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# Miami Lakes
# Greenways and Trails Master Plan

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EXECUTIVE SUMMARY

The Town of Miami Lakes is a master-planned, mixed-use community designed to encourage a variety of community activities, services in close proximity, and recreation through a unique system of 101 parks. The Miami Lakes Greenways and Trails Master Plan complements the Town’s Comprehensive Master Plan vision to create safe and convenient non-motorized transportation to connect communities, recreational parks, schools, office parks, and businesses. When implemented, the Plan will provide a network of off-road shared use paths (for bicycling, walking, in-line skating, etc.), as well as a network of on-road facilities including bike lanes on major thoroughfares and neighborhood greenways on low-speed, low-volume streets.

Some of the highlights of the proposed network plan include:

- Capitalizing on the opportunity presented by the existing 8-foot wide sidewalks on major thoroughfares within the Town as the backbone of the future off-road facility network.

- Developing scenic greenway trails along canal corridors such as NW 77th Court, NW 138th Street/NW 57th Court, and NW 170th Street (portions completed already).

- Incorporating low-speed, low-volume residential streets where bicycling is already comfortable into a bike route network of neighborhood greenways.

- Filling in sidewalk gaps in key areas including business parks and access to bus stops.

- Incorporating elder pedestrian safety improvements at intersections including additional walk time for crossing the street and providing a leading pedestrian interval (LPI), which allows pedestrians to be more visible and establish their right-of-way in the crosswalk.

The report also includes design guidelines and a planning level opinion of probable cost (OPC) for the various components of the Miami Lakes Greenways and Trails Plan.
PURPOSE AND NEED

Enhancing the bicycle and pedestrian network within the Town of Miami Lakes is consistent with the Town’s Adopted Comprehensive Plan. The goal of the Transportation Element of the Town’s Comprehensive Plan is to develop and maintain a multimodal transportation system that meets the diverse circulation needs of Miami Lakes in a safe and efficient manner and protects the quality of life for all residents. Within this goal, the Town lists several policies such as providing a complete and inter-connected sidewalk network and extending the bicycle circulation system to unserved areas within the Town. The Town of Miami Lakes Strategic Plan lists enhancing pedestrian friendliness and building bike paths as part of its strategic initiatives.

Bicycle and pedestrian facilities are important components of a multimodal transportation system. Bicycle and pedestrian facilities, such as greenways, trails, bike paths, bike lanes, sidewalks, and crosswalks, designate space for bicycle and pedestrian travel which enhances bicycling and walking as viable transportation options. Supplemental bicycle and pedestrian infrastructure, such as signage, traffic signals, curb ramps, bike racks, benches, and end-of-trip facilities (lockers, changing rooms, bike storage rooms, etc.), enhance the experience of bicyclists and pedestrians and encourage greater usage.

Combining these facilities and supplemental infrastructure is important to create an integrated system that augments bicycling and walking as modes of transportation. Bicycling and walking are not only transportation modes; they are also popular recreational activities. Many people in Miami Lakes take advantage of favorable weather throughout much of the year to enjoy bicycle riding and walking or running for leisure and mobility.

According to recent 2009 USDOT data from the National Household Travel Survey (NHTS), approximately one-quarter of all trips within the Miami urbanized area are one mile or less in
length. Providing appropriate bicycle and pedestrian facilities can encourage short trips to be made on a bicycle or on foot instead of by automobile, which can help reduce traffic congestion, and contributes to a healthy citizenry.

The purpose of this Plan is to recommend specific projects to help create a safe and convenient non-motorized transportation system to connect communities, schools, parks, and businesses. The Plan will focus on key elements of non-motorized transportation including pedestrian pathways, bicycle trails, shared-use paths, recreational greenways, and connections to mass transit, thereby optimizing walking and bicycling as healthy, clean transportation options in Miami Lakes.

**What is a Greenway?**

A greenway is a linear open space established along either a natural corridor or a man-made corridor (such as a street, canal, utility corridor, or highway). Greenways serve a dual-nature as both a link in the transportation system and a park for recreational purposes. Greenways can exist in both rural and urban areas. Rural greenways are often associated with long-distance travel and recreation including abandoned railroad corridors, rivers, large state and national parks, and ecologically significant natural corridors that provide for hiking and wildlife migration. Protected linear corridors in urbanized areas can be more challenging to provide due to land constraints and other obstacles; however, urban greenways are just as vital due to the critical need for the environmental, health, and transportation benefits associated with greenways in modern cities. In addition, the large
population base of a modern urbanized area often furnishes a higher number of potential greenway users within close proximity.

**What is a Trail?**

A trail is a pathway providing the opportunity to move from one place to another. Trails can be developed naturally over time due to frequent usage by people or animals. Trails can also be established in greenways or other corridors to facilitate or encourage movement or recreation along a certain path. The NW 170th Street Greenway Trail (pictured on the right) is an example of a trail in Miami Lakes. Trails can be made of a natural surface, such as grass or dirt, or a hard surface, such as concrete or asphalt. Trails and trail networks provide positive opportunities for users:

- Exercise/healthy lifestyles
- Safe routes to schools
- Bike to work
- Walk to a shopping center
- Foster community involvement
- Meet neighbors
- Access the park system
- Experience tranquil outdoor settings

The Town desires to develop a network of greenway trails that will provide transportation functionality as well as recreation opportunities. Trails should be developed in scenic areas wherever possible to take advantage of the natural beauty of Miami Lakes including tree canopies and water bodies. Trails should be designed for all non-motorized users including bicyclists, pedestrians, runners, and in-line skaters.
Bicycling in Miami Lakes

In addition to consistency with the Town’s Adopted Comprehensive Plan, the Town supports bicycling and walking through many different ways including implementing trail projects such as the NW 170th Street Greenway Trail (pictured on the previous page), participating in bike rodeos for the community, and conducting Town staff bike rides to observe the bicycling conditions within the community. A bike rodeo is a clinic designed to teach children the skills and precautions to ride a bicycle safely. Bike rodeos are typically held in parking lots and include chalk courses with obstacles created by traffic cones and other devices.
Several of the key transportation corridors in Miami Lakes have wide sidewalks under tree-lined canopies including NW 154th Street, NW 67th Avenue, Miami Lakeway North, and Montrose Road. These wide sidewalks provide non-motorized transportation and recreation opportunities.

The Miami Lakes Business Park West is an area that is commonly used by on-road bicyclists for recreation purposes including evening and weekend rides.
**Scenic Trail Opportunities**

Several corridors in the Town present opportunities for providing scenic greenway trails including canal corridors (NW 170th Street Greenway Trail, NW 77th Court Canal Bicycling and Walking Trail, NW 139th Street/NW 57th Court Canal Bicycling and Walking Trail, and the Canal Trail south of Bamboo Street) and tree-lined canopy wide sidewalk corridors (NW 154th Street, NW 67th Avenue, Miami Lakeway North, and Montrose Road). It should be noted that the canal trail corridors that pass behind residential neighborhoods, such as the canal along the southern boundary of the Town, are considered long-range opportunities.
Connectivity to Parks

The Town of Miami Lakes has one of the most unique park systems in Miami-Dade County including several large Town parks and numerous pocket parks. In total there are 101 parks located within the 6.5 square mile area of the Town, which means that almost every resident is located within walking distance of a park. The *Greenways and Trails Master Plan* strives to provide a network focused around connectivity to the parks. Highlights include connectivity to Miami Lakes Optimist Park, Miami Lakes Picnic Park West, and Royal Oaks Park. The Town may consider a future park in the location of the par 3 golf course, which if it were to happen could become a long range opportunity to be added to the greenways and trails network. In addition, several of the proposed new greenway trail corridors could potentially become parks due to the scenic and aesthetic quality of the trail experience.
Benefits of Walking and Bicycling

Active Transportation

Active transportation is travel powered by human energy with walking and biking the most common examples (Rails-to-Trails Conservancy 2007). To encourage more walking and biking, communities must create active transportation systems that consist of seamless networks of accessible trails, sidewalks and on-road bike facilities. At a time when nearly half of all trips made in the Miami-Dade urbanized area are three miles or less (USDOT, National Household Travel Survey, 2009), and the vast majority of these short trips taken by automobile, the practicality and wisdom of making biking and walking mainstream transportation options are undeniable. Especially when connected with transit, a new host of mobility choices are opened up through active transportation.

