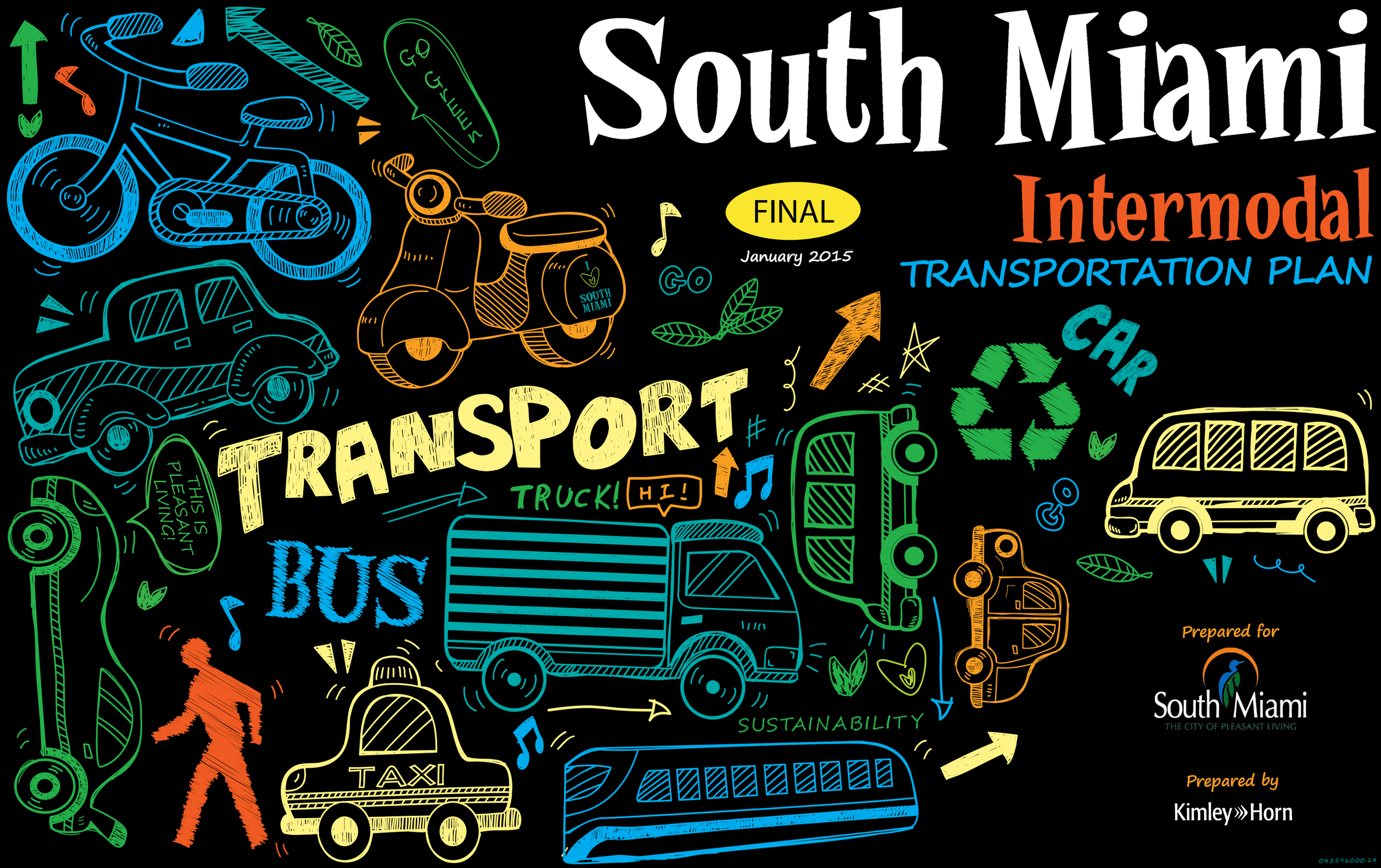
South Miami

Intermodal

TRANSPORTATION PLAN

FINAL

January 2015



Prepared for

South Miami
THE CITY OF PLEASANT LIVING

Prepared by

Kimley»Horn

043596000.14

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South Miami Green Task Force

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Acknowledgements

South Miami Intermodal Transportation Plan (SMITP)

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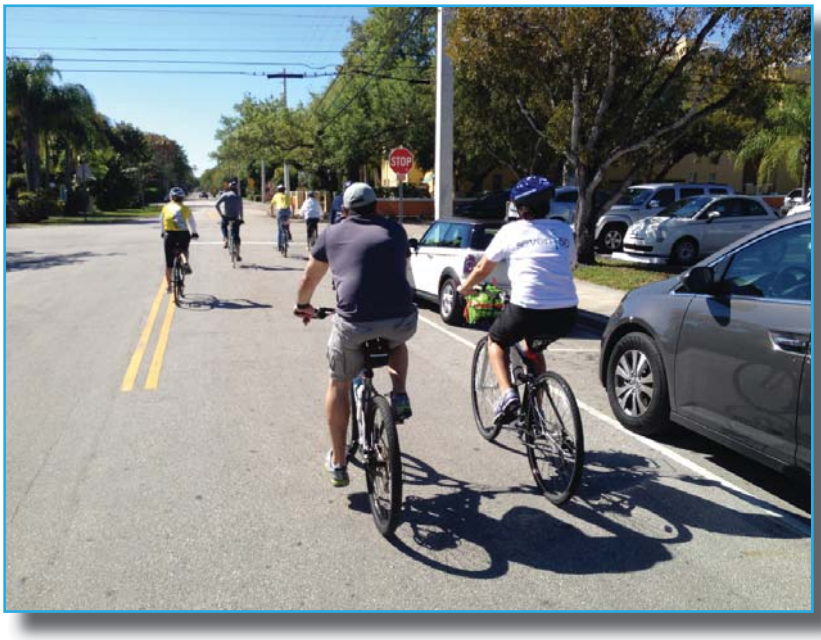
Introduction

Introduction

The City of South Miami desires to enhance the existing transportation system and mobility choices available to residents, workers, and visitors to the City. Despite its many positive attributes, challenges exist within the transportation system making it difficult for the City to maintain the Pleasant Living ideal. The beginnings of a greenway network are in place; however, connectivity improvements need to be identified to solve challenges presented by significant gaps in the greenway network. The Miami-Dade Metrorail passes through the City with the South Miami station located just north of Sunset Drive; yet, pedestrian access to the station is severely limited by the US 1/South Dixie Highway barrier that runs through the City. Sidewalks are found on many streets within South Miami, although the infrequency of well-designed crosswalks leads to accessibility and safety challenges. A grid network of streets is in place in most parts of the City, but there is a traffic calming challenge associated with ensuring that motorists travel at a respectful speed in and around South Miami.

The City is attempting to re-integrate these functions through complete streets principles, which seek to provide a comfortable transportation system for all modes and users of all ages and abilities. An integral component of this effort is to establish and approve this Plan, which identifies an interconnected network of mobility and safety improvements based on smart growth and complete streets principles. The SMITP is a community-based transportation plan that provides for convenient and efficient use of motorized and non-motorized transportation and addresses issues such as vehicular circulation, parking, pedestrian/bicyclist movements, and public transportation, resulting in short- and long-term strategies for implementation of the resultant plan.



Participants of the SMITP Bike Path Inspection riding through the streets of South Miami

Outcomes

The primary outcomes of the plan, once implemented, are to:

- Provide people with sustainable, safe, and effective alternatives to personal motorized vehicles;
- Reduce vehicle trips; and
- Reduce vehicular congestion.
- Increase transit ridership.

Principles and Strategies

The plan accomplishes these outcomes through the following principles and strategies.

- Focus on pedestrian and bicycle transportation projects, as well as enhancing access to public transportation with the goal of providing a blueprint for developing a citywide system that serves all modal user groups, including commuting, recreational, and utilitarian trips.
- Develop a comprehensive intermodal transportation plan based on smart growth principles that improve accessibility for all modes of transportation with an emphasis on safety and to provide recommended improvements based on current and projected future conditions.
- Provide for convenient and efficient use of motorized and non-motorized transportation and address issues such as vehicular circulation, parking, pedestrian/bicyclist movements, and public transportation, resulting in short- and long-term strategies for implementation of the resultant plan.
- Review and analyze existing trails, sidewalks, bicycle paths, activity nodes, and the roadway network within the City and coordinate with neighboring communities to ensure connectivity for a larger bicycle, pedestrian, and trails network.
- Review and analyze earlier transit related studies.
- Review and analyze capital improvement projects to ensure that the needs of non-motorized users, including pedestrians, bicyclists, and persons with disabilities, are considered in programming, planning, maintenance, construction, operations, and project development activities.
- Enhance and expand the network of new trails, sidewalks, and bicycle paths, to provide safe non-motorized connections to activity nodes such as schools, parks, hospitals, transit, and shopping centers.
- Enhance pedestrian crossings, landscaping, lighting, directional signage, and other amenities.
- Define the "spine" of the greenway system along the existing and future travel network.
- Define the priority for greenways implementation.
- Recommend a plan for future trailheads and trail amenities (locations and types of benches, trash cans, etc.).
- Recommend improvements to existing roadways, sidewalks, bike lanes, sharrows, and bioswales.
- Recommend locations for additional sidewalks, bike lanes, sharrows, and bioswales.
- Recommend traffic calming improvements on neighborhood streets.
- Provide recommendations for way-finding (signage) and pavement markings, to direct users to preferred and nearby destinations, as well as alert drivers of non-motorized users.

