bicycle and pedestrian projects, especially those that are constructed adjacent to highways. The environmental restoration component of bicycle and pedestrian related activities should be stressed in order to be eligible for funding from the Congestion Management and Air Quality Improvement Program and the Clean Air Act. Both sources encourage the development of facilities that will promote alternate non-motorized modes of transportation.

The Clean Air Act of 1990 also encourages the development of bicycle storage facilities, sidewalks, and dedicated bicycle facilities.[26]

In order to be eligible for federal ISTEA Transportation Enhancement funds, a proposed project must first demonstrate the following:

- "A strong and direct relationship to the intermodal transportation system.
- Fit one or more of the ten TEA categories.
- Be officially sponsored by a local agency that has taxing authority, although in some states a private organization or individual can own the affected property.
- NOT be a standard mitigation or maintenance project.[27]

Additional federal funding under ISTEA can be targeted through the Federal Lands Highway Act, the Federal Transit Act, the National Recreational Trails Fund, the Scenic Byways Fund, or the Section 402 Highway Safety Grant Program. Federal Transportation Enhancement funding requires the recipient to pay most, if not all project costs up front with the knowledge that they will be reimbursed later. TEAs also require the project sponsors to match 20 percent of the project's cost. Recipients of Transportation Enhancement funds must comply with numerous federal requirements, including the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the U. S. Department of Transportation (DOT) Act. The management and maintenance of the project following construction is the responsibility of the recipient.[28]

The U. S. Department of the Interior and the U. S. Department of Housing and Urban Development fund the construction of bikeways across the country. The Land and Water Conservation Fund (LWCF) of the Department of the Interior was the principle vehicle for bicycle facilities development in the United States between 1968 and 1978. Approximately $20 million has been available for distribution throughout the fifty states. Most funding is at a 50/50 federal/non-federal matching ratio. Community Development Block Grants (CDBG) awarded by the Department of Housing and Urban Development are provided to communities and states to carry out a wide range of community development activities. Under the CDBG, the Neighborhood Development Demonstration Program (NDDP) funds the construction of sidewalks and pedestrian facilities.[29]

STATE FUNDING SOURCES

Several departments and/or agencies of the State of Florida offer assistance in both

the planning and construction of greenway corridors. The Florida Department of Transportation (FDOT) also engages in corridor planning studies. FDOT may fund studies within current intermodal project investigations to justify greenway transit corridors as an enhancement to existing studies such as the Florida Rail Corridor. Additionally, once a study is complete and a corridor plan is developed, a city or a county can submit an application to the Greenways and Trail Land Acquisition Program of the Florida Department of Environmental Protection, a program that "funds land purchases to create either linear corridors of landscaped courses linking parks, or trails providing access to green spaces, outdoor recreation and / or alternative transportation opportunities." Bonds that are issued through the sale of documentary stamps generate these funds through the State's Preservation 2000 funds.[30]

The Florida Department of Transportation may offer funds through many different programs. The FDOT *5-Year Work Program* is the critical document outlining in detail which transportation projects receive funding in any given year. This work program also includes all potential sources of funding, whether for highways, roads, rail, transit, or bicycle and pedestrian projects. Among the available funding programs through FDOT are the Joint Participation Agreement Programs (JPA), the Public Transit Service Development Program, and the Commuter Assistance Program.

LOCAL FUNDING SOURCES

Dade County's *Transportation Improvement Program* of 1996 contains appendices that parlay local option Dade County tax financing for some roadway improvements. Included in the program are references to funds obtained by Road Impact Fees, Capital Outlay Reserve (COR) Funds, and Capital Improvements Local Option Gas Tax. In 1966, the County Commission divided Miami-Dade County into nine road impact fee districts for the purpose of collecting funds for roadway improvements within each district. Pedestrian bridges that are proposed in the North Dade Greenways network may be funded through "Road and Bridge" and "Traffic Operations Projects to Increase Capacity and Safety" (TOPICS) sections of the Road Impact Fee Improvement Program.[31]

The Capital Outlay Reserve Fund, noted in Miami-Dade County's *Bicycle Facilities Plan* of 1994, is a relatively small fund that is generated through the County's ad valorem taxes for new bikeways and sidewalks. The combined programs have usually totaled about $500,000 a year.[32]

The Capital Improvements Local Option Gas Tax authorizes county governments to levy an optional gas tax of up to six cents a gallon for roadway and right-of-way equipment and structures used primarily for the storage and maintenance of such equipment. Therefore, this gasoline tax may be used for the maintenance of bicycle and pedestrian

facilities and other structures that are associated with them.[33]

FUNDING THROUGH GRANTS

Many private and governmental organizations offer grants that can be used to finance the development and construction of community greenways for utilitarian and recreational use. Among the most highly publicized is the Florida Greenways Small Grants Program that is funded by the American Express Foundation and the John D. and Catherine T. MacArthur Foundation. This grant is awarded by the Florida Greenways Commission to local projects that stimulate or support community greenway initiatives. The American Greenways DuPont Awards Program offers greenway grants to non-profit organizations, public agencies, or individuals. In 1993, the program awarded 57 grants in 31 states ranging from $500 to $2500.[34]

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[1] 1000 Friends of Florida. "Tell Your Lawmakers: Growth Management Works for Florida," *Foresight* vol. 7 no. 1 (Winter 1994): 1.

[2] 1000 Friends of Florida and The Conservation Fund. "Creating a Statewide Greenways System for Florida," *Florida Greenways... For Wildlife... For People... Forever* vol. 2 no. 3 (Winter 1994): 2.

[3] Florida Greenways Commission. *Creating a Statewide Greenways System: Report to the Governor* (Tallahassee: Southwest Florida Water Management District and St. Johns River Water Management District, December 1994) 1.

[4] *Ibid.*, 19.

[5] *Ibid.*, 19.

[6] *Ibid.*, 31.

[7] *Ibid.*, 13.

[8] *Ibid.*, 13.

[9] *Ibid.*, 13.

[10] Rivers, Trails, Conservation Assistance Program of the National Park Service. *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors* (Washington D. C.: U. S. Government Printing Office, 1992) 6-3.

[11] *Ibid.*, 6-5.

[12] Florida Greenways Commission. *Creating a Statewide Greenways System: Report to the Governor* (Tallahassee: Southwest Florida Water Management District and St. Johns River Water Management District, December 1994) 64.

[13] *Ibid.*, 65.

[14] *Ibid.*, 65.

[15] Loring LaB. Schwarz, ed. *Greenways: A Guide to Planning, Design, and Development* (Washington D. C.:

Island Press, 1993) 18.

[16] Florida Greenways Commission. *Creating a Statewide Greenways System: Report to the Governor* (Tallahassee: Southwest Florida Water Management District and St. Johns River Water Management District, December 1994) 69.

[17] Thomas F. Gustafson and Phil Rothschild. *Building the Urban Greenway: Greenway Transit Corridors for Multimodal Use* (Ft. Lauderdale: May 9, 1997) 1.

[18] *Ibid.*, 1.

[19] Florida Greenways Commission. *Creating a Statewide Greenways System: Report to the Governor* (Tallahassee: Southwest Florida Water Management District and St. Johns River Water Management District, December 1994) 71.

[20] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[21] US Department of Transportation and the Federal Highway Adminstration . *National Bicycling and Walking Study* (Washington D. C.: US Government Printing Office, 1994) 7.

[22] I Mei Chan, ed. *Building on the Past Traveling to the Future: The Preservationist's Guide to the ISTEA Transportation Enhancement Provision* (Washington D. C.: Federal Highway Administration and the National Trust for Historic Preservation, 1996) 7.

[23] *Ibid.*, 14.

[24] *Ibid.*, 14-5.

[25] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[26] *Ibid.*, 7-5.

[27] I Mei Chan, ed. *Building on the Past Traveling to the Future: The Preservationist's Guide to the ISTEA Transportation Enhancement Provision* (Washington D. C.: Federal Highway Administration and the National Trust for Historic Preservation, 1996) 17.

[28] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 8-5.

[29] *Ibid.*, 7-7.

[30] Thomas F. Gustafson and Phil Rothschild. *Building the Urban Greenway: Greenway Transit Corridors for Multimodal Use* (Ft. Lauderdale: May 9, 1997) 13.

[31] Metropolitan Planning Organization. *Bicycle Facilities Plan* (Miami: Metropolitan Dade County, 1994) 7-7.

[32] *Ibid.*, 7-7.

[33] *Ibid.*, 7-7.

[34] 1000 Friends of Florida and The Conservation Fund. "Florida is Looking for 150 Greenways1 Is Yours One of Them?" *Florida Greenways... For Wildlife... For People... Forever* vol. 2 no. 3 (Winter 1994): 1.