Active transportation must grow to meet the nation's mobility needs while fostering vibrant healthy places. Specific plans for projects in the Miami Lakes Greenways and Trails Master Plan are needed to elevate greenway trails, biking, and walking as local transportation priorities and present a strong case for increased investment in trails, biking and walking.

Mobility

Active transportation has the potential to carry a significant part of the transportation load. Communities that invest in walking and biking have seen tremendous growth in walking and biking trips. Minneapolis, Minnesota, for example, has nearly a 30 percent share of non-motorized trips.

With nearly half of all trips under three miles (USDOT 2009), expanding safe, active transportation choices, which are ideal for short trips, can make a significant contribution to the transportation load. The Town of Miami Lakes has 2,646 residents who currently work and live within the Town
boundaries according to the U.S. Census Bureau Longitudinal Employer-Household Dynamics (LEHD) data. These works trips represent potential trips that are within range of many people’s bicycling abilities if safe and connected pathways are provided. However, many transportation mode choice statistics undercount walking and biking trips by focusing only on work trips (such as the U.S. Census Bureau Journey-to-Work data), which account for only 15 percent of all trips (Bureau of Transportation Statistics 2002). Therefore, the total number of all trips that are within walking and bicycling range is much higher than just the number of residents who work in the Town.

**Expanding transportation choices needs to be at the heart of the long term transportation strategy.** The status quo practice of expanding roadway capacity is a recipe for gridlock. Communities with good walking and biking conditions can expect a five to 15 percent reduction on overall vehicle miles traveled (Litman, *Smart Emission Reduction Strategies*, 2007).

**When offered a real choice through the provision of walking and biking infrastructure, people will choose to walk and bike.** Portland, Oregon, for example has built more than 100 miles of trails and bike lanes since 2001. This and earlier investments have resulted in tripling bicycle miles traveled over the last decade (City of Portland, *Portland Bicycle Count Report*, 2012).

**Public Health**

**Childhood obesity has become a major public health problem.** The obesity rate has doubled for children and tripled for adolescents since 1980 (U.S. Department of Health and Human Services, *Childhood Obesity*, 2005). Obesity contributes to approximately 300,000 annual deaths on average.

**The lack of physical activity is a significant factor in the growing obesity epidemic.** Daily walking and biking used to be an integral part of kid’s
lives. Today, however, only 13 percent of children walk to school down from 48 percent in 1969 (USDOT, National Household Travel Survey, 2009). It should be noted that following focused investments in the Safe Routes to School program, data show that the decline in rates of walking and bicycling to school has stabilized. In addition, physical activity trend data for children indicate that one-third of adolescents are not getting recommended levels of exercise and 10 percent are completely inactive (U.S. Department of Health and Human Services, Childhood Obesity, 2005).

**People who reported using trails at least once a week were twice as likely to meet physical activity recommendations** than people who reported rarely or never using trails according to a study published by the American Journal of Preventive Medicine (Librett et. al., Characteristics of Physical Activity Levels Among Trail Users, 2006).

**Economic Development**

**Trails build strong, economically vital communities.** Trails, according to a National Association of Homebuilders study cited by the New York Times, are the number one amenity potential homeowners cite when they are looking at moving into a new community.

**Trails provide communities with a valuable amenity that translates into increased housing values.** In Indianapolis, for example, the increased property value associated with proximity to trails was estimated at more than $140 million (Lindsey et. al., Public Choices and Property Values: Evidence from Greenways in Indianapolis, 2003).

**Trails build local businesses.** Bicycle tourists, a growing, affluent segment of the tourist market, contribute significantly to local businesses that are well-connected to trails. Along the Virginia Creeper Trail in southwest Virginia, visitors spend $1.59 million annually providing an estimated 27 new full-time jobs (Bowker et. al., Virginia Creeper Trail: An Analysis of Use, Economic Impacts, Visitors’ Characteristics, and Preferences, 2004).
Pollution

Transportation is a leading source of climate pollution representing approximately 28 percent of overall U.S. greenhouse gas emissions in 2011 (Environmental Protection Agency 2013). It is also the fastest rising source of CO₂ emissions. Over 90 percent of the fuel used for transportation is petroleum-based. In addition, cars are the dominant mode of transportation even for short trips under three miles (USDOT, National Household Travel Survey, 2009). With most trips within a 15- to 20-minute bike ride, many of these trips are ripe for conversion to walking, biking and transit with the right investments in infrastructure and programs. Recent studies have shown that making communities more bike/pedestrian friendly can make a significant contribution towards reduction in greenhouse gas emissions by driving down vehicle miles traveled.

Family and Community

Community and family are the heart of greenway trail experiences. One of the most significant benefits of trails is the sense of community and the connections they build. Well-designed trails transform “community” from an abstraction into a real place. At their most basic, trails encourage personal interaction in a way entirely unavailable to automobile users. Individuals passing in cars are limited to, at most, a honk and a wave.

Residents living in walkable neighborhoods are more likely to have higher levels of social capital. The importance of walkable neighborhoods for creating strong communities is demonstrated in a 2003 study that found that residents in highly walkable neighborhoods are more likely to know their neighbors, participate politically, trust others, and be socially engaged than those residing in suburbs of low walkability (Leyden, Social Capital and the Built Environment: The Importance of Walkable Neighborhoods, 2003).
Walking contributes to higher levels of mental health and a quality aging experience. Safe, walkable neighborhoods are vital components contributing to mental health and well-being of the community, as well as the opportunity for residents to age in place (Cagney and Wen, Social Capital and Health: Part II Chapter 11. Social Capital and Aging-Related Outcomes, 2008). The Miami-Dade Age-Friendly Initiative (AFI) is based on the successes, assets, needs, and gaps multiple sectors face in creating a metropolitan area that fosters a physical and social environment for older adults of all ages to stay active and health with dignity and enjoyment. Miami Lakes is one of five municipalities participating with Miami-Dade County in the State of Florida/Department of Elder Affairs/AARP designation of becoming a Community for a Lifetime.
Several key planning efforts have already been performed that provide background and context for the Miami Lakes Greenways and Trails Master Plan including the following.

- North Dade Greenways Master Plan
- Miami Lakes Commute Trip Reduction Plan
- Miami-Dade MPO 2035 Bicycle and Pedestrian Plan
- Miami-Dade County Open Space Master Plan (OSMP)
- Miami-Dade MPO Pedestrian Safety at Parks Plan
- Town of Miami Lakes Comprehensive Master Plan
- Town of Miami Lakes Transportation Master Plan
- NW 170th Street Greenway Plan
- Miami Lakeway Safe Routes to School Trail Plan

A map of proposed bikeways, pedestrian paths, and open space recommended in prior planning efforts is shown in Figure 1 on the following page. It is important to utilize these prior planning efforts as a foundation for the Miami Lakes Greenways and Trails Master Plan.
A general transportation mobility analysis was conducted to identify bicycle and pedestrian mobility issues through data analysis in the Town of Miami Lakes. The purpose of this task is to collect data that will allow the study team to properly assess the existing conditions of alternative travel modes in Miami Lakes, and to analyze the future bicycle and pedestrian infrastructure needs.