Green Sustainability Values

The SMITP will help to fulfill the South Miami Carbon-Neutral Resolution No. 23-09-12833 and will also be built upon green sustainability values. Sustainability in transportation is the ability to meet the needs of the present generation and to provide for the movement of people and goods without compromising the ability of future generations to meet their own needs. Transportation is the largest user of fossil fuels and one of the largest emitters of carbon dioxide into the atmosphere. The SMITP is developed around the following green sustainability values.

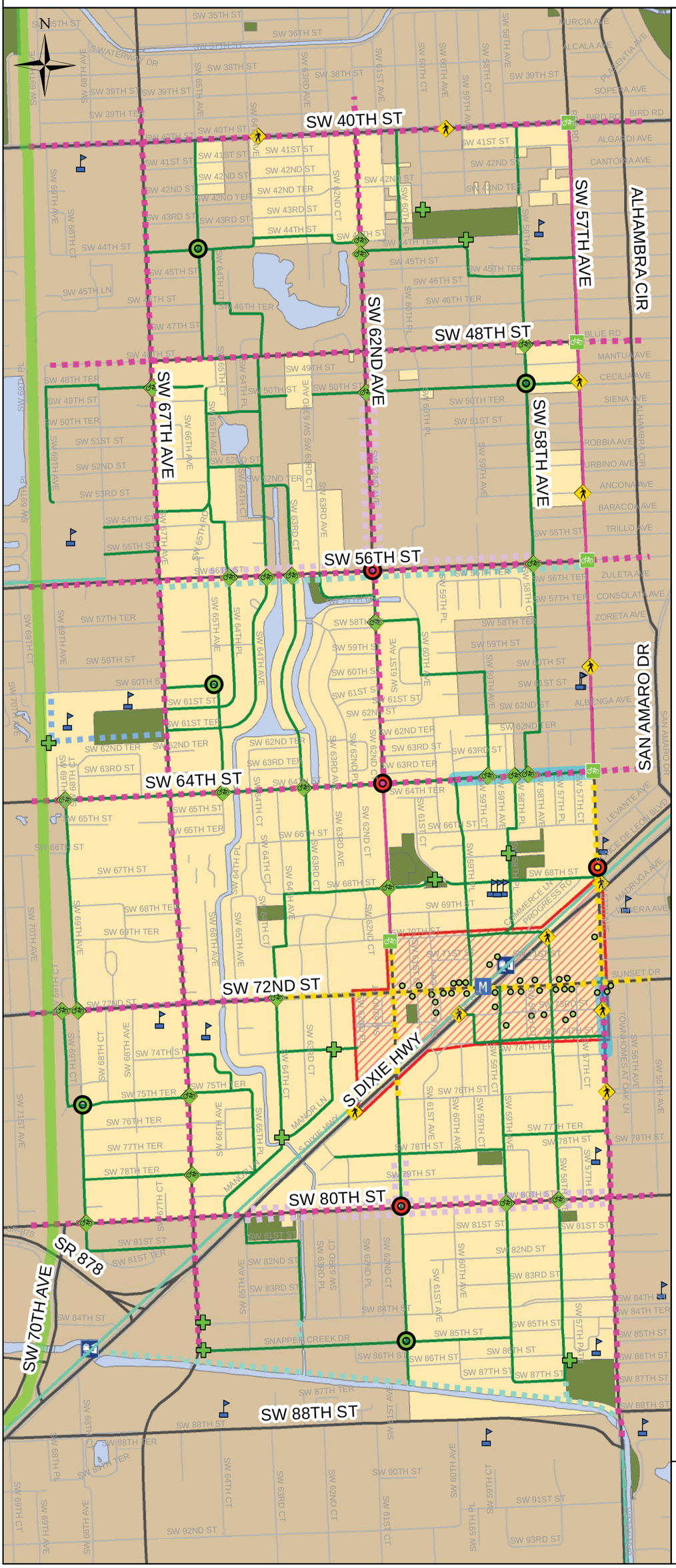
- Provide viable mobility options to be given opportunities to drive less (walking, bicycling, access to public transit, etc.).
- Increasing opportunities for walking and bicycling in the City will lead to enhanced public health and fitness.
- Provide urban design and landscape techniques to enhance the City's street rights-of-way and open spaces.
- Provide local merchants with better multimodal connectivity to South Miami neighborhoods.
- Provide a multimodal transportation system designed around people, not cars, will help promote the South Miami Hometown identity.
- Increase education strategies will help supplement engineering improvements to connect with residents, neighborhoods, business owners, schools, and advocacy groups to promote sustainable transportation.

SMITP Network Plan

The recommendations of the SMITP are summarized in the Figure 1 Network Plan, which shows the recommended future network of non-motorized transportation facilities. The Network Plan includes existing facilities, such as bike lanes and paved paths, as well as recommended projects such as proposed crosswalks, sidewalks, bike lanes, sharrows, shared use paths, neighborhood greenways, and traffic circles. The SMITP Network Plan was developed throughout the course of the SMITP process, which included several forms of public engagement, inter-agency coordination, technical analysis, use of complete streets design elements, and adherence to the vision, goals, and objectives of the this Plan These elements will be discussed throughout the SMITP report. Refer to Figure 1 Network Plan on the following page.

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 1: NETWORK PLAN



LEGEND

Future Facilities

- Future Bike Lanes
- Future Sharrows
- Future Shared-Use Path
- Future Sidewalk
- Future One-Way Loop Circulation
- Neighborhood Greenways
- Buffered Bike Lane
- Ludlam Trail Corridor
- Future Crosswalk
- Green Bike Lane and/or Bike Box
- M-Path Crossing Improvements
- Neighborhood Greenway Crossing Treatment
- Neighborhood Traffic Circle
- Non-Motorized Connection
- Traffic Circle
- Pedestrian Wayfinding Sign System

Existing Facilities

- Bike Racks
- Schools
- Existing Bike Lanes
- Existing Paved Path
- Metrorail Station
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

Executive Summary

Executive Summary

The approach is to identify a coordinated set of phased multimodal improvements with a focus on pedestrian and bicycle mobility. The recommended improvements and implementation plan will serve as a tool to guide short- and long-term intermodal transportation improvements.

Some of the key opportunities that have been identified include:

- Connecting to neighboring municipalities, as well as to the regional system of planned and existing greenways, such as:
  - Snapper Creek Trail
  - M-Path
  - Red Road Linear Park
  - Old Cutler Trail Bike Path (Bike Route 1)
  - FEC Ludlam Corridor
- Identifying pedestrian crossing strategies to reduce the barrier that US 1 (South Dixie Highway) forms between the east and west side of town.
- Understanding that bus stops should have a safe and convenient crosswalk nearby.
- Enhancing and expanding the network of paved paths and trails within City street rights-of-way.
- Identification of missing gaps in the sidewalk network.
- Distinguishing strategies to better link the downtown district with the South Miami Metrorail Station.
- Expanding the network of traffic calming that has been identified on local streets, to encourage motorists to drive through the City at respectful speeds.