APPENDICES

LANDSCAPE LIST

PARTIAL LISTING OF SUGGESTED MATERIAL FOR DADE COUNTY BICYCLE AND PEDESTRIAN FACILITIES

GROUND COVERS AND SMALL SHRUBS

Alligator Lily	*Hymenocallils palmeri*
Beach Verbena	*Verbena maritima*
Beach Sunflower	*Helianthus debilis*
Blanket Flower	*Gaillardia pulchella*
Blue Porterweed	*Stachytarpheta jamaicensis*
Broom Sedge	*Andropogon spp.*
Coastal Cocoplum	*Chysobalanus icaco* var. *horizontalis*
Cocoplum	*Chrysobalanus icaco*
Coral Honeysuckle	*Lonicera sempervirens*
Dwarf Wax Myrtle	*Myrica pumila*
Dwarf Yaupon Holly	*Ilex vomitoria*
Gama Grass	*Tripsacum floridanum*
Fakahatchee Grass	*Tripsacum dactyloides*
Golden Creeper	*Ernodia littoralis*
Gopher Apple	*Licania michauxii*
Hammock Snowberry	*Chiococca alba*
Horsemint	*Monarda punctata*
Lantana	*Lantana depressa*
Leather Fern	*Achrostichum spp.*
Lizard's Tail	*Saururus cernuus*
Matchweed, Creeping Charlie	*Lippia nodiflora*
Maypop	*Passiflora incarnata*

Muhly Grass	*Muhlenbergia capillaris*
Pennyroyal	*Piloblephis rigida*
Peperomia	*Peperomia obtusifolia*
Perennial Glasswort	*Salicornia virginica*
Pineland Snowberry	*Chiococca pinetorium*
Pink Purslane	*Portulaca oleracea*
Quailberry	*Crossopetalum ilicifolium*
Railroad Vine	*Ipomea pes-capre*
Sage	*Salvia spp.*
Sand Cordgrass	*Spartina bakeri*
Shield Fern	*Thelypteris spp.*
Shiny Blueberry	*Vaccinium myrsinites*
Smartweed	*Polygonum hydropiperoides*
Smooth Cordgrass	*Spartina alterniflora*
Spider Lily	*Hymenocallis floridana*
Spiderwort	*Tradescantia ohiensis*
Spoonflower, Arrow Arum	*Peltandra virginica*
String, Strap Lily	*Crinum americanum*
Swamp Fern	*Blechnum serrulatum*
Wild Petunia	*Ruellia caroliniensis*
Wiregrass	*Aristida stricta*

FRESH WATER AQUATICS

American Lotus	*Nelumbo lutea*
Spatterdock	*Nuphar luteum*
Yellow Water Lily	*Nymphaea mexicana*
Fragrant Water Lily	*Nymphaea odorata*
Floating Heart, Banana Lily	*Nymphoides aquatica*

PALMS & CYCADS

Buccaneer Palm	*Pseudophoenix sargentii*
Cabbage Palm	*Sabal palmetto* (nursery grown only)
Coontie	*Zamia integrifolia pumila*
Cuban Royal Palm	*Roystonea regia*
Dwarf Palmetto	*Sabal minor*
Florida Thatch Palm	*Thrinax radiata*
Key Thatch Palm	*Thrinax morrisii*
Paurotis Palm	*Acoelorrhaphe wrightii*
Royal Palm	*Roystonea elata*
Saw Palmetto	*Sernoa repens*
Scrub Palmetto	*Sabal etonia*
Silver Palm	*Coccothrinax argentata*
Thatch Palm	*Thrinax radiata*
Veitchia Palm	*Veitchia sp.*

SHRUBS

Bay Cedar	*Suriana maritima*
Beautyberry	*Callicarpa americana*
Black Torch	*Erithalis fruticosa*
Bloodberry	*Cordia globosa*
Black Bead	*Pithecellobium guadelupense*
Buttonbush	*Cephalanthus occidentalis*
Cat's Claw	*Pithecellobium unguis-cati*
Cocoplum	*Chrysobalanus icaco*
Coral Bean	*Erythrina herbacea*
Everglades Velvetseed	*Guettarda elliptica*
Firebush	*Hamelia patens*

Florida Boxwood	*Schaeferia frutescens*
Florida Mayten	*Maytenus phyllanthoides*
Florida Privet	*Forestiera segregata*
Florida Trema	*Trema micantha*
Golden Dewdrop	*Duranta repens*
Green Buttonwood	*Conocarpus erectus*
Gulf Licaria	*Licaria triandra*
Jamaica Caper	*Capparis cynophallophora*
Limber Caper	*Capparis flexuosa*
Locustberry	*Byrsonima lucida*
Maidenbush	*Savia bahamensis*
Marlberry	*Ardisia escallonioides*
Myrsine	*Myrsine floridana*
Myrtle Oak	*Quercus myrtifolia*
Myrtle of the River	*Calyptranthes zuzygium*
Necklace Pod	*Sophora tomentosa*
Pineland Privet	*Forestiera pinetorum*
Red Stopper	*Eugenia rhombea*
Saffron Plum	*Bumelia celastrina*
Sand Live Oak	*Quercus geminata*
Saw Palmetto	*Serenoa repens*
Sea Myrtle Saltbush	*Baccharis halimifolia*
Seven Year Apple	*Casasia clusiifolia*
Silver Buttonwood	*Conocarpus erectus* var. *sericeus*
Simpson Stopper	*Myrcianthes fragrans*
Spanish Stopper	*Eugenia foetida*
Spicewood	*Calyptranthes pallens*
Sweet Acacia	*Acacia farnesiana*
Torchwood	*Amyris elemifera*

Varnish Leaf	*Dodonea viscosa*
Walter's Viburnum	*Viburnum obovatum*
Wax Myrtle	*Myrica cerifera*
West Indian Lilac	*Tertrazygia bicolor*
White Indigo Berry	*Randia aculeata*
White Stopper	*Eugenia axillaris*
Wild Coffee	*Psychotria nervosa*
Winged Sumac	*Rhus copallina*
Wild Dilly	*Manilkara bahamensis*
Wild Lime	*Zanthoxylum fagara*
Yaupon Holly	*Ilex vomitoria*

TREES

Bahama Strongbark	*Bourreria ovata*
Bald Cypress	*Taxodium distichum*
Black Ironwood	*Krugiodendron ferreum*
Black Mangrove	*Avicennia germinans*
Blolly	*Guapira discolor*
Carambola	*Averrhoa carambola*
Cinnamon Bark	*Canella winterana*
Coastal-Plain Willow	*Salix caroliniana*
Crabwood	*Ateramnus lucidus*
Custard Apple	*Annona glabra*
Dahoon Holly	*Ilex cassine*
Fiddlewood	*Citharexylum fruticosum*
Geiger Tree	*Cordia sebestena*
Green Buttonwood	*Conocarpus erectus*
Guiana Plum	*Drypetes diversifolia*
Gumbo Limbo	*Bursera simaruba*

Hercules' Club	*Zanthoxylum clava-herculis*
Jamaican Dogwood	*Piscidia piscipula*
Inkwood	*Exothea paniculata*
Krug's Holly	*Ilex krugiana*
Lancewood	*Nectandra coriacea*
Laurel Oak	*Quercus laurifolia*
Live Oak	*Quercus virginiana*
Loblolly Bay	*Gordonia lasianthus*
Longleaf Blolly	*Guapira longifolia*
Madagascar Olive	*Noronhia emarginata*
Mahogany	*Swietenia mahogani*
Mastic	*Mastichodendron foetidissimum*
Paradise Tree	*Simarouba glauca*
Persimmon	*Diospyros virginiana*
Pigeon Plum	*Coccoloba diversifolia*
Pitch Apple	*Clusia rosea*
Pond Apple	*Annona glabra*
Pond Cypress	*Taxodium ascendens*
Red Bay	*Persea borbonia*
Redberry Stopper	*Eugenia confusa*
Red Mangrove	*Rhizophora mangle*
Red Maple	*Acer rubrum*
Red Mulberry	*Morus rubra*
Satinleaf	*Chrysophyllum oliviforme*
Seagrape	*Coccoloba uvifera*
Shortleaf Fig	*Ficus citrifolia*
Silver Buttonwood	*Conocarpus erectus* var. *sericeus*
Slash Pine (Dade County)	*Pinus elliotii* var. *densa*
Soapberry	*Sapindus saponaria*

Southern Magnolia	*Magnolia grandiflora*
Southern Red Cedar	*Juniperus silicicola*
Spanish Lime	*Melicoccus bijugatus*
Sugarberry	*Celtis laevigata*
Sweetbay Magnolia	*Magnolia virginiana*
West Indian Cherry	*Prunus myrtifolia*
Wild Tamarind	*Lysiloma latisiliquum*
Willow Bustic	*Dipholis salicifolia*
Winged Elm	*Ulmus alata*
White Mangrove	*Laguncularia racemosa*

WILDFLOWERS

Rabbit Bells	*Crotalaria rotundifolia* var. *rotundifolia*
Butterfly Weed	*Asclepias species*
Thin-leaf Dayflower	*Commelina erecta* var. *angustifolia*
Tickseed	*Coreopsis leavenworthii*

GLOSSARY

DEFINITIONS OF TERMS USED IN *NORTH DADE GREENWAYS* STUDY

AASHTO – American Association of State Highway and Transportation Officials.

Attractors – potential trip destinations; for example: schools, recreation areas, shopping areas, and employment centers.

Bike Lane – a portion of a roadway which has been designated for the preferential or exclusive use of bicycles, with through travel by motorists and pedestrian prohibited, but with crossflows by pedestrians and motorists permitted.

Bike Route – a segment of a system with appropriate directional and informational markers and with a specific designation.

Bike Path – a bikeway which is physically separated from motorized vehicular traffic by an open space or barrier and which is either within the highway right-of-way or within an independent right-of-way.