**Bicycling and Walking Activity Levels**

USDOT data from the National Household Travel Survey (2009) indicate that bicycling and walking account for approximately 10 percent of all trips in the Miami-Dade urbanized area, with walking representing approximately 9 percent and bicycling representing approximately 1 percent. The USDOT NHTS data are collected on daily trips taken in a 24-hour period for all trips, all modes, all purposes, and all trip lengths. Florida’s participation in the NHTS Add-On Program allows sufficient data collection to be analyzed at the urbanized area level.

The United States Bureau of the Census measures transportation data for work trips only using a sampling of respondents that complete the census long form as part of the annual American Community Survey (ACS). Updated socioeconomic, demographic, and housing information is now available on an annual basis. The 2008-2012 ACS 5-Year Estimates were used for this analysis.

Work trip characteristics in the Town of Miami Lakes demonstrate that residents are less likely to make work trips on foot or by bicycle than in the County and State as a whole. “Drove alone” is the dominant journey-to-work mode within the Town of Miami Lakes, with the percentage of single occupant vehicles at about 4 percent more than in the County as a whole.
Table 1: Journey to Work Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Town of Miami Lakes</th>
<th>Miami-Dade County</th>
<th>State of Florida</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Car, truck, or van</td>
<td>12,489</td>
<td>89.18%</td>
<td>964,180</td>
<td>86.44%</td>
</tr>
<tr>
<td>Drove Alone</td>
<td>11,308</td>
<td>80.75%</td>
<td>857,014</td>
<td>76.83%</td>
</tr>
<tr>
<td>Carpooledd</td>
<td>1,181</td>
<td>8.43%</td>
<td>107,166</td>
<td>9.61%</td>
</tr>
<tr>
<td>Public Transportation</td>
<td>189</td>
<td>1.35%</td>
<td>60,007</td>
<td>5.38%</td>
</tr>
<tr>
<td>Taxicab</td>
<td>11</td>
<td>0.08%</td>
<td>1,641</td>
<td>0.15%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0</td>
<td>0.00%</td>
<td>2,403</td>
<td>0.22%</td>
</tr>
<tr>
<td>Bicycle/Walked</td>
<td>140</td>
<td>1.00%</td>
<td>30,167</td>
<td>2.70%</td>
</tr>
<tr>
<td>Other means</td>
<td>16</td>
<td>0.11%</td>
<td>11,627</td>
<td>1.04%</td>
</tr>
<tr>
<td>Worked at home</td>
<td>1,159</td>
<td>8.28%</td>
<td>45,399</td>
<td>4.07%</td>
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</tbody>
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**GIS Data Map Series**

Using geographic information systems (GIS), a map series was prepared to illustrate existing transportation mobility conditions and community features in Miami Lakes that help form the background conditions for improving the Town’s bicycle and pedestrian mobility.

Figures 2 through 7 present the GIS Data Map Series.

- Figure 2. Bicycle Crashes
- Figure 3. Pedestrian Crashes
- Figure 4. Bicycle Level of Service (BLOS)
- Figure 5. Pedestrian Level of Service (PLOS)
- Figure 6. Metrobus Ridership Range per Stop
- Figure 7. 2010 Census Population Density

Bicycle Level of Service (BLOS) and Pedestrian Level of Service (PLOS) were calculated according to the methodology established in the *2009 FDOT Quality/Level of Service (QLOS) Handbook*. The BLOS Model is based on the following facility characteristics:

- Average effective width of the outside thru lane;
- Number of thru lanes;
- Motorized vehicle volumes;
Similar to the required BLOS roadway characteristic criteria, the PLOS Model requires additional variable information to complete its assessment and calculate its LOS. The facility characteristics needed to complete the PLOS calculation are listed below:

- Existence of a sidewalk;
- Lateral separation of pedestrians from motorized vehicles;
- Motorized vehicle volumes; and
- Motorized vehicle speeds.

The PLOS and BLOS of a corridor are determined by using the respective characteristics above in the LOS score equations from the *2009 FDOT Q/LOS Handbook*.

As shown in Figure 4, the majority of the major roadways within the Town of Miami Lakes have a BLOS of E. On the contrary, Figure 5 shows that the majority of the major roadway segments within the Town of Miami Lakes have a PLOS of D or better, indicating the result of a much greater investment over the years in pedestrian infrastructure than bicycle facilities, which is consistent with findings from the County as a whole.
Commute Trip Reduction Program

The Town of Miami Lakes recognizes that continued growth in the region is placing a strain on the Town’s transportation system resulting from vehicular congestion that is compromising the quality of life for residents and adversely impacting the community’s sense of place. The roadways within the Town that exhibit LOS F conditions according to the Town of Miami Lakes Transportation Master Plan include NW 67th Avenue, NW 82nd Avenue, NW 154th Street, Miami Lakeway North, and Miami Lakeway South.

In 2013, the Town completed the Commute Trip Reduction Program that identified strategies to help ease traffic congestion. The Program recognizes that a comprehensive system of transit, bicycle, and pedestrian infrastructure combined with Transportation Demand Management (TDM) strategies will play a crucial role in maintaining mobility and reducing automobile dependency. The established goals of the Commute Trip Reduction Program are as follows.

- Reduce dependence on single occupant vehicles.
- Reduce peak hour traffic congestion on Town roadways.
- Increase efficiency of the existing transportation system.
- Offer mobility choices through provision of multimodal transportation infrastructure.
- Provide sustainable lifestyle choices to residents of the community.
- Enhance the livability of the Town of Miami Lakes.

Twenty-five preliminary TDM strategies were identified, from which thirteen TDM strategies were selected for implementation through a screening process.

- Carpooling
- Vanpooling
- Emergency Ride Home
- Telecommuting
- Flexible/Compressed Work Week
- Commuter Tax Incentives
- Bicycle Master Planning
- Pedestrian Master Planning
- Public Outreach
- Employer Outreach
- TDM Marketing and Promotion
- Employer Transportation Coordinator
- Commute Trip Reduction Ordinance
The development of the *Miami Lakes Greenways and Trails Master Plan*, along with ongoing coordination with the Miami-Dade MPO, is part of the implementation steps for the Bicycle Master Planning recommendation and the Pedestrian Master Planning recommendation.

**Pedestrian Safety**

The promotion of pedestrian safety is a fundamental tenet of the *Miami Lakes Greenways and Trails Plan*. The Miami-Dade MPO maintains a database of pedestrian crashes, which shows that investment in pedestrian safety infrastructure improvements as well as education, enforcement, and encouragement programs over the years has resulted in an overall reduction in pedestrian injuries and fatalities over the past two decades.