The following is a list of tasks that were completed for this project:

- Transportation Mobility Data Collection, Review, and Analysis (February 2014)
- Bike Path Inspection (March 2014)
- Public Engagement (March 2014)
- Inter-agency Coordination (February and July 2014)
- Vision, Goals, and Objectives (June 2014)
- Master Plan Diagrams and Exhibits (July 2014)
- Design Considerations and Cost (July 2014)
- Implementation Plan (September 2014)
- Master Plan Report Preparation (September-November 2014)

Timeline of Significant Events

Timeline of Significant Events

SMITP History

- **September 6, 2011:** A resolution recognizing the importance of bicycling in transportation and recreation for the betterment of the residents and for the environment was approved by Commission
- **April 10, 2012:** Draft Greenways proposal was prepared by Green Task Force
- **September 24, 2012:** Green Task Force requested to develop greenway systems for walkability and showed Draft Greenways Plan. The Commission approved $100,000 from PTP funds to create an Intermodal Transportation Plan
- **January 17 2013:** MPO grant application submittal for the SMITP with Letter of Support from Green Task Force
- **April 12, 2013:** RFQ #PW-S2013-10 released for the SMITP
- **May 2013:** MPO grant awarded $21,000 for SMITP
- **June 18, 2013:** Commission approved resolution authorizing the City Manager to negotiate a professional service agreement for the SMITP
- **December 18, 2013:** SMITP Contract signed by both the City and Kimley-Horn
- **February 20, 2014:** Interagency Coordination Meeting #1
- **March 3, 2014:** Green Task Force Workshop
- **March 8, 2014:** Bike Path Inspection
- **March 20, 2014:** Public Charrette
- **July 15, 2014:** Presentation to Green Task Force
- **July 17, 2014:** Interagency Coordination Meeting #2
- **August 12, 2014:** Presentation to Green Task Force
- **September 2014:** Draft SMITP Master Plan Report
- **October 22, 2014:** Revised draft SMITP resubmitted for adminstrative review
- **December 4, 2014:** Revised draft SMITP Report submittal

SMITP Vision

SMITP Vision

The genesis of the South Miami Intermodal Transportation Plan (SMITP) began with the Green Task Force discussing a system of neighborhood greenways and trails for the City of South Miami. This idea was further galvanized on September 6, 2011, when the City Commission passed a resolution recognizing the importance of bicycling in transportation and recreation for the betterment of the residents and for the environment. The SMITP is part of a continuing effort to enhance the transportation system and mobility choices for residents and visitors to the City of South Miami.

The vision is to establish a network of sidewalks, trails, roadway improvements, neighborhood greenways, and bicycle lanes throughout the City that will provide residential areas with a safe and comfortable connection to downtown shopping and dining, transit facilities (Metrorail and Metrobus), and the M-Path, available to everyone: young and old; motorists and bicyclists; walker and wheelchair users; and bus and Metrorail riders alike. Based on smart growth and complete streets principles, the Plan will focus on pedestrian and bicycle transportation projects, as well as enhancing access to public transportation through complete streets principles, which seek to provide a comfortable transportation system for users of all transportation modes and all ages and abilities.

Complete Streets is a relatively new term for an idea from decades past. Long before regulations and requirements promoting rapid automobile movement began dictating street design, streets were built and developed to serve the destinations surrounding them. Some of the greatest streets in America still maintain this century-old character. New, enhanced streets, built to evolving standards, are being constructed throughout the country through Complete Streets programs. Complete Streets facilitate pedestrian street crossings, walkability, and biking. Furthermore, it improves transit connectivity and safety for all users.

Sustainability in transportation is the ability to meet the needs of the present generation and to provide for the movement of people and goods without compromising the ability of future generations to meet their own needs. Transportation is the largest user of fossil fuels and one of the largest emitters of carbon dioxide into the atmosphere. The SMITP will help to fulfill South Miami's desire to be carbon-neutral by following sustainability values:

- People deserve viable mobility options to be given opportunities to drive less (walking, bicycling, access to public transit, etc.).
- Enhancement of street rights-of-way and open spaces through good urban design and landscape techniques.
- Better multimodal connectivity will provide economic benefits to local merchants.
- A multimodal transportation system designed around people, not cars, will help promote the South Miami Hometown identity and reinforce its City of Pleasant Living ideals.
- Educating users of the system improvements will encourage and promote sustainable transportation.

The SMITP will try to balance functionality, maintenance, and cost, while focusing on solutions to reduce environmental impact. As projects recommended in the SMITP Network Plan are implemented, some options that can be included in these projects consistent with sustainability principles include:

- Rain gardens and bioswales (to capture stormwater runoff)
- Solar lighting for bus stops and sidewalks
- LED street lighting
- Car share locations
- Bike service kiosks
- Pervious concrete and porous asphalt

Many of the features noted above can be considered as an alternative to more extensive infrastructure changes, resulting in major costs savings.

Goals and Objectives

Goals and Objectives

The goal of the SMITP is to develop an interconnected network plan of multimodal streets that promote sustainable transportation and identify design solutions that:

- Provide for multiple transportation modes, such as pedestrian, bicycle, transit, and automobile, and include environmentally sustainable, context-sensitive solutions;
- Recognize the differences between street types; and
- Support flexibility to accommodate future needs and allow change to occur incrementally within budgetary constraints.

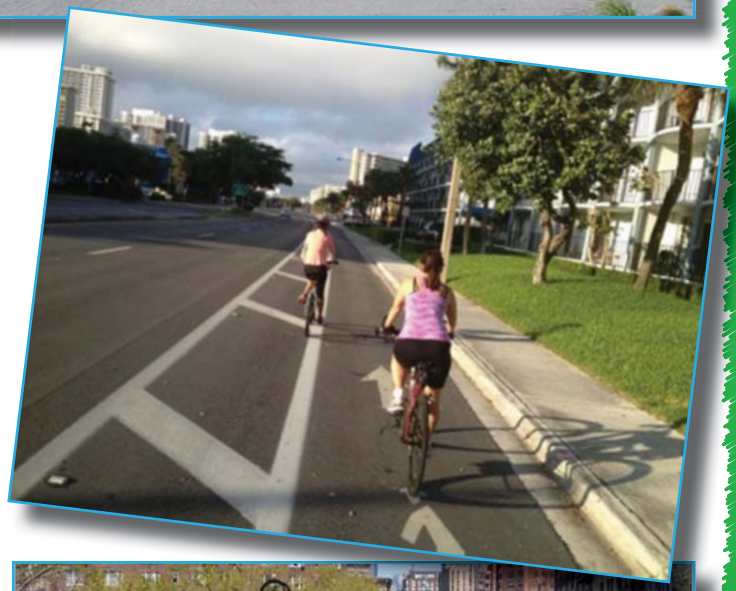
The following objectives will drive the development of the SMITP as a means towards achieving the above stated goals:

- Establish new street design processes, policies, and standards that provide the opportunty to integrate Complete Streets and Integrated Stormwater Management (ISWM) principles.
- Provide effective and timely opportunities for community stakeholder input on the design priorities and cost/benefit of the proposed street improvements.
- Develop a strategy for systematic and phased implementation over time through both public and private improvements.

Benefits of Complete Streets

Benefits of Complete Streets

Embracing Complete Streets principles would enhance the everyday quality of life for South Miami residents. Complete Streets drive both infrastructure and cultural changes. Shifting demographic trends show more people are choosing to live in walkable urban areas and desire access to a variety of transportation modes. This gives an increasing number of people the option not to choose automobiles for everyday travel.



Data from the 2012 National Household Travel Survey indicate that within the Miami urbanized area, approximately 25 percent of all vehicular trips are one mile or less in length and nearly half of all trips are three miles or less. This indicates that one-quarter of trips are within walking range for most people and almost half of all trips are within bicycling range for most people. Roadway congestion seems to grow despite a continual investment in roadway capacity infrastructure. The demand for alternative methods to move around the City is increasing.

Complete Streets design also encourages a shift in the City's modal split increasing the use of transit, biking, and walking. By diversifying modes of transportation, like transit and rail, more people can move through a corridor by means other than solely using motor vehicles. Another critical benefit is the incorporation of green features. These design elements can improve the visual impact of the roadway, assist in stormwater management, combat pollution from emissions, reduce exposed pavement, and lead to a decrease in the City's heat island effect. Complete Streets will benefit the City of South Miami in the following ways:

- Improve safety by designing and accommodating for all travel modes, including bicyclists, pedestrians, drivers, transit users, childen, seniors, and persons with disablities thus reducing accidents.

- Increase the overall capacity of the transportation network while offering options to avoid traffic
- Create more walking and bicycling opportunities which improves public health and wellbeing
- Provide social equity to those who choose to not own or drive a car
- Encourage children and elder adults to be more physically active
- Create increased social, civic, and economic activity on streets
- Provide incentives for economic revitalization by reducing transportation costs and travel time while increasing property values and job growth
- Reduce the demand on existing infrastructure by incorporating stormwater management into street designs
- Improve the return on infrastructure investments by integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project sparing the expense of later retrofits
- Improve the quality of place by creating vibrant livable centers through increased walking and bicycling, and by promoting suitable denser development patterns where appropriate
- Provide environmental benefits from reduced congestion through the use of alternative transportation options and increased stormwater management

Transportation Mobility Data Collection, Review, and Analysis

Transportation Mobility Data Collection, Review, and Analysis

Locally and across the nation, recent trends in development have changed the approach to roadway planning, allowing for greater flexibility in thoroughfare design that better complements surrounding land uses. This emerging practice is based upon the principles of Context Sensitive roadway design. Designing Walkable Urban Thoroughfares: A Context Sensitive Solutions (CSS) Design Manual, prepared by the Institute of Transportation Engineers (ITE) and the Congress for the New Urbanism (CNU), provides a guide on how this emerging practice can be implemented during the thoroughfare planning process.

Opportunities for multimodal corridors that advance economic development and create a safer, more efficient transportation system arise when the context of a roadway is taken into account during the planning and design processes.