Chokers – physical reductions of road widths installed at intersections to reduce speed.

Contractor's Fees – contractor's overhead profit and expenses.

Corridor – a strip of land tending to linear form that differs from the matrix on either side.

CSX Right-of-Way – CSX Transportation railroad right-of-way.

Design and Development – the costs of planning, designing, engineering, and permitting trail construction.

Design Speed – the maximum safe speed that can be maintained over a specific section of the non-motorized facility when conditions are so favorable that the design features of the non-motorized facility govern.

Easement – non-ownership access granted by legal means, providing for use of a property; most often for extended periods of time.

Ecological Connectivity – a measure of the degree to which a corridor or matrix is connected or spatially continuous.

FDOT – Florida Department of Transportation.

FEC Right-of-Way – Florida East Coast Railroad right-of-way.

Greenway – a linear open space established along either a natural corridor, such as a stream, or over land along the right-of-way of a railroad, a canal, a road, or other route; any natural or landscaped course for pedestrian or bicycle passage, an open space connector linking parks, nature preserves, cultural features, employment centers with each other and with populated areas.

Hub – a central place that anchors a network and provides an origin or destination for movement to or through it.

ISTEA – Intermodal Surface Transportation Efficiency Act of 1991.

Linkages – connections that enable the greenway system to function and multiply the utility of existing components by connecting them together, like beads on a string.

Matrix – the most extensive and most connected landscape element present; matrix is the largest portion of something surrounding smaller landscape elements.

Metro-Dade County (Metropolitan Dade County) – Miami-Dade County.

Miami-Dade County – Metro-Dade County (Metropolitan Dade County).

Multi-Use Facility – a transportation corridor designed for use by bicycles, pedestrians, and other non-motorized forms of travel; usually contains demarcated lanes segregating each activity in order to avoid potential mixed use conflicts.

Node – a point which an observer may enter, and which are the foci to and from which travel occurs; nodes can be junctions, places of break in transportation, a crossing or convergence of paths, or places which gain their importance from being the condensation of some use or physical character, as a street corner hang-out or an enclosed square; see *attractors and trip generators.*

Non-Motorized Facility – a travel corridor dedicated for use by bicycles, pedestrians, or other non-motorized activities.

Outrigger – a non-motorized transportation corridor that is cantilevered from the structure at the side of a bridge, highway overpass, or other elevated structure.

Patch – a non-linear surface area differing in appearance from its surroundings.

Recreational Bicyclist – an individual who uses a bicycle for the trip itself; the ultimate destination is of secondary importance.

Region – a term describing trail segments and their surrounding area(s).

Right-of-Way – a general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Roundabout – a traffic control structure placed at an intersection requiring a yield condition at all intersecting roads.

Speed Humps – a pavement undulation for the width of the traffic lane, usually three to four inches in height.

Street Closure – street access restricted to motor vehicles through the use of curbing, raised planters, bollards, gates, fencing, or landscaping.

Superelevevation – raised outside edge of a roadway curve designed to overcome the force causing a vehicle to skid when maintaining speed; often referred to as a "banked curve".

Traffic Calming – initiatives implementing physical changes to streets intended to reduce vehicle speeds and to decrease the propensity for intrusions into protected zones (schools, parks, historic districts, residential areas) by non-local drivers; some common traffic calming devices include speed humps, chokers, traffic circles, roundabouts, traffic diverters, and street closures.

Traffic Circle – traffic islands located in the center of a local intersection with a "Stop" condition at two or more intersecting roads.

Traffic Control Device – signs, signals, or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

Traffic Diverter – a diagonal barrier within an intersection restricting through traffic, and requiring choice of an alternate route – usually a ninety degree turn – through that intersection.

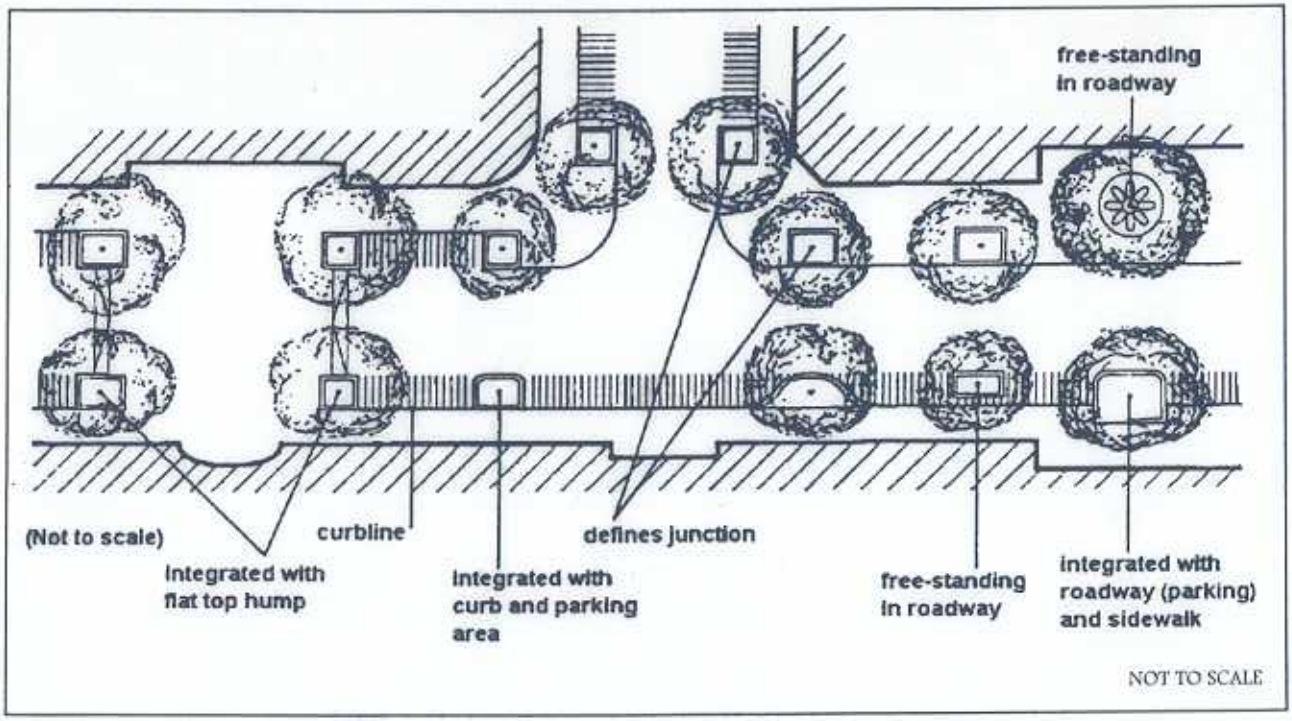
Transportation Corridor – (1) a strip of land between two termini within which traffic, topography, environment, and other factors are evaluated for transportation purposes; (2) a strip of land within which a transportation right-of-way exists.

Trip Generators – particular areas or locations which represent trip destination points to the recreational bicyclists or utilitarian bicyclist; for example: libraries, schools, recreation areas, and work centers.

Utilitarian Bicyclist – an individual who uses a bicycle primarily to reach a particular destination.

TRAFFIC CALMING ALTERNATIVES

THE FOLLOWING INITIATIVES HAVE BEEN OBTAINED FROM
STREET CLOSURE STUDY TECHNICAL MEMORANDUM 3,
PREPARED FOR
THE MIAMI-DADE COUNTY PUBLIC WORKS DEPARTMENT
AND THE METROPOLITAN PLANNING ORGANIZATION
MARCH 1996



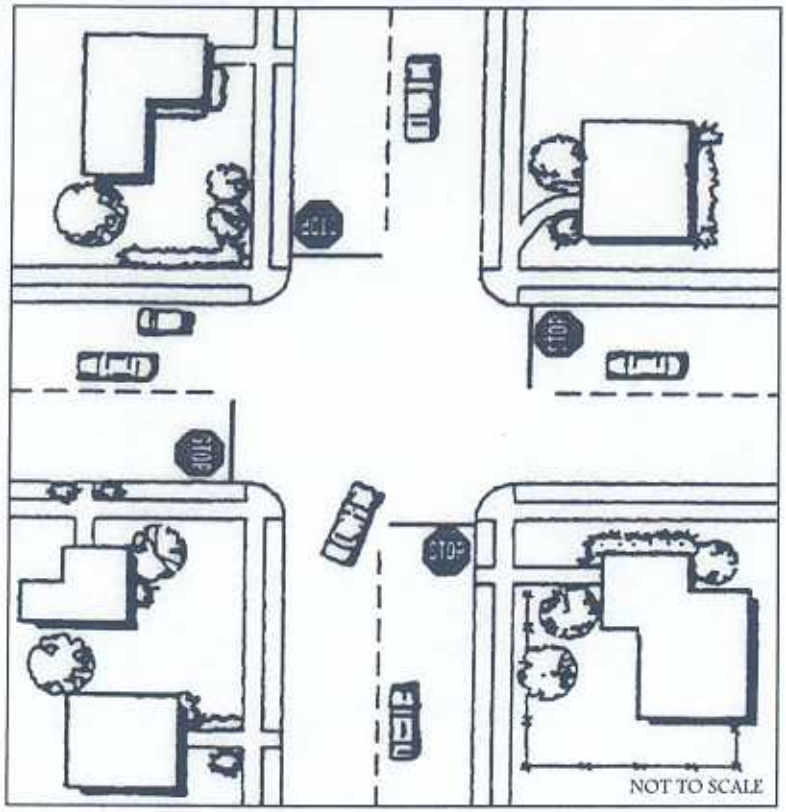
Source: After Chorlton, Edward. *Traffic Calming Guidelines.* Devon County, England, 1992.