![Pedestrian Fatalities and Injuries Miami-Dade County 1990-2012](chart)

*Source: Miami-Dade MPO from Department of Highway Safety and Motor Vehicles (DHSMV) Data*

In particular, elder pedestrian safety is of critical concern within the Town. According to national 2010 data, 4,280 pedestrians were killed in traffic crashes, 813 of whom (19 percent) were elder adults aged 65 and older (National Highway Traffic Safety Administration [NHTSA], *Traffic Safety Facts*, 2010). In Miami-Dade, the problem is even more pronounced. In 2010, 29 out of the 73 pedestrian fatalities in Miami-Dade traffic crashes (40 percent) were elder adults (Alliance for Aging, *Elder Pedestrian Safety in Miami-Dade: An Overview*, 2013). Elder pedestrian safety is an essential component of a community's efforts to address the transportation and mobility needs of its citizens. The *Miami Lakes Greenways and Trails Plan* includes a series of recommendations focused on improving safety and mobility for elder...
pedestrians in the Elder Pedestrian Safety section. These recommendations when implemented are intended to help lower elder pedestrian crash rates in the future. Figure 3 in the GIS Data Map Series presents pedestrian crash location data according to the MPO’s pedestrian crash database.
Bicycle and pedestrian connectivity should be provided throughout the Miami Lakes community. Most streets already have basic sidewalks that provide pedestrian circulation. Based on the transportation mobility analysis that was conducted for this Plan, and coupled with an understanding of the Purpose and Need established, an analysis of the Town's transportation system was conducted.

**Proposed Network Plan**

The analysis resulted in the creation of a Proposed Network Plan as shown in Figure 8. The Proposed Network Plan identifies the type of facilities recommended for the Town's street network. The Proposed Network Plan builds upon the opportunities established from prior plans reviewed earlier in this report. In addition, the Proposed Network Plan serves the Town's mobility needs for all ages and abilities and is consistent with Americans with Disabilities Act (ADA) accessibility requirements.

Off-road facilities, as identified in the Proposed Network Plan, refer to wide sidewalks, greenways trails, or shared use paths located outside of the roadway traveled way that are at least eight (8) feet in width and accommodate a basic level of pedestrian and bicycle mobility and interaction. It should be noted that “new construction” shared use paths should be a minimum of ten (10) feet wide to meet current design guidelines (American Association of State Highway Transportation Officials [AASHTO], *AASHTO Guide for the Development of Bicycle Facilities, 4th Edition*, 2012; Florida Department of Transportation [FDOT], *FDOT Greenbook*, 2011). However, several of the Town's key arterials including NW 67th Avenue (Ludlam Road) and NW 154th Street (Miami Lakes Drive) were built with 8-foot sidewalks adjacent to the roadway before modern design guidelines were in effect. These facilities are incorporated into this analysis with the suggestion that upgrades, such as additional sidewalk width at bottlenecks and reconstructing the curb ramps to be the width of the path, could result in these wide sidewalks forming the backbone of a comprehensive network of off-road bicycle and pedestrian facilities throughout the Town.
FIGURE 9: PROPOSED NETWORK PLAN WITH FUNDED PROJECTS

Legend
- Existing Off-Road Facility
- Existing On-Road Facility
- Future Off-Road Facility
- Future On-Road Facility
- Future Facility by Others
- Long-Range Opportunity
- Major Roads
- Funded Projects
- Water
- Town of Miami Lakes
- Miami-Dade County
- Parks

Kimley-Horn and Associates, Inc.
Table 2: Facility Types Considered in this Plan

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<th>Off-Road Facilities</th>
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<tr>
<td><strong>Shared Use Path</strong></td>
<td>Paved facilities for bicyclists and pedestrians that are a minimum of ten (10) feet in width, which can be (a) within the roadway right-of-way beside the street, or (b) in a separate right-of-way such as a canal or park</td>
</tr>
<tr>
<td><strong>Greenway Trails</strong></td>
<td>Paved or natural surface trails within a greenway, such as a canal bank, abandoned railroad corridor, or park, which range in width and usage</td>
</tr>
<tr>
<td><strong>Wide Sidewalks</strong></td>
<td>Sidewalks that are at least eight (8) feet in width and provide for a basic level of mobility for both pedestrians and bicyclists, although wide sidewalks do not meet modern design criteria for bicycle facilities</td>
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<tr>
<th>On-Road Facilities</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Bike Lanes</strong></td>
<td>Bike lanes designate available roadway space for preferential use by bicyclists and shall have a minimum functional width of 4 feet separated from motor vehicle lanes by a continuous lane line stripe</td>
</tr>
<tr>
<td><strong>Sharrows</strong></td>
<td>Shared lane markings (sharrows) may be used in travel lanes to indicate a shared condition where bicyclists may occupy the travel lane and to indicate the optimum lateral placement for bicyclists in the lane</td>
</tr>
</tbody>
</table>
On-road facilities refer to bicycle facilities located within the traveled way of a roadway or street. For purposes of this Plan, considered types of on-road bicycle facilities are designated bike lanes and shared lane markings (sharrows). Although the focus of the Miami Lakes Greenways and Trails Master Plan is on off-road bicycle and pedestrian facilities, the study team in conjunction with the Interagency Coordination Committee established for the development of the Plan recognized the importance of identifying the existing and potential future on-road bicycle facilities on the Proposed Network Plan to indicate the important additional connectivity provided by on-road facilities.

More information on the various types of off-road and on-road facilities considered in this Plan can be found in Appendix A and in design guidelines such as the AASHTO Guide for the Development of Bicycle Facilities, 4th Edition, 2012.

**Primary Trail Facilities**

During the course of the analysis conducted for the Plan, several key trail facilities were developed in conjunction with Town staff and the Interagency Coordination Committee. Additional conceptual design work was prepared for the key trail facilities to help determine feasibility and to assist Town staff in future efforts to potentially acquire grant funding for construction of these facilities. These key trail facilities are intended to form the primary backbone of the Miami Lakes trail network. The following facilities were identified as the primary trail facilities.

- NW 77th Court Bicycling/Walking Trail
- Neighborhood Greenway/Canal Trail Bicycling/Walking Trail
- NW 67th Avenue Bicycling/Walking Trail
- NW 87th Avenue Bicycling/Walking Trail
- NW 154th Street Bicycling/Walking Trail
**NW 77th Court Bicycling/Walking Trail**

| Project Description | Install a 10-foot wide shared use path along the east side of NW 77th Court between the roadway and the canal that would serve as a bicycling and walking trail separated from the roadway by a guardrail. Focus traffic enforcement on the NW 154th Street intersection to enhance motorists’ yielding to bikes and pedestrians. |
| Agencies Involved | Town of Miami Lakes, Florida Department of Transportation (FDOT), Miami-Dade Public Works and Waste Management Dept. |
| Notes | • A shared use path can fit within the existing canal bank for the majority of the NW 77th Court corridor south of NW 154th Street.  
• The existing canal bank narrows between NW 146th Street and NW 148th Street along the east side of NW 77th Court; therefore, NW 77th Court will need to be realigned to the west to accommodate a continuous shared use path on the east side of the roadway.  
• The path may need to narrow at the new fire station and may need to become a sidewalk directly adjacent to NW 77th Court due to existing constraints in the area.  
• Install a new crosswalk across NW 154th Street on the east side of the NW 77th Court intersection for future path continuation. |
| Implementation Strategy | FDOT Project FM#430821-3 is programmed to implement portions of the project including shared lane pavement markings on NW 77th Court and bike lanes on the NW 77th Avenue/NW 167th Street frontage road. Seek grant funding for construction of the shared use path or incorporate into a roadway improvement project. |
| Supplemental Infrastructure | • Observation area with lookout and potential fishing area  
• Rest area with benches and shelters |