People who live in cities and towns throughout the country have a strong interest in ensuring that transportation investments provide for safe travel of everyone using the road. Across the country, Complete Streets policies have been gaining traction as more communities realize the benefits of safe, accessible, and healthy streets. Of all the trips within the U.S., 40 percent are less than two miles; of these, 99 percent are by automobile. Nationwide, people are open to using viable transportation alternatives, if available. Trends also show that vibrant bike- and transit-friendly cities attract the youth and creative class—people who are integral to building tomorrow's workforce.

In 2011, 125 jurisdictions adopted a Complete Streets policy, up from the 80 jurisdictions that committed to Complete Streets in 2010. In total, as of 2011, 330 regional and local jurisdictions, 26 states, the Commonwealth of Puerto Rico, and the District of Columbia have made a commitment to Complete Streets implementation.

Transit Related Studies

During the evaluation process, we addressed prior City of South Miami transit-related studies in order to develop a comprehensive intermodal transportation plan based on smart growth principles that improve accessibility for all modes of transportation with an emphasis on safety and to provide recommended improvements based on current and projected future conditions. It was important to review available existing pedestrian, bicycle, and transit studies conducted by the City; surrounding municipalities, MPO, FDOT, and others; in addition to reviewing the City's Capital Improvements Plan, in order to recommend ways to enhance the multimodal transportation network through low-cost additions to projects that are already programmed. As part of the Data Collection and Analysis task, we evaluated the City's existing transportation network in conjunction with the City's Comprehensive Plan, Land Development Codes, and the County's Unified Planning Professional Architectural and Engineering Services Request for Qualification Work Program, as well as addressed prior transit-related studies conducted by the City.

We conducted a transportation mobility analysis to identify and map bicycle and pedestrian trip patterns throughout the City boundaries, utilizing client-provided geographic information systems (GIS) data. We then collected the following bicycle and pedestrian levels-of-service data for arterials and major collector roads: During field reviews, we photo documented key features, such as existing bicycle lanes, bicycle parking, identified deficiencies, sidewalks, crosswalks, curb ramps, signage, and bicycle and pedestrian activity.

- Presence of a bike lane or paved shoulder
- Presence and width of a sidewalk
- Width of outside travel lane
- Number of lanes
- Posted speed limit
- Median type
- Separation width between the sidewalk and the travel lanes
- Traffic volume
- Truck volume

One of the biggest obstacles faced in addressing bicycle and pedestrian safety issues is the lack of information on bicycle and pedestrian activity levels, often referred to as exposure data. While motor vehicle count data are routinely being collected and maintained, bicycle count data are not typically collected by public agencies in a systematic manner. To address this issue, we performed formal two-hour bicycle and pedestrian counts at six locations within the City. These bicycle and pedestrian counts helped us to monitor locations, better define safety issues, develop improvements, and prioritize locations for implementation. In addition, bicycle and pedestrian counts will be used to define bicycle safety issues (i.e., crashes) in relation to exposure. We also collected the available bicycle and pedestrian crash data within the City.

Through field reviews and surveys, we assessed the current bicycle parking level-of-service within the City, including typical bicycle rack types and sizes, location of bicycle parking, number of bicycles parked, and general observations on the usage of bicycle racks. Based on experience, it is also important to inventory the "unofficial" bicycle parking, such as bicycles parked at bus stop signs, utility poles, trees, and any other "unofficial" locations observed in the field. The "unofficial" bicycle parking can often give a good indication of latent demand and trip patterns.

Transportation Mobility Analysis

A general transportation mobility analysis was conducted to identify bicycle and pedestrian mobility issues through data analysis in the City of South Miami. 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 South Miami 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 City of South Miami demonstrate that residents are more likely to make work trips on foot or by bicycle than in the County, State, and Country as a whole. "Drove alone" is still the dominant journey-to-work mode within the City of South Miami; however, the percentage of single occupant vehicles at about 0.75 percent less than in the County as a whole and about 3.5 percent less than in the State as a whole.

Table 1: Journey to Work Data

	City of South Miami		Miami-Dade County		State of Florida		United States	
Description	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Car, truck, or van	4,708	82.22%	964,180	86.44%	7,256,082	89.50%	120,551,904	86.17%
Drove Alone	4,355	76.06%	857,014	76.83%	6,443,859	79.48%	106,519,508	76.14%
Carpooled	353	6.16%	107,166	9.61%	812,223	10.02%	14,032,099	10.03%
Public Transportation	455	7.76%	60,007	5.38%	164,698	2.03%	6,967,689	4.98%
Taxicab	0	0.00%	1,641	0.15%	6,514	0.08%	159,486	0.11%
Motorcycle	12	0.21%	2,403	0.22%	29,200	0.36%	316,992	0.23%
Bicycle	184	3.00%	5,802	0.52%	51,997	0.64%	785,665	0.56%
Walked	214	4.55%	24,365	2.53%	126,718	1.75%	3,938,418	3.27%
Other means	15	0.26%	11,627	1.04%	92,845	1.15%	1,195,856	0.85%
Worked at home	138	2.00%	45,399	4.07%	379,422	4.68%	5,977,629	4.27%

GIS DATA MAP SERIES

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

Figures 2 through 13, listed below, present the GIS Data Map Series.

- Figure 2. Community Features
- Figure 3. Existing Facilities
- Figure 4. Metrobus Ridership Range per Stop
- Figure 5. Number of Travel Lanes
- Figure 6. 2010 Census Population Density
- Figure 7. 2010 Census Automobile Ownership
- Figure 8. Bicycle Level of Service (BLOS)
- Figure 9. Pedestrian Level of Service (PLOS)
- Figure 10. Bicycle/Pedestrian Crashes ('05-'11)
- Figure 11. Bicycle Crashes ('05-'11)
- Figure 12. Pedestrian Crashes ('05-'11)
- Figure 13. Bicycle Parking Inventory

As shown in Figure 8, the majority of the major roadways within the City of South Miami have a BLOS of D or E. On the contrary, Figure 9 shows that the majority of the major roadway segments within the City of South Miami 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.

High crash corridors were identified based on geographic information systems (GIS) crash data mapping. Figures 10, 11, and 12 depict the bicycle-related and pedestrian-related crashes within the City of South Miami area from 2005 to 2011. As shown on these maps, the vast majority of bicycle-related and pedestrian-related crashes occurred along the major roadways within the City, including SW 40th Street, SW 64th Street, SW 72nd Street, SW 67th Avenue, SW 57th Avenue, and S. Dixie Highway.

Bike rack at the NW corner of Red Road and San Remo

Bicycles along fence outside of Winn Dixie on SW 73rd Street and SW 59th Avenue

BICYCLE PARKING INVENTORY

A field inventory of existing bicycle parking facilities within the commercial areas of the City of South Miami, including typical bicycle rack types and sizes, location of bicycle parking, number of bicycles parked, and general observations on the usage of bicycle racks was conducted in July 2014. The inventory also included "unofficial" bicycle parking, such as bicycles parked at street signs, fences, utility poles, trees, and any other "unofficial" location observed in the field.

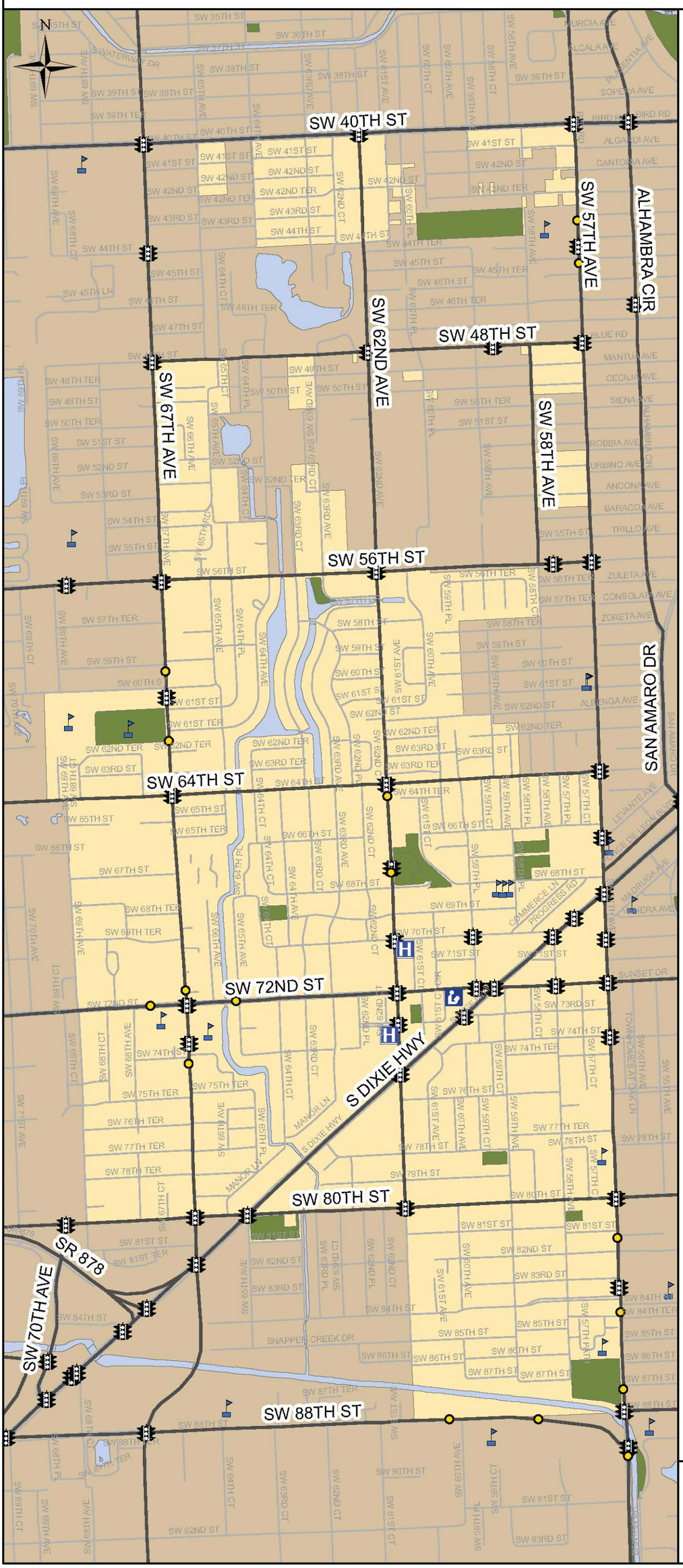
Figure 13 depicts the locations where either designated parking facilities (bike racks) were available or undesignated bicycle parking was observed. The majority of the observed undesignated bicycle parking was adjacent to business-related uses. Detailed bicycle parking data collection sheets are included in Appendix A.