DESCRIPTION

Additional landscaping enhances the beauty of a neighborhood, contributing to a residential character. Drivers are mentally encouraged to slow down while traversing this area.

DESIGN OBJECTIVES

- Reduce speed via subliminal suggestion
- Increase edge "friction" by addition of landscaping and / or parking



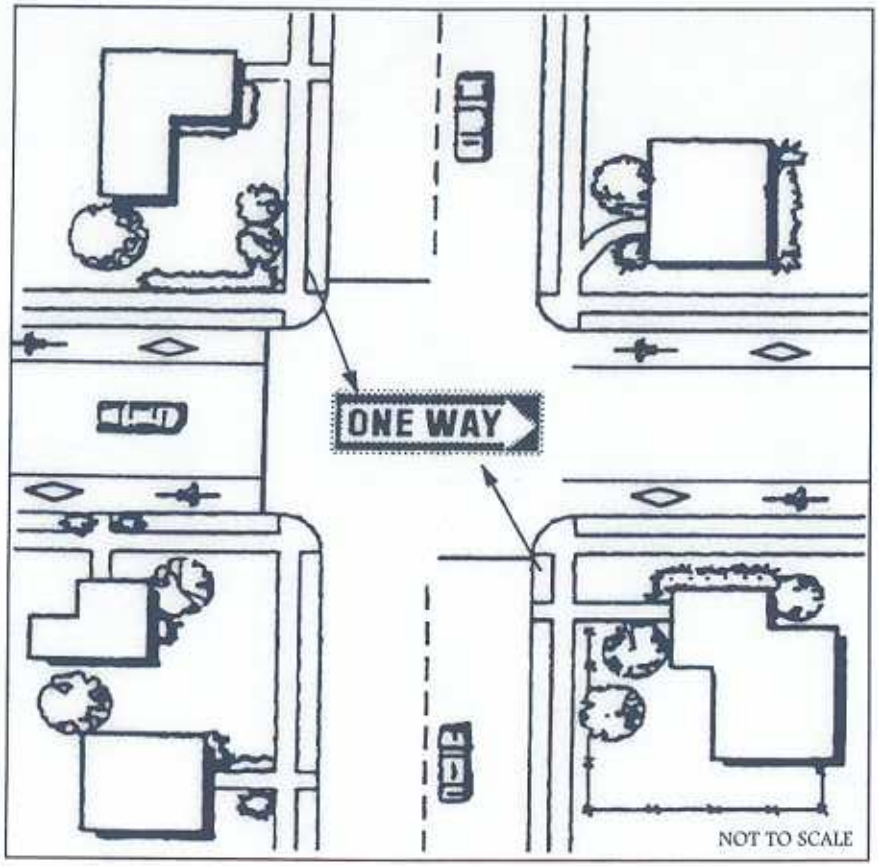
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program* and Frederic R. Harris, Inc.

DESCRIPTION

Stop signs are introduced where traffic is required to stop, for the purposes of assigning right-of-way and improving safety. Stop signs should be used only when they do not cause a substantial inconvenience to motorists. Traffic volumes and accident history are required for multi-way stop control, and precedes the installation of signalization warranted by increases in volume of accidents.

DESIGN OBJECTIVE

- Engage a regulatory traffic control device to improve safety at an intersection, by assigning right-of-way.
- Define intersections in a manner that enhanced bicycle / pedestrian accessibility and safety.



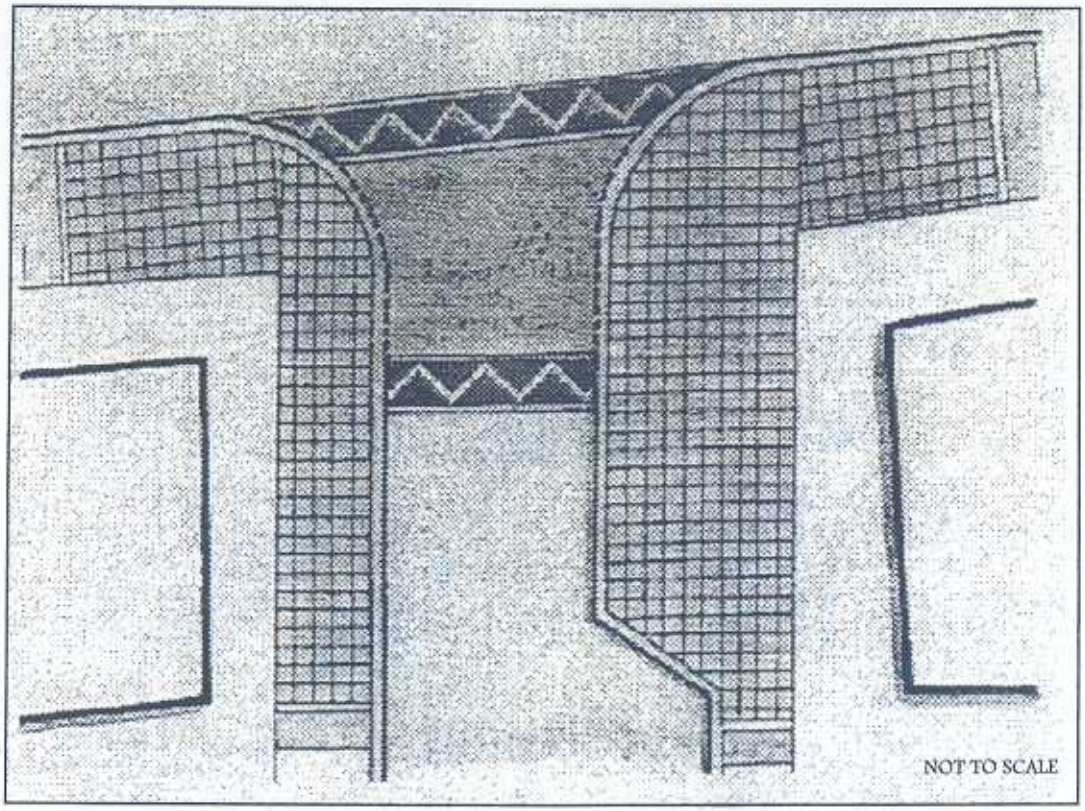
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program* and Frederic R. Harris, Inc.

DESCRIPTION

One-way streets create a discontinuity in the roadway network, forcing motorists into different navigational patterns. Traffic volumes are inherently reduced by eliminating the opposing direction of traffic flow.

DESIGN OBJECTIVES

- Reduce traffic intrusion
- May reduce excessive traffic volumes
- May reduce speeding
- Enhance bicycle / pedestrian accessibility and safety



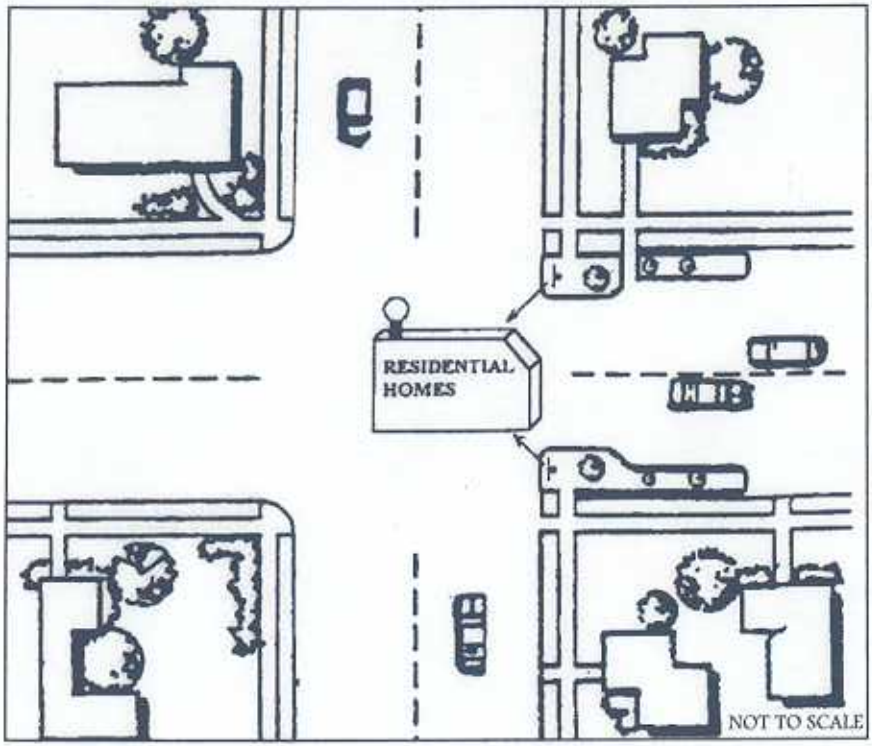
Source: After Chorlton, E. *Traffic Calming Guidelines.* Devon County, England, 1992.