Examples of canal trails beside roadways
NW 77th Court Trail Typical Section
The concept design for the proposed NW 77th Court trail crosswalk at NW 154th Street includes a “pork chop island” to provide a refuge for trail users between the westbound right-turn lane and the through lanes. A median refuge should also be provided for trail users crossing NW 154th Street.
<table>
<thead>
<tr>
<th><strong>Neighborhood Greenway/ Canal Trail Bicycling/ Walking Trail</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Description</strong></td>
</tr>
<tr>
<td>This trail consists of two phases.</td>
</tr>
<tr>
<td>- Neighborhood Greenway – Future on-road facility with</td>
</tr>
<tr>
<td>bicycle sharrow pavement markings on Sabal Drive, Twin</td>
</tr>
<tr>
<td>Sabal Drive, and Big Cypress Drive. The neighborhood</td>
</tr>
<tr>
<td>greenway could also be supplemented with bike route</td>
</tr>
<tr>
<td>wayfinding signage to indicate that the neighborhood</td>
</tr>
<tr>
<td>greenway is part of a larger overall system</td>
</tr>
<tr>
<td>- Canal Trail – Future off-road facility with a shared use</td>
</tr>
<tr>
<td>path in the canal right-of-way along the southern boundary</td>
</tr>
<tr>
<td>of the Town between Leaning Pine Drive and NW 67th Avenue.</td>
</tr>
<tr>
<td>The canal portion of this facility is considered a long-range</td>
</tr>
<tr>
<td>opportunity due to implementation steps and timeframes</td>
</tr>
<tr>
<td><strong>Agencies Involved</strong></td>
</tr>
<tr>
<td>Town of Miami Lakes, Miami-Dade County Public Works and Waste</td>
</tr>
<tr>
<td>Management Department, Miami-Dade County Department of</td>
</tr>
<tr>
<td>Environmental Resource Management</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>Sharrow pavement markings are used to designate shared lane</td>
</tr>
<tr>
<td>conditions and to provide guidance to bicyclists on</td>
</tr>
<tr>
<td>appropriate lateral placement within the travel lane</td>
</tr>
<tr>
<td><strong>Implementation Strategy</strong></td>
</tr>
<tr>
<td>Implement neighborhood greenway elements as either a</td>
</tr>
<tr>
<td>standalone project or as a component of a traffic calming</td>
</tr>
<tr>
<td>project</td>
</tr>
</tbody>
</table>

**Sharrow pavement markings**
Canal Trail Bicycle/Walking Trail

- Connection to Future Potential Park
- Rest Area
- Future On-Road Facility
- Future Off-Road Facility
- Observation Area

Key:
- Palmetto Expressway (SR-826)
- Miami Lakes Drive
- Miami Lakes South
- NW 67th Avenue
- Miami Lakes Elementary School
- SR 924
Neighborhood Greenway Typical Section (50’ ROW)
Examples – Sabal Drive, Big Cypress Drive

Neighborhood Greenway Typical Section (70’ ROW)
Examples – Dade Pine Avenue, Lake Patricia Drive
**NW 67th Avenue Bicycling/Walking Trail**

| Project Description | Utilize the 8-foot wide sidewalk along the east side of NW 67th Avenue (Ludlam Road) as a bicycling/walking path, with strategic intersection and signage improvements to upgrade the sidewalk to a future off-road facility.  
- Upgrade ADA curb ramps at intersections and driveways to the width of the path  
- Add concrete to expand the existing width of the path around pinch-points such as bus shelters  
- Relocate objects such as signs and trash receptacles to be outside of the clear width of the path with the goal of creating 8 feet of unobstructed path width  
- Add D11-1 “bike route” wayfinding signs  
- Add W11-15 “trail crossing” warning signs at cross-street  
- Add W5-4a “path narrows” signs at locations where the pinch-point cannot be widened due to physical or right-of-way constraints |
| Agencies Involved | Town of Miami Lakes, Miami-Dade County Public Works and Waste Management Department |
| Notes | The NW 67th Avenue bicycling/walking trail would form the north-south spine facility in the eastern half of the Town |
| Implementation Strategy | Implement as a component of roadway improvement or reconstruction projects on the indicated corridor |

Example of sidewalk trail where the curb ramps are the width of the path

Additional concrete width around bus stop including the optional use of green color
NW 67th Avenue Typical Section (100’ ROW)
### NW 87th Avenue Bicycling/Walking Trail

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Widen the existing sidewalk along the east side of NW 87th Avenue to 8-10 feet in width as a bicycling/walking path, with strategic intersection and signage improvements to upgrade the sidewalk to a future off-road facility.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Upgrade ADA curb ramps at intersections and driveways to the width of the path</td>
</tr>
<tr>
<td></td>
<td>- Relocate objects such as signs and trash receptacles to be outside of the clear width of the path with the goal of creating 8-10 feet of unobstructed path width</td>
</tr>
<tr>
<td></td>
<td>- Add D11-1 “bike route” wayfinding signs</td>
</tr>
<tr>
<td></td>
<td>- Add W11-15 “trail crossing” warning signs at cross-street</td>
</tr>
<tr>
<td></td>
<td>- Add W5-4a “path narrows” signs at locations where the pinch-point cannot be widened due to physical or right-of-way constraints</td>
</tr>
</tbody>
</table>

| Agencies Involved  | Town of Miami Lakes, Miami-Dade County Public Works and Waste Management Department |

| Notes               | The NW 87th Avenue bicycling/walking trail would form the north-south spine facility in the western half of the Town |
|                     | This trail would connect to the recently implemented on-road bicycle lanes on NW 87th Avenue north of NW 154th Street |

| Implementation Strategy | Implement as a component of roadway improvement or reconstruction projects on the indicated corridors |

- Example of an 8-foot sidewalk with benches and landscaping
- The NW 87th Avenue trail would connect to the designated bike lanes north of NW 154th Street
- W11-15 “Trail Crossing” warning signs
**Project Description**

Utilize the 8-foot wide sidewalk along the south side of NW 154th Street (Miami Lakes Drive) as a bicycling/walking path, with strategic intersection and signage improvements to upgrade the sidewalk to a future off-road facility.

- Widen existing narrow sidewalk sections to at least 8 feet
- Upgrade ADA curb ramps at intersections and driveways to the width of the path
- Add concrete to expand the existing width of the path around pinch-points such as bus shelters
- Relocate objects such as signs and trash receptacles to be outside of the clear width of the path with the goal of creating 8 feet of unobstructed path width
- Add D11-1 “bike route” wayfinding signs
- Add W11-15 “trail crossing” warning signs at cross-street
- Add W5-4a “path narrows” signs at locations where the pinch-point cannot be widened due to physical or right-of-way constraints

**Agencies Involved**

Town of Miami Lakes, Florida Department of Transportation (FDOT), Miami-Dade County Public Works and Waste Management Department

**Notes**

- The NW 154th Street bicycling/walking trail would form the east-west spine facility of the Town and connect the east and west sides

**Implementation Strategy**

Implement as a component of roadway improvement or reconstruction projects on the indicated corridors

Examples of wide sidewalk facilities
**Elder Pedestrian Safety**

As discussed in the Transportation Mobility Analysis section of this report, the promotion of pedestrian safety, and in particular elder pedestrian safety, is a fundamental tenet of the *Miami Lakes Greenways and Trails Master Plan*. Elder pedestrian safety is an essential component of the community's efforts to address the transportation and mobility needs of its citizens.