PUBLIC ENGAGEMENT

Kimley-Horn conducted an online public survey regarding attitudes and opinions on bicycle and pedestrian mobility. The online public survey served a dual purpose as both a data collection mechanism and a public engagement tool to obtain street users' perspectives about the quality of existing bicycle and pedestrian conditions and ideas for network improvements. A total of 113 people responded to the online survey. The survey included qualitative and quantitative questions regarding the use of streets and areas within South Miami for walking and bicycling. Other public engagement events included Bike Path Inspection, Green Task Force Workshops, Public Workshop and Public Presentation.The results of the online public survey and deleted discriptions of the listed public engagemtns are presented in the Public Engagement section of this report.

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 2: COMMUNITY FEATURES



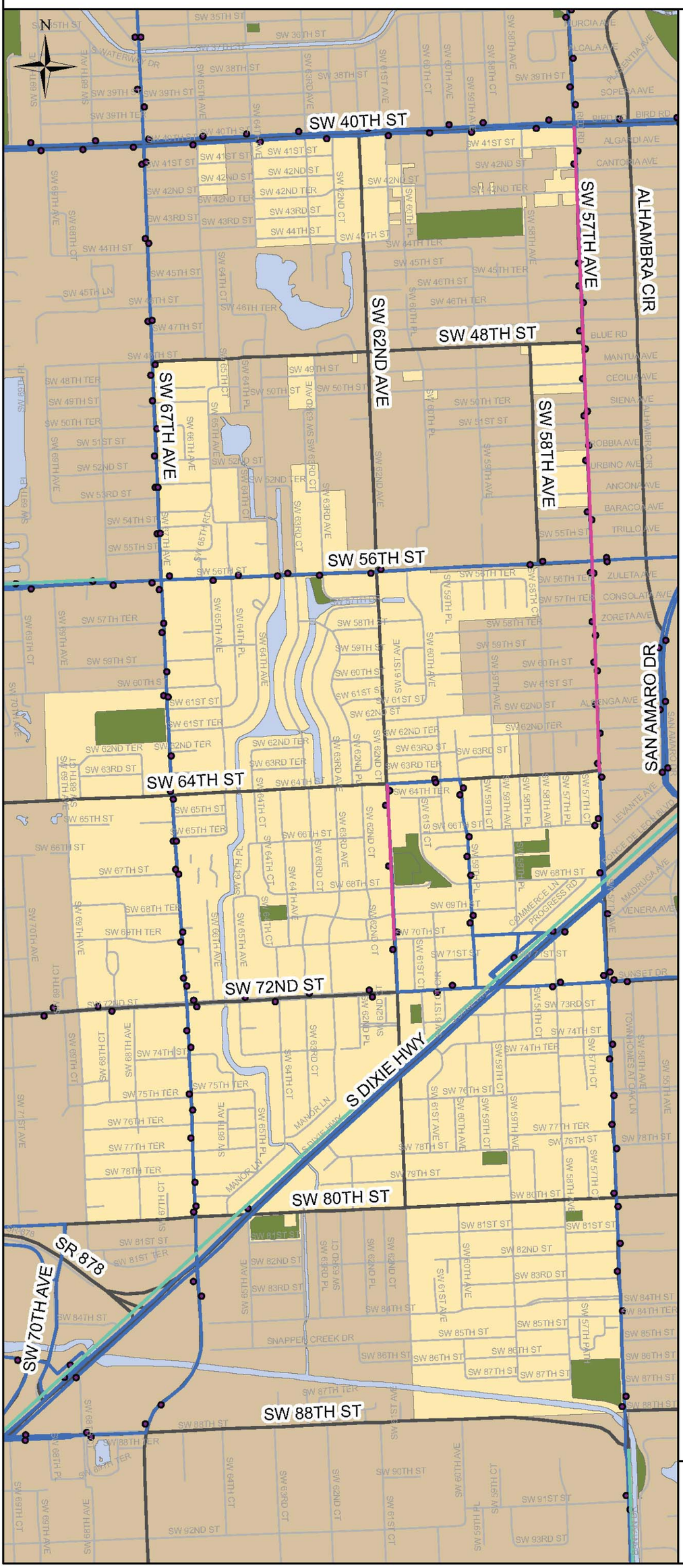
LEGEND

- Schools
- Libraries
- Hospitals
- Signalized Intersection
- School Flashing Signal
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 3: EXISTING FACILITIES



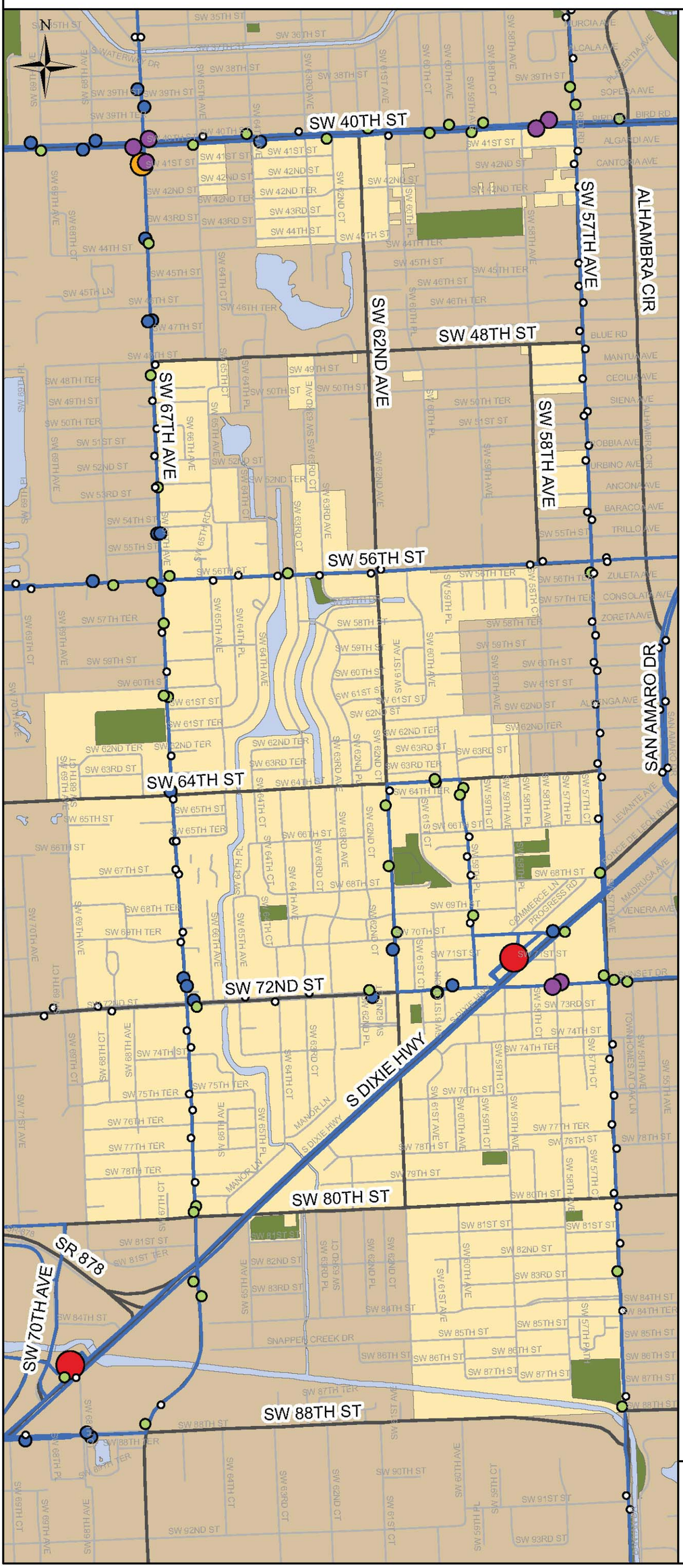
LEGEND

- Existing Bike Lanes
- Existing Paved Path
- Existing Paved Shoulder
- Bus Stops
- Bus Routes
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 4: METROBUS RIDERSHIP RANGE PER STOP