DESCRIPTION

Textured pavement techniques create an inconsistency in the roadway and provide a mental and sometimes physical (depending on the chosen pavement surface) suggestion that a vehicle slow down through the specially paved area. This treatment can be used in conjunction with gateway treatments to further enhance.

DESIGN OBJECTIVES

- Alert driver to changes in land use and / or roadway classification
- Reduce speeding
- Enhance on-road and intersection safety for bicycles and pedestrians



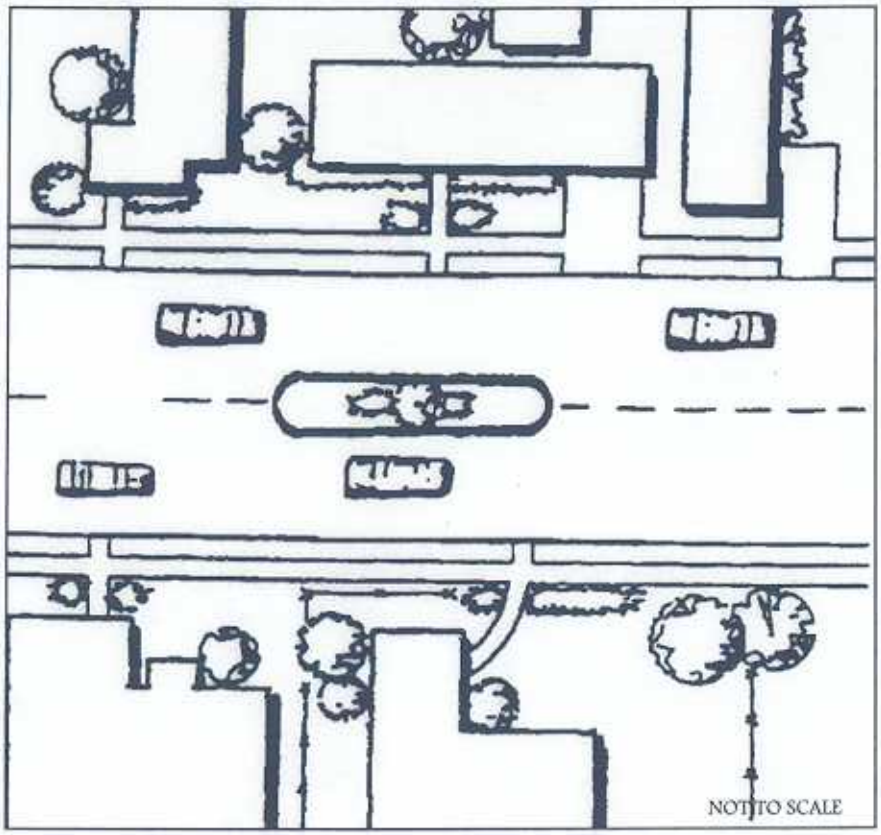
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program* and Frederic R. Harris, Inc.

DESCRIPTION

Gateway treatments provide a mental suggestion to the motoring public that this area is a private residential community and should not be used as a travel path. This type of treatment typically includes a monument with the community's name and landscaping at the entrance to a neighborhood. Chokers can also be used to further accentuate such gateway treatments.

DESIGN OBJECTIVES

- Reduce traffic intrusion
- Reduce excessive traffic volumes
- Reduce speeding
- Enhance on-road and intersection safety for bicycles and pedestrians



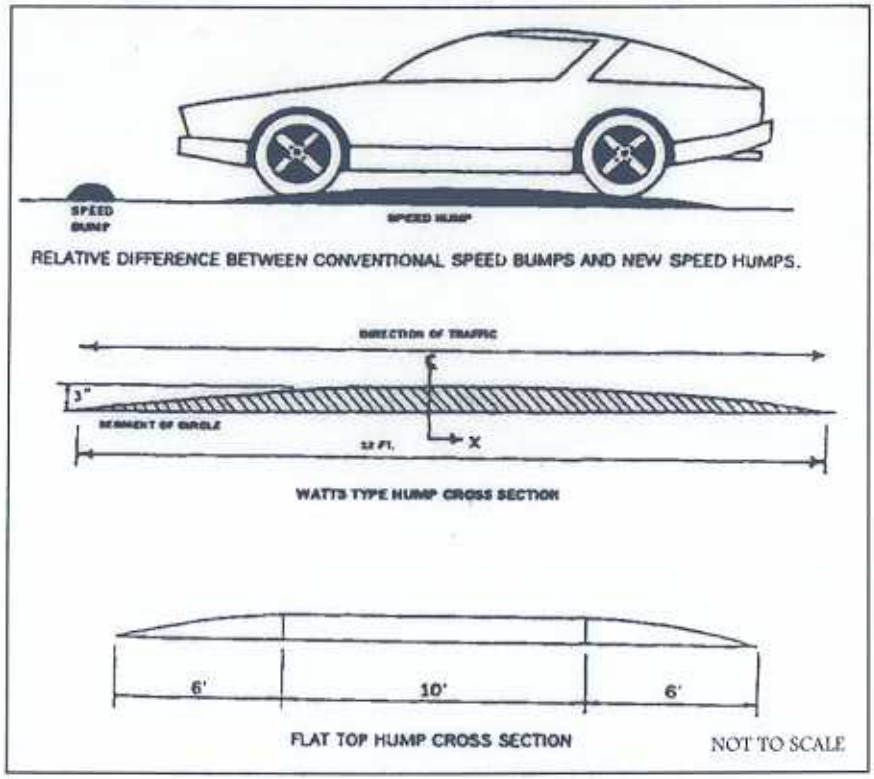
Source: After the city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The raised island reduces pavement width on the traveled roadway, yet allows opposing vehicles to pass. Raised islands can be used as pedestrian refuges and can be landscaped to accomplish aesthetic intent. The local access management plan must be considered in identifying appropriate and available access points for raised island implementation.

DESIGN OBJECTIVES

- Reduce traffic intrusion by physically restricting traffic movements
- May reduce speed
- Channelize traffic flow
- Enhance on-road safety for bicycle



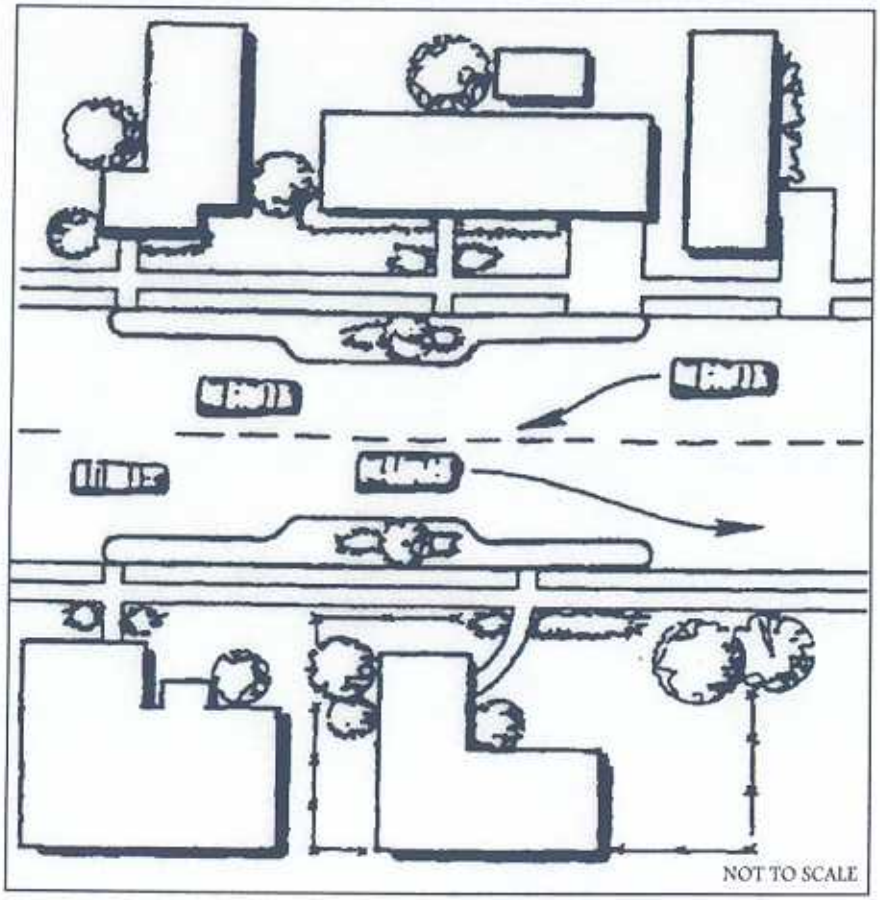
Source: After "Suburban Residential Traffic Calming", *ITE 1994 Compendium of Technical Papers*, and p. 446.

DESCRIPTION

The speed hump or raised crosswalk is used to reduce speeding. The hump creates an inconsistency in the roadway pavement, encouraging the deceleration of the vehicle. Speed humps should be used in a series to be effective. They can be painted a contrasting color than the roadway surface for further emphasis, and may also be surfaced in an alternate pavement.

DESIGN OBJECTIVES

- Reduce speeding
- Enhance mid-block and intersection safety for bicycles and pedestrians.