The following recommendations are made to address elder pedestrian safety in the Town of Miami Lakes.
### Leading Pedestrian Interval

<table>
<thead>
<tr>
<th>Description</th>
<th>Leading Pedestrian Interval (LPI) is a traffic signal timing technique that reserves a pedestrian WALK phase for 3 to 5 seconds prior to the concurrent green phase with permissive turns for motor vehicles to allow pedestrians to enter the crosswalk before turning motor vehicles attempt to cross their path.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Crash Types</td>
<td>Right-Hook Crashes</td>
</tr>
</tbody>
</table>
| Notes | • Increases turning motorists’ visibility of pedestrians  
• Allows pedestrians to establish their right-of-way in the crosswalk before turning motor vehicles have a concurrent green indication  
• Use where heavy turning vehicle volume on permissive green comes into conflict with pedestrians  
• The LPI is particularly helpful for elder pedestrians who are slower to start into the intersection  
• The Pedestrian Facilities User Guide published by FHWA indicates that the LPI reduces conflicts for pedestrians by approximately 50 percent  
• See 2009 MUTCD Chapter 4E and the FHWA Older Driver and Pedestrian Highway Design Handbook for more information. |
| Implementation Strategy | Work with Miami-Dade Public Works Signals and Signs Division to implement as part of resurfacing and traffic operations projects at signalized intersections as a strategy to reduce pedestrian crashes. |
# Adjust Pedestrian Walk Phase Timing at Intersections

<table>
<thead>
<tr>
<th>Description</th>
<th>Adjust the pedestrian phase timing to consider a slower walking speed of 2.8 ft/s for elderly pedestrians at signalized intersections.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Crash Types</td>
<td>Elderly Pedestrian Crashes</td>
</tr>
<tr>
<td>Notes</td>
<td>- The Manual on Uniform Traffic Control Devices (MUTCD) suggests 3.5 feet/second as a typical walking speed for timing pedestrian walk phases at signalized intersections. However, the MUTCD also suggests adjusting the pedestrian walk phase timing to consider a slower walking speed of 2.8 feet/second for areas where elderly pedestrian safety is a concern</td>
</tr>
<tr>
<td>Implementation Strategy</td>
<td>Work with Miami-Dade Public Works Signals and Signs Division to implement as part of resurfacing and traffic operations projects at signalized intersections as a strategy to reduce pedestrian crashes.</td>
</tr>
</tbody>
</table>
### Miami Lakes
#### Greenways and Trails Master Plan

<table>
<thead>
<tr>
<th>Description</th>
<th>Prohibit motorists from turning right during the red interval at certain signalized intersection approaches based on a pedestrian safety approach. Potential locations could include Main Street and NW 67th Avenue, and Miami Lakes Drive and NW 67th Avenue due to high volumes of pedestrians and crash history.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Crash Types</td>
<td>Right-Hook Crashes</td>
</tr>
</tbody>
</table>
| Notes | • Prohibiting vehicle right turns during the red phase can enhance pedestrian safety because although vehicles are required to yield or stop for pedestrians in the crosswalk, motorists do not always look to their right before making a right turn  
• Right-turning vehicles attempting to make turns on red often encroach upon pedestrians in the crosswalk due to line-of-sight restrictions  
• Can be useful where:  
  o there are restricted sight lines between motorists and pedestrians  
  o there are an unusual number of pedestrian conflicts with turns on red  
  o a leading pedestrian interval is used  
• Can be implemented during certain time periods or at all times of day |
| Implementation Strategy | Work with Miami-Dade Public Works Signals and Signs Division to implement as part of resurfacing and traffic operations projects or as a standalone project. Prohibited RTOR could be implemented if signage and other treatments, such as LPI, have been tried and did not produce optimal results. |

---

**Prohibited Right-Turn-On-Red (RTOR)**

**Description:**
Prohibit motorists from turning right during the red interval at certain signalized intersection approaches based on a pedestrian safety approach. Potential locations could include Main Street and NW 67th Avenue, and Miami Lakes Drive and NW 67th Avenue due to high volumes of pedestrians and crash history.

**Targeted Crash Types:**
Right-Hook Crashes

**Notes:**
- Prohibiting vehicle right turns during the red phase can enhance pedestrian safety because although vehicles are required to yield or stop for pedestrians in the crosswalk, motorists do not always look to their right before making a right turn.
- Right-turning vehicles attempting to make turns on red often encroach upon pedestrians in the crosswalk due to line-of-sight restrictions.
- Can be useful where:
  - there are restricted sight lines between motorists and pedestrians
  - there are an unusual number of pedestrian conflicts with turns on red
  - a leading pedestrian interval is used
- Can be implemented during certain time periods or at all times of day

**Implementation Strategy:**
Work with Miami-Dade Public Works Signals and Signs Division to implement as part of resurfacing and traffic operations projects or as a standalone project. Prohibited RTOR could be implemented if signage and other treatments, such as LPI, have been tried and did not produce optimal results.

---

**Images:**
- **NO TURN ON RED** (R10-11)
- **NO TURN ON RED** (R10-11a)
- **NO TURN ON RED** (R10-11b)
# Miami Lakes
## Greenways and Trails Master Plan

<table>
<thead>
<tr>
<th>Enforcement of Yielding to Pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>Targeted Crash Types</strong></td>
</tr>
</tbody>
</table>
| **Notes**                             | • Programs that over time combine decoy pedestrians, warnings, informational flyers to give to violators, and citations deliver optimum results  
• One week of a strong and visible enforcement program can result in increased yielding behavior for a year  
• Refer to 2004 study of a program in Miami Beach documented in *Effects of a Driver Enforcement Program on Yielding to Pedestrians* by Ron Van Houten and J.E. Louis Malenfant  
• Cameras that use video analytics and radar to determine if a vehicle is stopped when a pedestrian is in the crosswalk can be installed |
| **Implementation Strategy**            | Coordinate with local law enforcement agencies |

Signage for Chicago’s crosswalk enforcement initiatives notifies drivers that they must yield to pedestrians in crosswalk at the enforcement locations.

Cameras in Washington D.C. record drivers as pedestrians step into crosswalks. Violations are issued to drivers who fail to stop for pedestrians who have the right of way. A team of officers and employees review the photos/videos from the enforcement cameras before issuing tickets to ensure that the violation notices are valid.
### Safe Steps - Pasos Seguros Program Expansion

<table>
<thead>
<tr>
<th>Description</th>
<th>Expand the Safe Steps - Pasos Seguros program to help educate seniors on the proper pedestrian safety techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Crash Types</td>
<td>Elderly Crashes</td>
</tr>
</tbody>
</table>

### Notes

The program is the Alliance for Aging, Inc.'s bilingual project to reduce elder pedestrian crashes in Miami-Dade County through:

- Public awareness TV campaign
- Educational curriculum provided in areas with high rates of elderly pedestrian crashes
- Safe Steps Pasos Seguros Workshops where a facilitator gives a presentation at a community center, elder housing center, or civic organization on safe pedestrian behaviors

### Implementation Strategy

Coordinate with the Alliance for Aging, Inc. staff to implement and expand the program components.
### Pedestrian Throughway Zones

<table>
<thead>
<tr>
<th>Description</th>
<th>Relocate elements within the right-of-way (including but not limited to signage, lighting, trees, benches, and traffic signal devices) obstructing bicycle and pedestrians paths to establish a clear throughway pedestrian network throughout Miami Lakes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted Crash Types</td>
<td>Walking Along Roadway</td>
</tr>
</tbody>
</table>
| Notes | • Clear pedestrian travel zones enhance the pedestrian environment and foster community life in residential and commercial districts  
• A desired minimum pedestrian travel zone width of 6 feet should be provided in areas with active pedestrian activity  
• For higher pedestrian volume areas, such as business districts and transit stations, additional width should be provided  
• Trees, planting strips, utilities, traffic signal equipment, benches, water fountains, bicycle parking racks are examples of street furniture  
| Implementation Strategy | Implement as a component of any road improvement or beautification project |
Pedestrian Throughway Zones (continued)