LEGEND

Average Daily Ridership

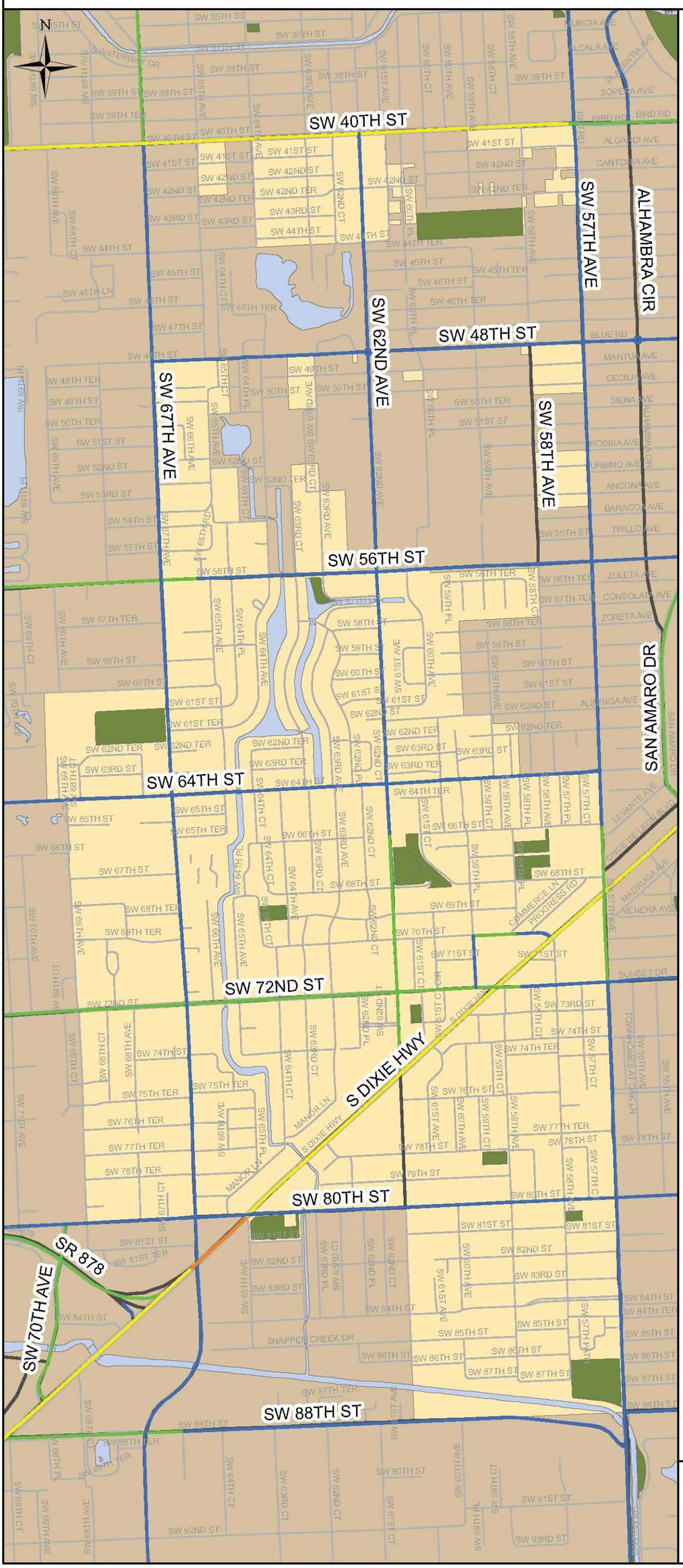
- 0 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 100
- >900

- Bus Routes
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 5: NUMBER OF TRAVEL LANES



LEGEND

Number of Lanes (Per Direction)

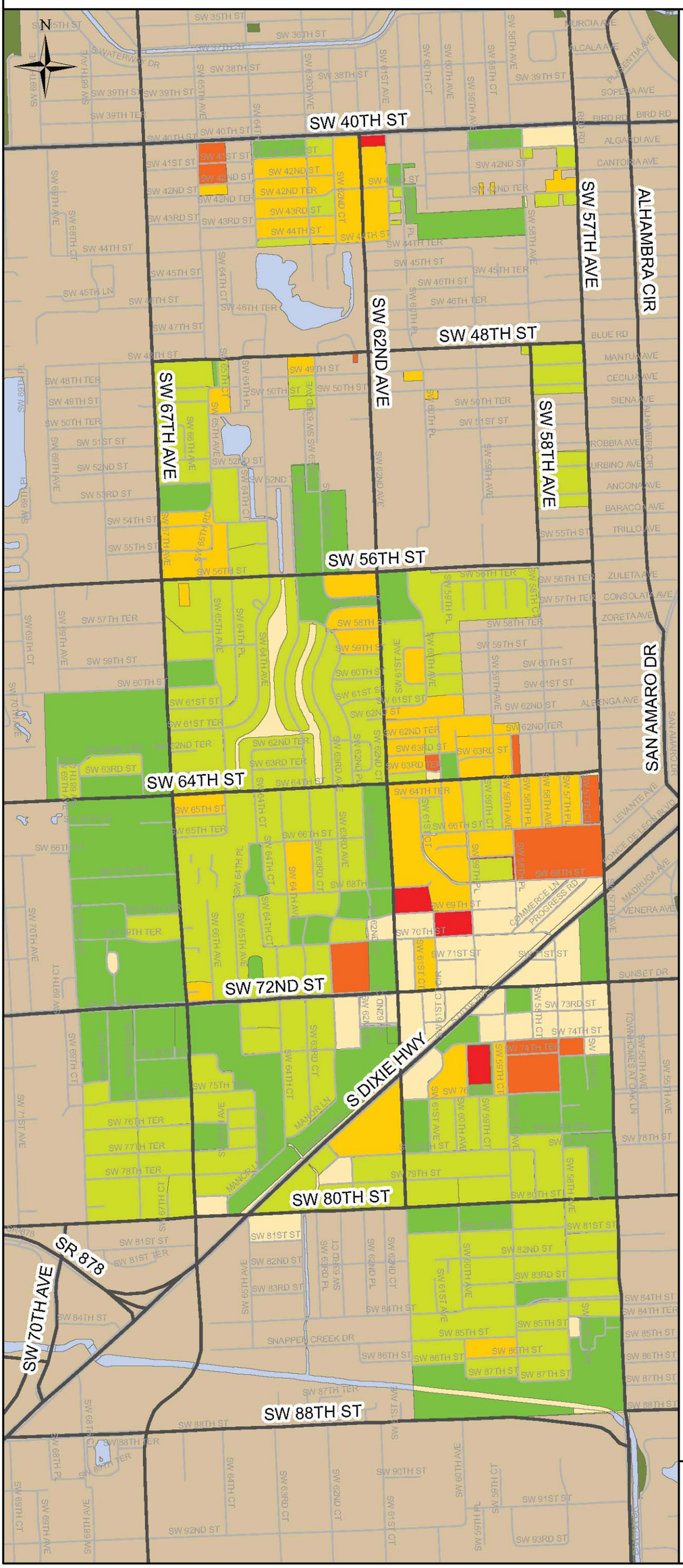
- 1
- 2
- 3
- 4

- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 6: 2010 CENSUS POPULATION DENSITY



LEGEND

Population Density (Persons/Acre)