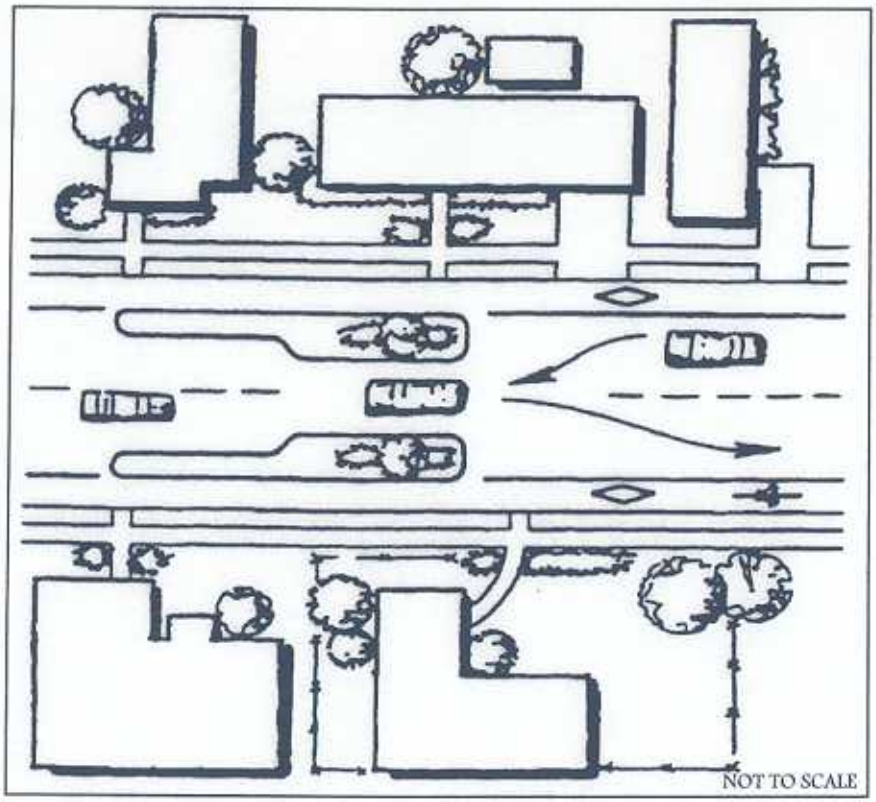
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The two-lane slow point reduces pavement width on the traveled roadway, while allowing opposing vehicles to pass.

DESIGN OBJECTIVES

- Reduce speed
- Reduce traffic intrusion
- Indirectly reduce traffic volumes
- Enhance mid-block safety for bicycles and pedestrians



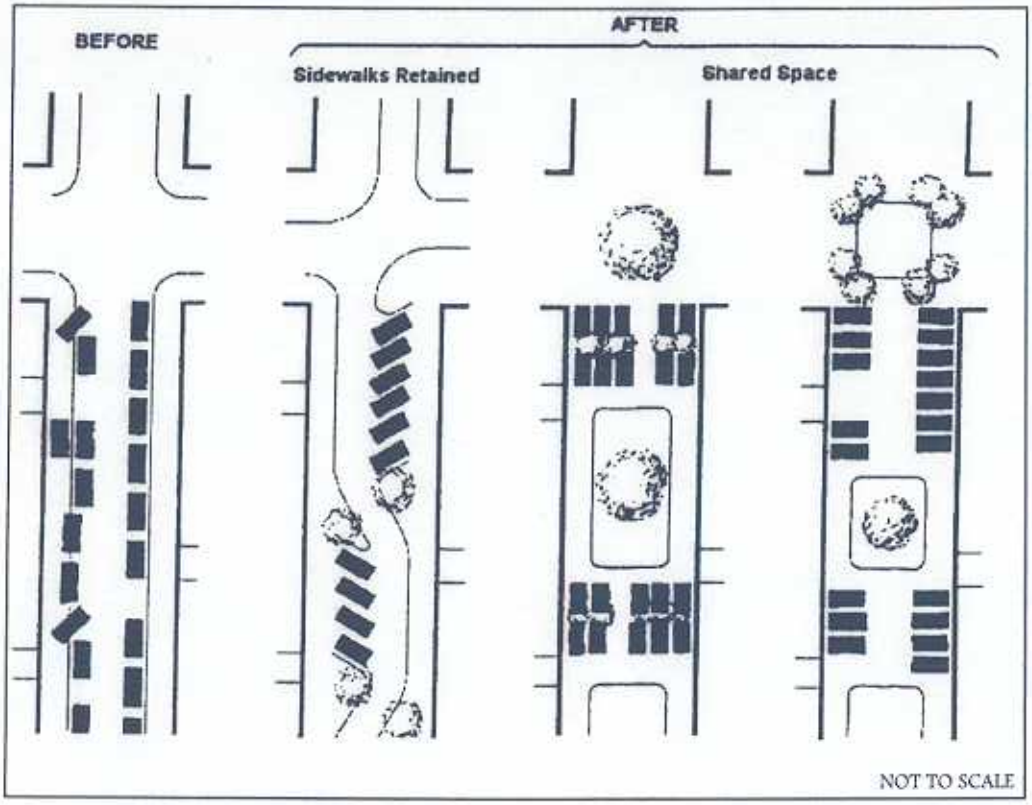
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The single-lane slow point reduces pavement width on the traveled roadway allowing only one vehicle to pass. Right-of-way is assigned on a "first come, first serve" basis.

DESIGN OBJECTIVES

- Reduce speed
- Reduce traffic intrusion
- Indirectly reduce traffic volumes



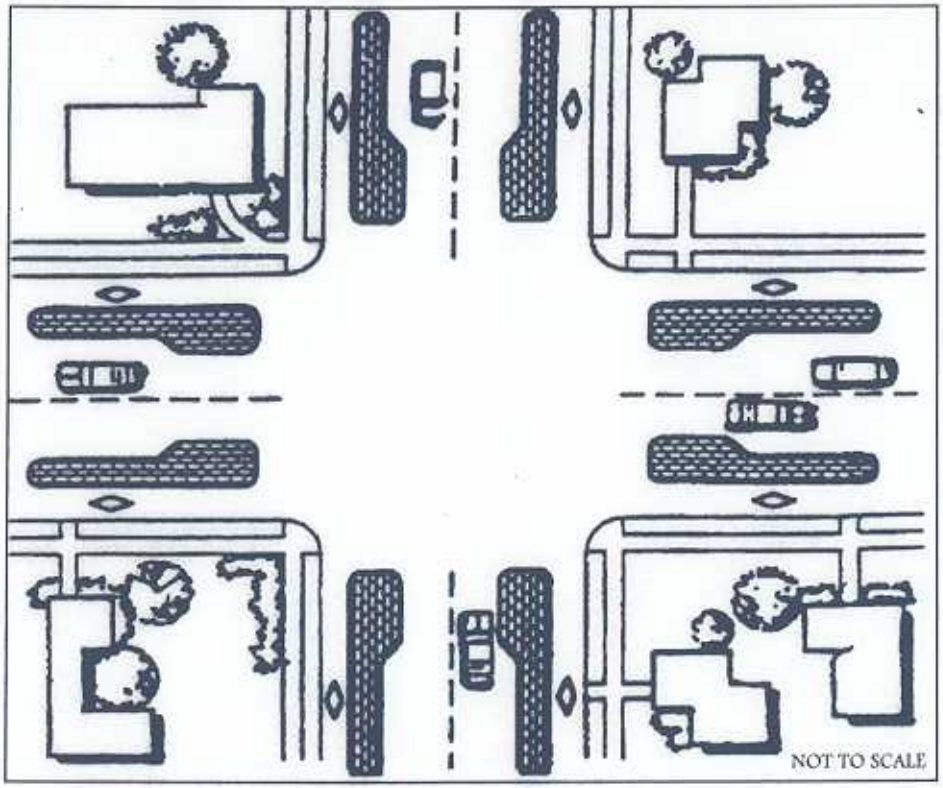
Source: After Chorlton, E. *Traffic Calming Guidelines.* Devon County England, 1992.

DESCRIPTION

The shared pedestrian zone provides a safe area for use by pedestrians. The design requires a significant amount of right-of-way, and can be landscaped to increase aesthetic quality. The designs may also integrate or separate pedestrians and the roadway.