Low/Medium Density Residential

Minimum Dimensions: 6" 4' 5' 18"

Medium/High Density Residential

Minimum Dimensions: 6" 4', 6'-8' at bus stops, and where large trees are desired 6' 18"
Pedestrian Throughway Zones (continued)

Mixed / Multi-Use

Minimum Dimensions: 6” 4’ 6’ 18”

Public Facilities

Minimum Dimensions: 6” 5’, 6’-8’ at bus stops, and where large trees are desired 6’ 18”
## Implement Missing Sidewalks

<table>
<thead>
<tr>
<th>Project Description</th>
<th>To provide a complete sidewalk network throughout the Miami Lakes area, construct new sidewalks where connections are missing and repair existing deteriorated/cracked sidewalks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Agencies</td>
<td>Town of Miami Lakes, Miami-Dade County Public Works and Waste Management Department</td>
</tr>
<tr>
<td>Implementation</td>
<td>Implement as a component of any roadway improvement project or as a standalone project</td>
</tr>
</tbody>
</table>

### Example of Missing Sidewalk in Miami Lakes along NW 60th Avenue

![Example of Missing Sidewalk in Miami Lakes along NW 60th Avenue](image)

### Recommended Sidewalk Improvements

<table>
<thead>
<tr>
<th>Street</th>
<th>Improvement Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW 60th Avenue - Business Park East</td>
<td>Construct sidewalk on both sides, connect to bus stops</td>
</tr>
<tr>
<td>NW 142nd Street - Business Park East</td>
<td>Construct sidewalk on one side</td>
</tr>
<tr>
<td>NW 151st Street / NW 153rd Street / NW 57th Court / NW 59th Court</td>
<td>Construct sidewalk on one side</td>
</tr>
<tr>
<td>NW 59th Avenue</td>
<td>Construct sidewalk on one side, connect to bus stops</td>
</tr>
<tr>
<td>NW 159th Street</td>
<td>Construct sidewalk on one side</td>
</tr>
<tr>
<td>NW 163rd Street</td>
<td>Construct sidewalk on one side, connect to bus stops</td>
</tr>
<tr>
<td>NW 165th Street</td>
<td>Construct sidewalk on one side</td>
</tr>
</tbody>
</table>
The design principles of the Town of Miami Lakes Greenways and Trails Plan are based on current state and national documents, which include standards and guidelines for designing bicycle and pedestrian facilities.

- **Manual on Uniform Traffic Control Devices (MUTCD),** Federal Highway Administration
- **Designing Walkable Urban Thoroughfares: A Context Sensitive Approach,** an ITE Recommended Best Practice
- **Pedestrian Facilities User Guide,** Federal Highway Administration
- **Florida Pedestrian Facilities Planning and Design Handbook,** Florida Department of Transportation
- **Florida Bicycle Facilities Planning and Design Handbook,** Florida Department of Transportation
- **Urban Bikeway Design Guide, National Association of City Transportation Officials (NACTO)**

In general, paved shared use paths expected to carry both pedestrian and bicyclist traffic should be designed to a minimum width of 10 feet to allow space for travelers to pass each other without conflict. Pedestrians and bicyclists often travel in groups of two or more, which impacts the width of the facility.

Miami Lakes has an existing network of 8-foot wide sidewalks on several key arterials. Since the cost and impact of widening these facilities would be substantial, it is recommended that they be implemented into the network through key specific location improvements such as
intersection curb ramp widening, additional concrete around pinch-points, bicycle route wayfinding signage, and trail crossing warning signage at intersections. These narrower facilities could be considered paved neighborhood trails rather than shared use paths.

The following figures illustrate key design principles associated with shared use paths and neighborhood trails.

Figure 10. Shared Use Path Design Guideline
Figure 11. Neighborhood Trail Design Guideline
A planning level opinion of probable cost was developed for the greenways and trail network based on typical per mile costs for greenways and trails. The planning level opinion of probable cost is based on the implementation steps needed to complete the facility, such as “bike lane plus sidewalk” or “intersection corner and sign improvements.” The planning level opinion of probable cost is included in the table on the following page.
<table>
<thead>
<tr>
<th>Roadway</th>
<th>Total Proposed</th>
<th>Cost Opinion</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 80th Avenue</td>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 57th Avenue</td>
<td>NW 57th Avenue</td>
<td>NW 57th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 146th Street</td>
<td>NW 146th Street</td>
<td>NW 146th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 60th Avenue</td>
<td>NW 60th Avenue</td>
<td>NW 60th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 154th Street</td>
<td>NW 154th Street</td>
<td>NW 154th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 158th Street</td>
<td>NW 158th Street</td>
<td>NW 158th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 107th Street</td>
<td>NW 107th Street</td>
<td>NW 107th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
</tbody>
</table>

**MIAMI LAKES GREENWAYS AND TRAILS PLAN: COST ESTIMATE**

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Total Proposed</th>
<th>Cost Opinion</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
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<tr>
<td>NW 80th Avenue</td>
<td>NW 89th Avenue</td>
<td>NW 89th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 57th Avenue</td>
<td>NW 57th Avenue</td>
<td>NW 57th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 146th Street</td>
<td>NW 146th Street</td>
<td>NW 146th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 60th Avenue</td>
<td>NW 60th Avenue</td>
<td>NW 60th Avenue</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 154th Street</td>
<td>NW 154th Street</td>
<td>NW 154th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 158th Street</td>
<td>NW 158th Street</td>
<td>NW 158th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
<tr>
<td>NW 107th Street</td>
<td>NW 107th Street</td>
<td>NW 107th Street</td>
<td>Bike Lanes (w/o drainage/curb alterations)</td>
</tr>
</tbody>
</table>

**MIAMI LAKES GREENWAYS AND TRAILS PLAN: COST ESTIMATE (Per Roadway)**

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Total Proposed</th>
<th>Cost Opinion</th>
<th>Notes</th>
</tr>
</thead>
</table>
Appendix A
Greenways and Trails Master Plan

Interagency Coordination Committee

Meeting 1

Thursday, January 30, 10:00 AM – 11:30 AM
AGENDA
GREENWAYS AND TRAILS INTERAGENCY COORDINATION
COMMITTEE MEETING #1
Thursday, January 30, 2013
10:00 a.m.
Community Conference Room #106
6601 Main Street, Miami Lakes, FL 33014

1. **Opening Remarks/Overview of Plan**: TOML, Tony Lopez
2. **Presentation of Data Collection**: Kimley-Horn
3. **Recommendations from Prior Plans**: Kimley-Horn
4. **Discussion of Interagency Impacts/Projects**: All Agencies
5. **Brainstorming/Idea Sharing**: All Agencies
6. **Next Meeting**: TBD
Purpose

• To recommend specific feasible projects to help create a safe and convenient non-motorized transportation system
  – To connect
    • Residential communities
    • Schools
    • Parks
    • Businesses
Approach

• Intergovernmental and Stakeholder Coordination
• Data Collection and Existing Conditions Inventory
• Network Identification and Supplemental Infrastructure
• Implementation Steps and Design Guidelines
• Final Report
Types of Facilities