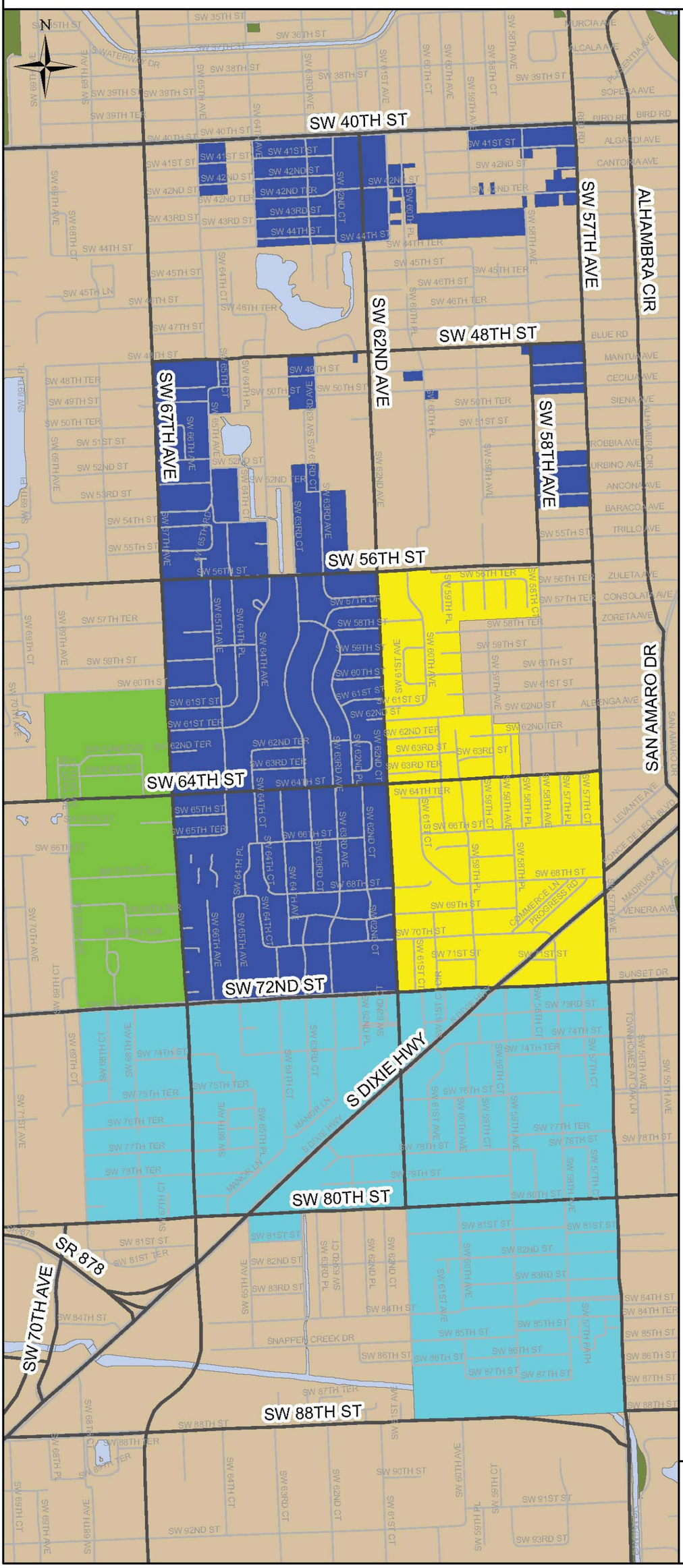
- 0
- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- >50

- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 7: 2010 CENSUS AUTOMOBILE OWNERSHIP



LEGEND

Average Vehicles Available (Per Household)

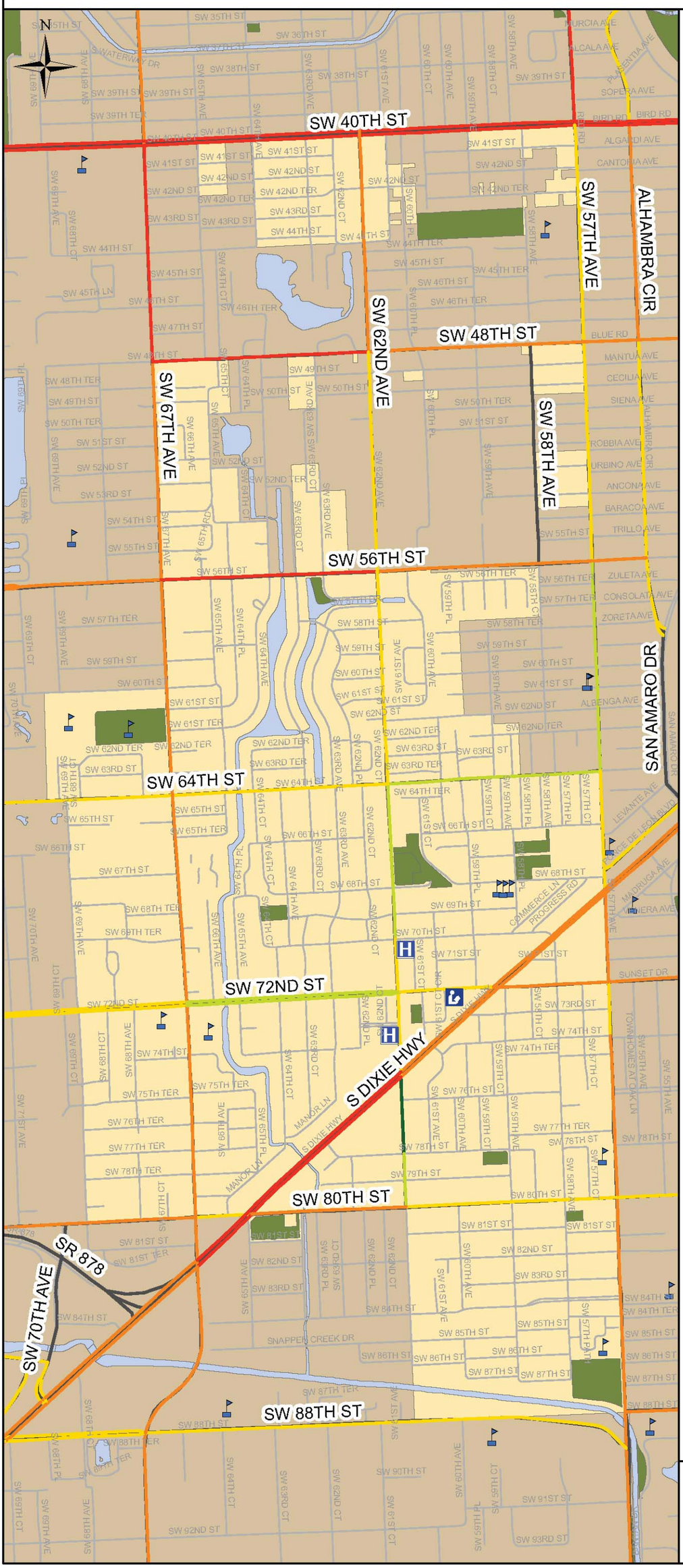
- 0.00
- 0.01 - 1.30
- 1.31 - 1.50
- 1.51 - 1.75
- >1.75

- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 8: BICYCLE LEVEL OF SERVICE (BLOS)