DESIGN OBJECTIVES

- Reduce traffic intrusion
- Increase pedestrian safety
- Reduce speeding
- Enhance accessibility and safety of bicycles



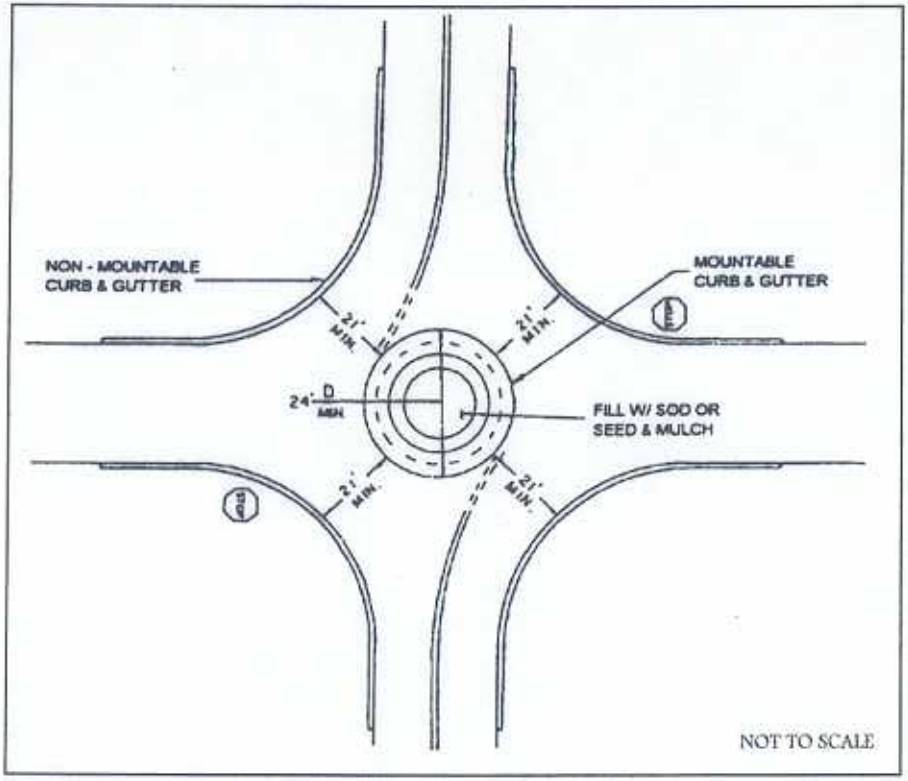
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

Traffic chokers reduce pavement width by constricting both the left and right sides of the roadway. Chokers allow passage of opposing vehicles and can be used in conjunction with gateway treatments.

DESIGN OBJECTIVES

- Reduce traffic intrusion
- Reduce speeding
- Enhance on-road safety of bicycles and pedestrians



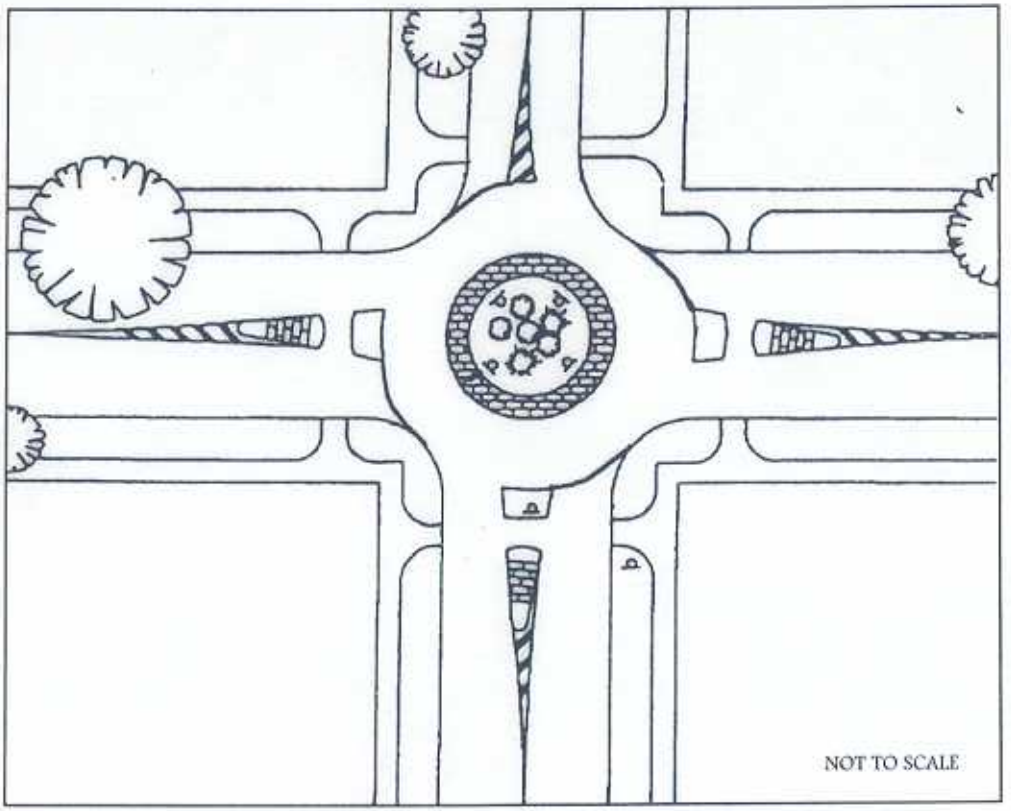
Source: After "Suburban Residential Calming", *ITE 1994 Compendium of Technical Papers*, p 446.

DESCRIPTION

The traffic circle is a traffic control device designed to assign right of way at an intersection. Traffic circles differ from roundabouts by requiring vehicles to come to a complete stop before entering the circle. The traffic circle requires less right-of-way since it is ideally designed to operate within the geometric constraints of the intersection.

DESIGN OBJECTIVES

- Reduce speeding
- Assigns right of way of an intersection
- Eliminates unwarranted multi-way stop control
- Requires reduced speed through intersection



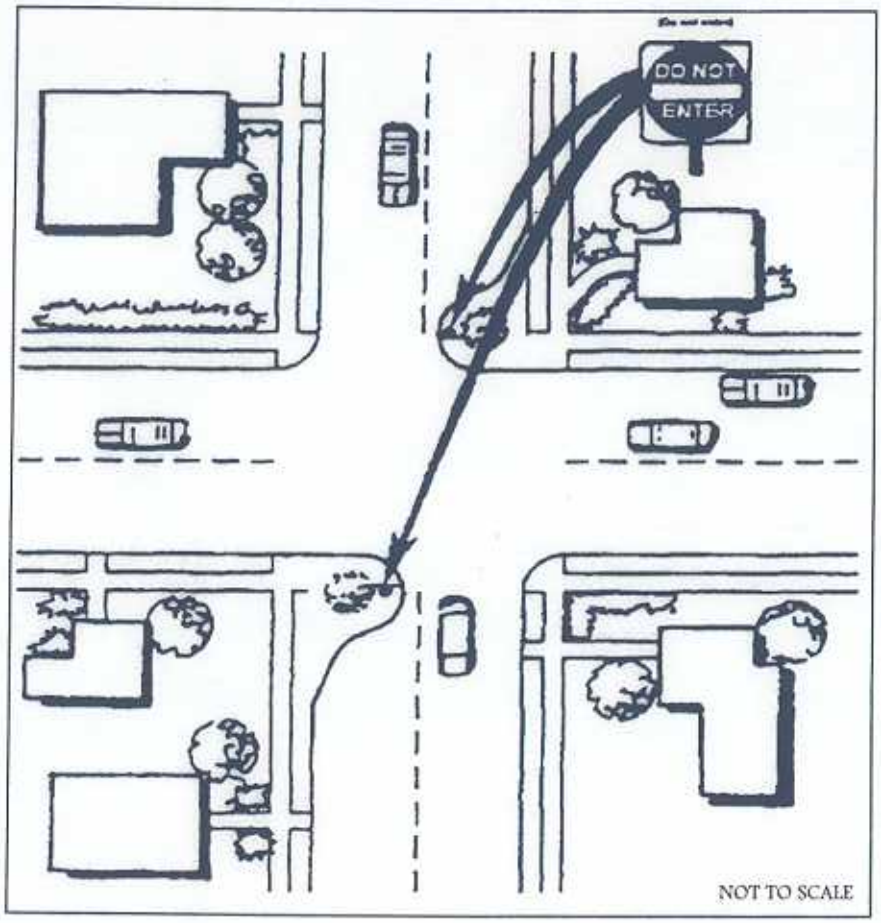
Source: After Chorlton, E. *Traffic Calming Guidelines.* Devon County, England. 1992.

DESCRIPTION

The roundabout is a traffic control device similar to a 4-way stop. However, traffic yields to opposing vehicles in the intersection. The roundabout allows continuous flow of traffic while slowing down vehicular speed. A reduction of travel speed is achieved by the designed deflection in the path of the vehicle.

DESIGN OBJECTIVES

- Slows traffic
- Can increase capacity
- Continuous traffic flow
- Requires reduced speed through intersection



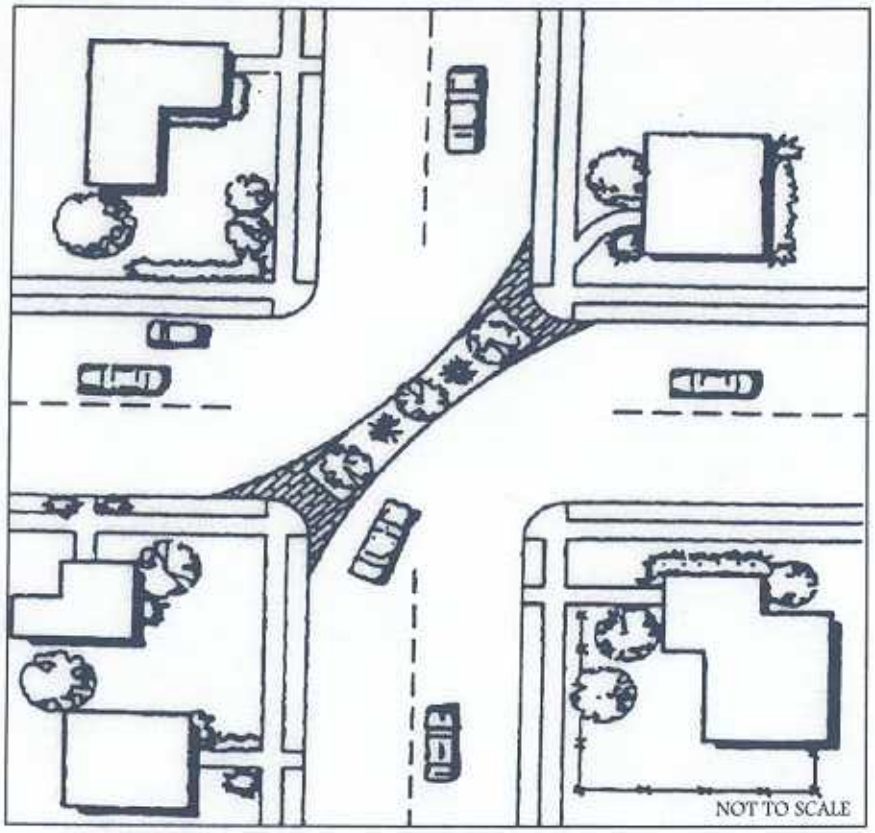
Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The semi-diverter is a physical roadway barrier which restricts vehicular movement within specific directions of travel. The barrier can be landscaped to improve aesthetic quality.