- Sidewalks
- Crosswalks
- Shared Use Paths
- Bike Lanes
- Greenways / Linear Parks
Shared Use Paths (Off-Road Facilities)

a.k.a. ... trails, multi-use trails, paths, walks, bike paths, bikeways, side paths

avoid calling them ... lanes, bike lanes, shared lanes
Greenways / Linear Parks (Off-Road Facilities)
Wide Sidewalks (Off-Road Facilities)
Bike Lanes (On-Road Facilities)

avoid calling them ... paths, bike paths, side paths, shared lanes
Sharrows (On-Road Facilities)

avoid calling them ... bike lanes, bike paths, trails, bikeways

streets with sharrow pavement markings can become “neighborhood greenways” when combined with traffic calming techniques and bike route wayfinding signs
USDOT Policy Statement

- Walking and bicycling are equal with other transportation modes
- Ensure convenient choices for people of all ages and abilities
- Go beyond minimum design standards within a context sensitive solution
- Collect data on walking and bicycling trips
- Maintain sidewalks and shared use paths with the same vigor that roadways are maintained
- Improve non-motorized transportation during maintenance projects
Benefits

• Mobility from Active Transportation
  – The mode share market is there
    • Nearly half of all trips in the Miami-Dade urbanized area are 3 miles or less
    • One-quarter of all trips are 1 mile or less
  – USDOT, National Household Travel Survey, 2009

“Driving a mile to the store for a quart of milk seems to me as much overkill as using a high-powered nail gun to hang a picture.”
- Jeff Mapes
Benefits

• Mobility from Active Transportation
  – Investments pay off!
    • Portland, OR
    • Minneapolis, MN
    • Reduced vehicle miles traveled (VMT)
Benefits

• Public Health and Wellness
  – Lack of physical activity is the primary cause in the obesity epidemic
    • U.S. Department of Health and Human Services, *Childhood Obesity*, 2005
  – Only 13 percent of children walk to school down from 48 percent in 1969
    • USDOT, *National Household Travel Survey*, 2009
Benefits

- Economic Development
  - Trails are a desired amenity for new residents
  - Indianapolis study shows increase in property values adjacent to trails
  - Lindsey et al., Public Choices and Property Values: Evidence from Greenways in Indianapolis, 2003)
Benefits

• Pollution
  – Transportation is a leading source of climate pollution
  – Transportation is the fastest growing source of CO2 emissions
    • Environmental Protection Agency 2013
Benefits

- Family and Community
  - More meaningful personal interaction
  - Higher social capital
  - Higher levels of mental health
  - Quality aging experience

- Sources
Walking and Bicycling Activity

“In you can make a city move by bicycling, it will be a more human and egalitarian city.”
- Enrique PeñaIosa
Town of Miami Lakes
Transportation Element Data, Inventory and Analysis
2030 Bicycle Facilities
Figure 2-17

Legend
- Existing Off-Street Bicycle Facilities
- Future Bike Lanes
- Proposed Trail
- Waterbodies
- Town Boundary

Source: Base GIS data, Miami-Dade County Department of Planning and Zoning, Geographic Information Services.
Pedestrian Level of Service (PLOS)
Bicycle Level of Service (PLOS)
Commute Trip Reduction Program

- Vehicular congestion is compromising the Town’s quality of life
- Town study completed in 2013
- Greenways and Trails Plan is part of the nonmotorized transportation strategy in addition to transportation demand management (TDM), ridesharing, flexible work schedules, etc.
TOWN OF MIAMI LAKES GREENWAYS AND TRAILS MASTER PLAN
FIGURE 1: PROPOSED FACILITIES

Legend
- Blue: Future Bike Lanes
- Light Blue: Proposed Greenway from OSMP
- Green: Proposed NW 170th Greenway PHII
- Orange: Proposed Memorial Trail
- Purple: Proposed Trail from Comp Plan
- Major Roads
- Other Roads
- Water
- Parks
- Miami-Dade County

Kimley-Horn and Associates, Inc.
Next Steps

- Develop network recommendations
- Prepare feasibility analysis
- Prepare draft implementation plan
Greenways and Trails Master Plan

Interagency Coordination Committee Meeting 2
Tuesday, June 3, 10:00 AM – 11:30 AM
AGENDA
GREENWAYS AND TRAILS INTERAGENCY COORDINATION
COMMITTEE MEETING #2
Thursday, May 29, 2014
10:00 a.m.
Community Conference Room #106
6601 Main Street, Miami Lakes, FL 33014

1. **Introductions & Welcome**: TOML, Tony Lopez

2. **Meeting #1 Summary**: Kimley-Horn

3. **Draft Network Plan Map**: Kimley-Horn

4. **Trail Concept Designs**: Kimley-Horn

5. **Design Guidelines & Implementation Steps/Ideas**: Kimley-Horn

6. **Interagency Feedback/Ideas**: All Agencies
Purpose

• To recommend specific feasible projects to help create a safe and convenient non-motorized transportation system
  – To connect
    • Residential communities
    • Schools
    • Parks
    • Businesses
Approach

- Intergovernmental and Stakeholder Coordination
- Data Collection and Existing Conditions Inventory
- Network Identification and Supplemental Infrastructure
- Implementation Steps and Design Guidelines
- Final Report
Meeting #1 Summary

- Data Collection and Analysis Map Series
  - Existing Facilities, Transit Data, Pedestrian Level of Service, Bicycle Level of Service, Crash Data

- Benefits of Greenways and Trails
  - Mobility, Health, Economic Development, Clean, Family and Community

- Types of Facilities
  - Greenways/Linear Parks, Bike Lanes, Sharrows, Sidewalks

- Commute Trip Reduction Program
Trail Concepts
NW 77th Court – Typical Section

10’ Planting strip
1’ 1’ 1’

11’ Drive lane

11’ Drive lane
1’ 1’
Border

8’ Planting strip

5’ Bike lane
5’ Bike lane
4’ Bench 2’
Planting
NW 77th Court – between NW 146th Street and NW 148th Street
NW 77th Court – between NW 146th Street and NW 148th Street
Trail Concepts
Trail Concepts
Trail Concepts
Sabal Drive
Sabal Drive – Typical Section
Twin Sabal Drive – Typical Section
Ludlam Road (SW 67th Avenue)
Ludlam Road (SW 67th Avenue)
Potential Intersection Improvements
Spot Improvements
Trail Concepts
Trail Concepts
On-Road Facilities

• On-Road Bike Lanes
  – NW 87th Avenue (existing)
  – NW 60th Avenue
  – NW 142nd Street
  – NW 59th Avenue
  – NW 158th Street
  – NW 163rd Street
On-Road Facilities

- On-Road Sharrows
  - Commerce Way
  - NW 79th Court
  - NW 80th Avenue
  - Sabal Drive
  - Twin Sabal Drive
  - NW 89th Avenue
  - NW 146th Terrace
  - NW 149th Terrace
  - NW 153rd Terrace
Design Guidelines

• National Association of City Transportation Officials (NACTO)
  – Bikeway Design Guide
  – Urban Street Design Guide

• American Association of State Highway Transportation Officials (AASHTO)

• Florida Greenbook
  – Chapters 8, 9, and 19

• Manual on Uniform Traffic Control Devices (MUTCD)
  – Includes standards and guidance
Design Guidelines

• Shared Use Paths

• Neighborhood Access Paths
Design Guidelines

- Canal Trails
Next Steps

- Revise recommendations per meeting discussion
- Prepare draft report
- Submit for review