DESIGN OBJECTIVES

- Reduce traffic intrusion
- Reduce speeding
- Enhance on-road safety for bicycles and pedestrians



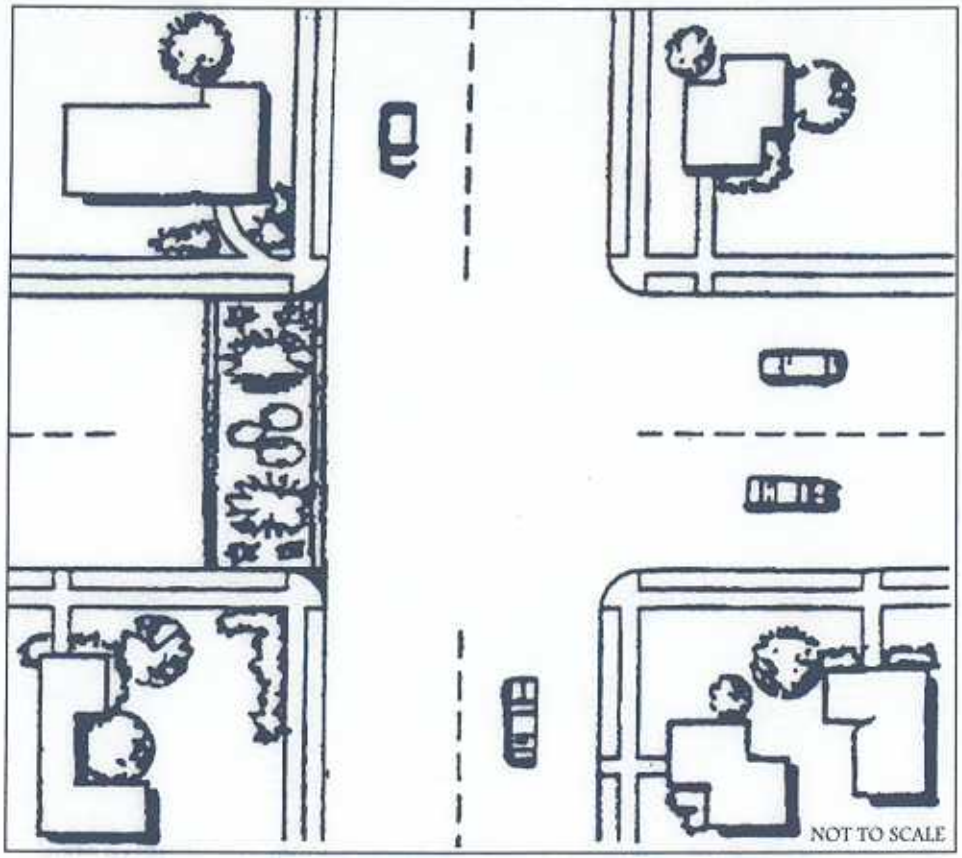
Source: After the city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The diagonal diverter restricts vehicular movements through an intersection. Motorists are forced to choose an alternate route when their current path is affected by a diagonal diverter.

DESIGN OBJECTIVES

- Reduce traffic intrusion by re-directing traffic
- May indirectly reduce traffic volumes
- Reduce vehicle speed through an intersection
- Enhance on-road bicycle safety



Source: After city of Boulder, Colorado. *Neighborhood Traffic Mitigation Program.*

DESCRIPTION

The street closure is a physical barrier which restricts access to a particular roadway. The barrier closes off all vehicular access and forces motorists to find an alternate route around the closure.

DESIGN OBJECTIVES

- Restrict vehicle access continuously or on a time-of-day basis
- Reduce traffic intrusion within protected areas (schools, parks, historic districts, residential areas)
- Reduce excessive traffic volumes

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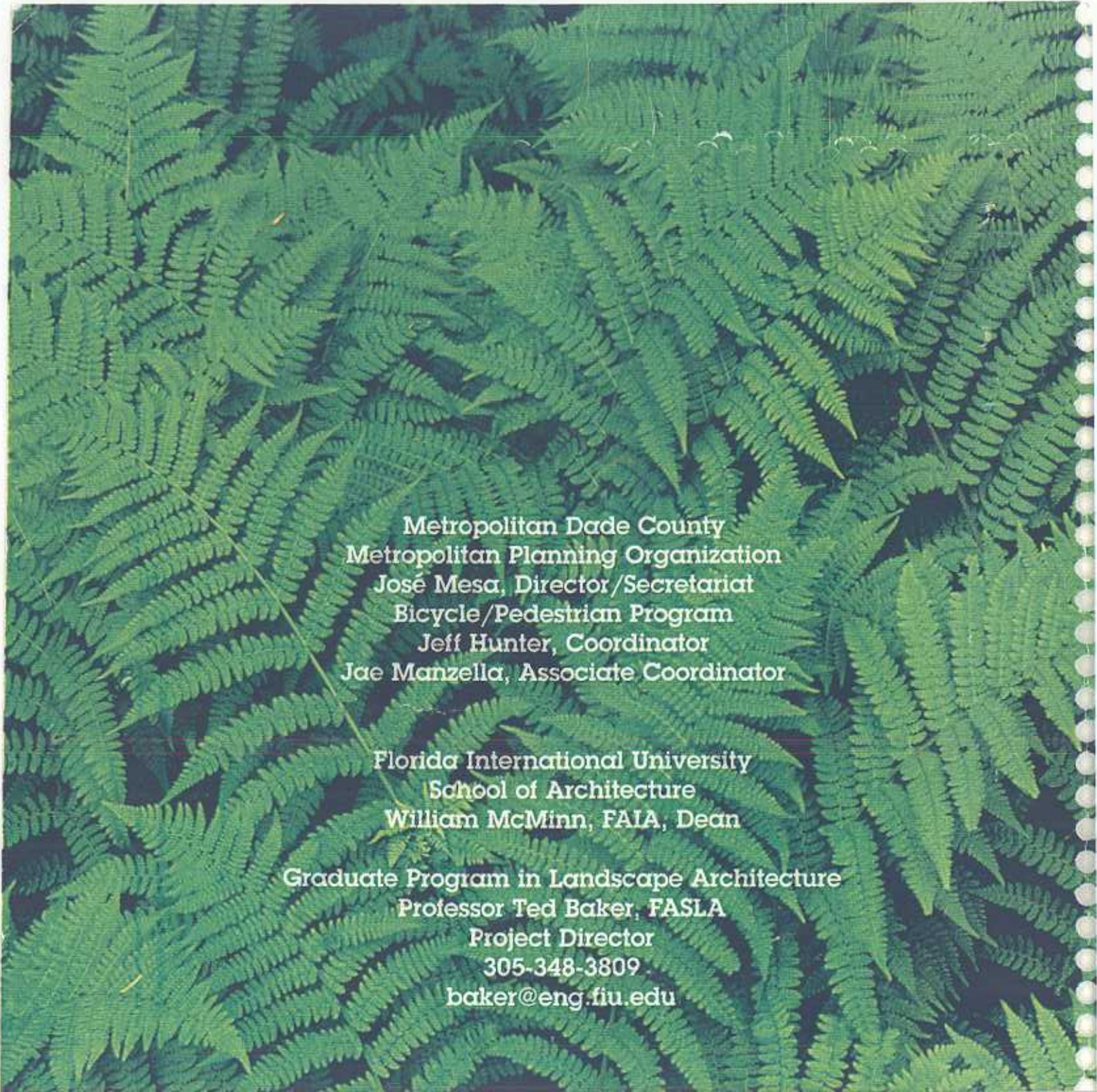
Interview with Supervising Transportation Planner and Project Manager, Parsons Brinckerhoff
11 March 1997.



Metropolitan Dade County
Metropolitan Planning Organization
José Mesa, Director/Secretariat
Bicycle/Pedestrian Program
Jeff Hunter, Coordinator
Jae Manzella, Associate Coordinator

Florida International University
School of Architecture
William McMinn, FAIA, Dean

Graduate Program in Landscape Architecture
Professor Ted Baker, FASLA
Project Director
305-348-3809
baker@eng.fiu.edu