LEGEND

Bicycle LOS Score

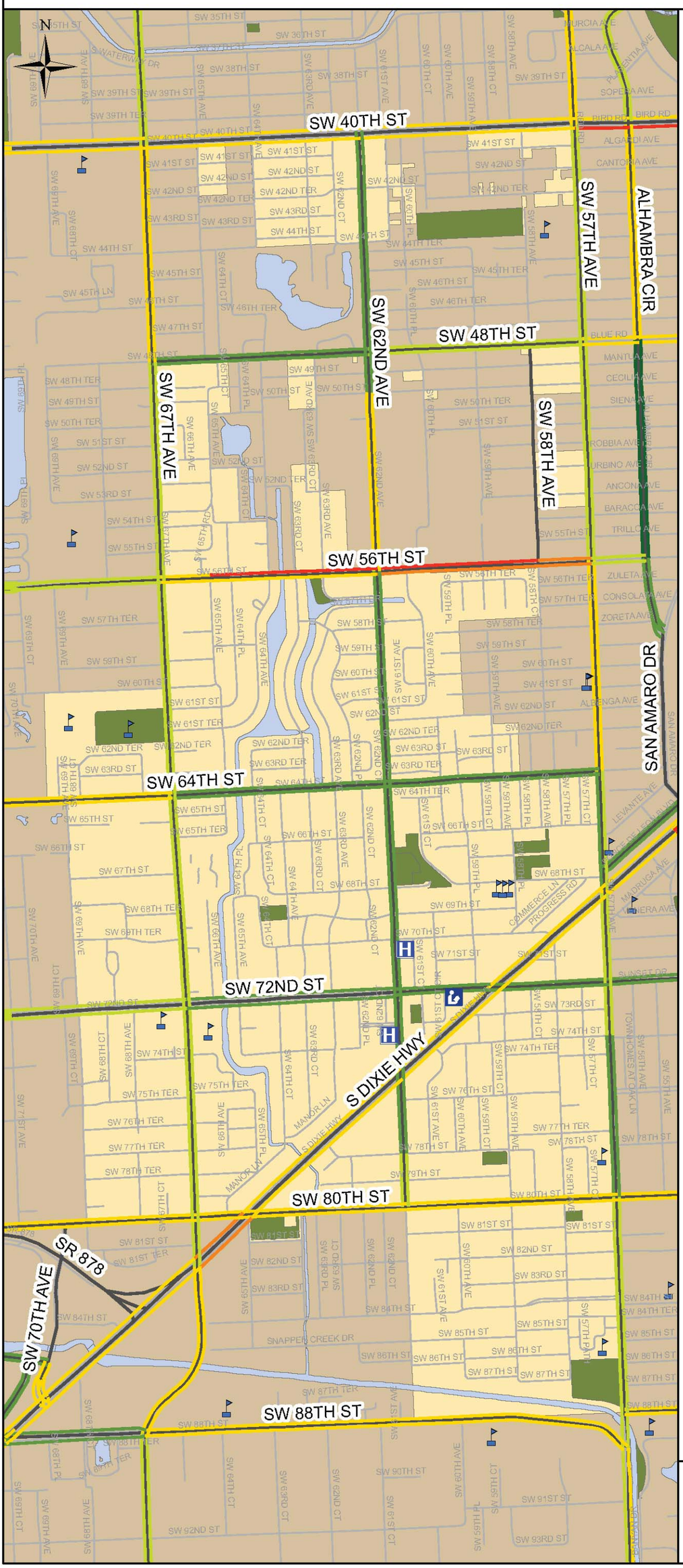
- A
- B
- C
- D
- E
- F

- Schools
- Libraries
- Hospitals
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 9: PEDESTRIAN LEVEL OF SERVICE (PLOS)



LEGEND

Pedestrian LOS Score

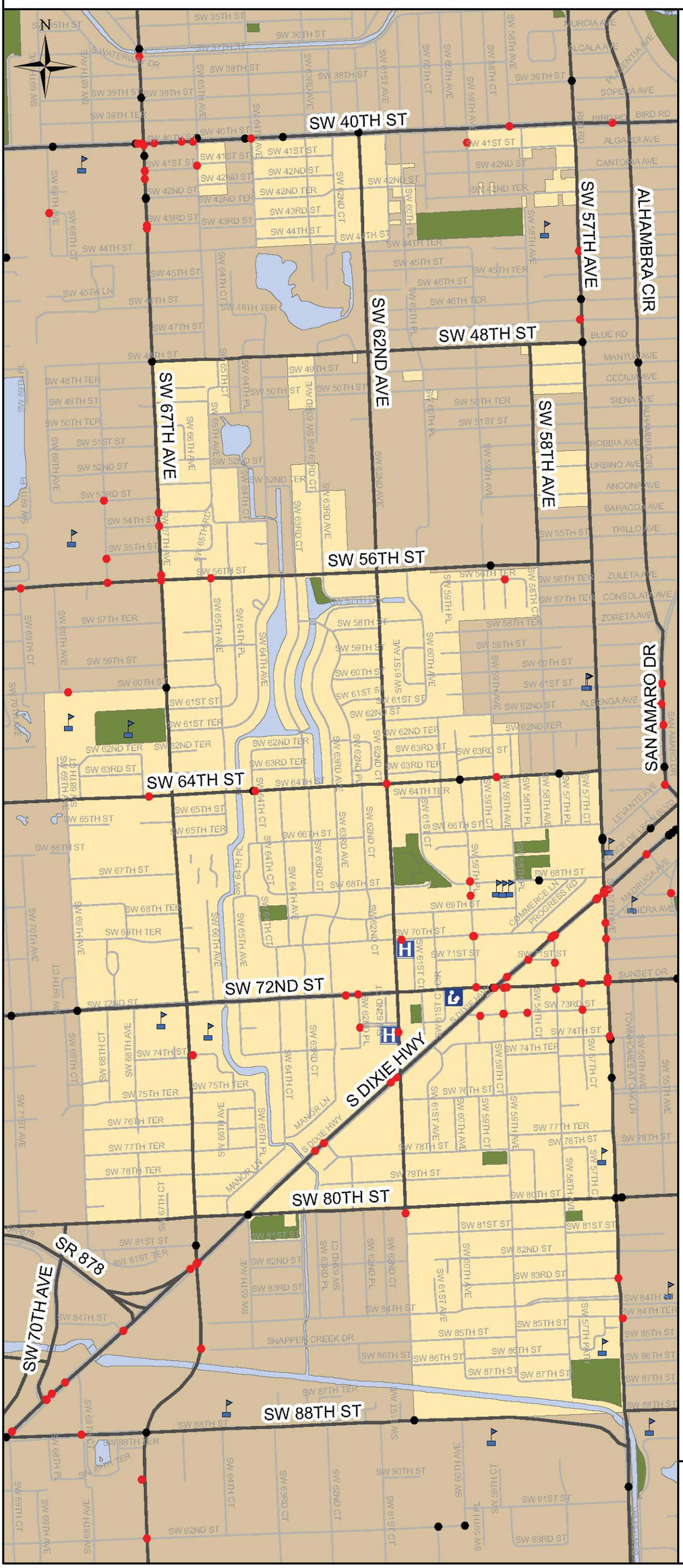
- A
- B
- C
- D
- E
- F

- Schools
- Libraries
- Hospitals
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 10: BICYCLE/PEDESTRIAN CRASHES ('05-'11)



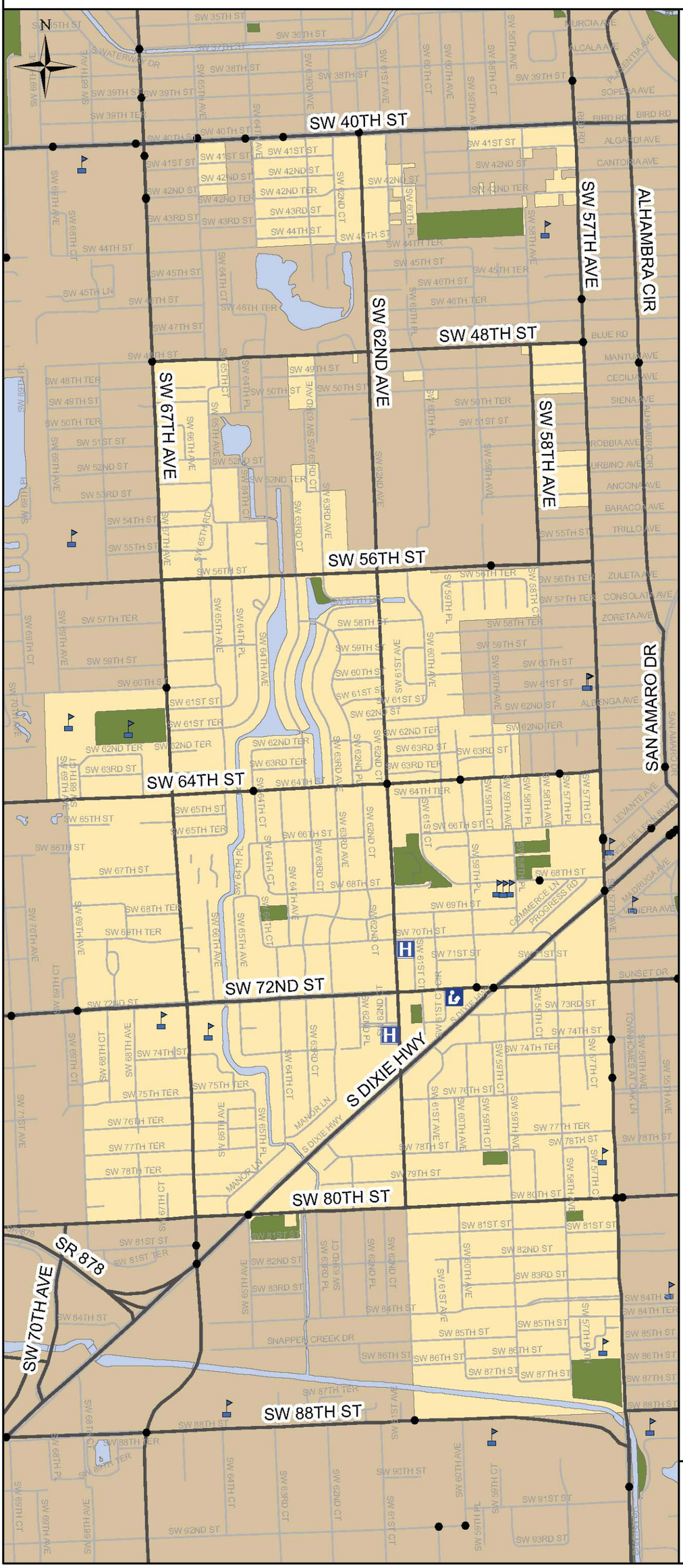
LEGEND

- Pedestrian Crashes
- Bicycle Crashes
- Schools
- Libraries
- Hospitals
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 11: BICYCLE CRASHES ('05-'11)



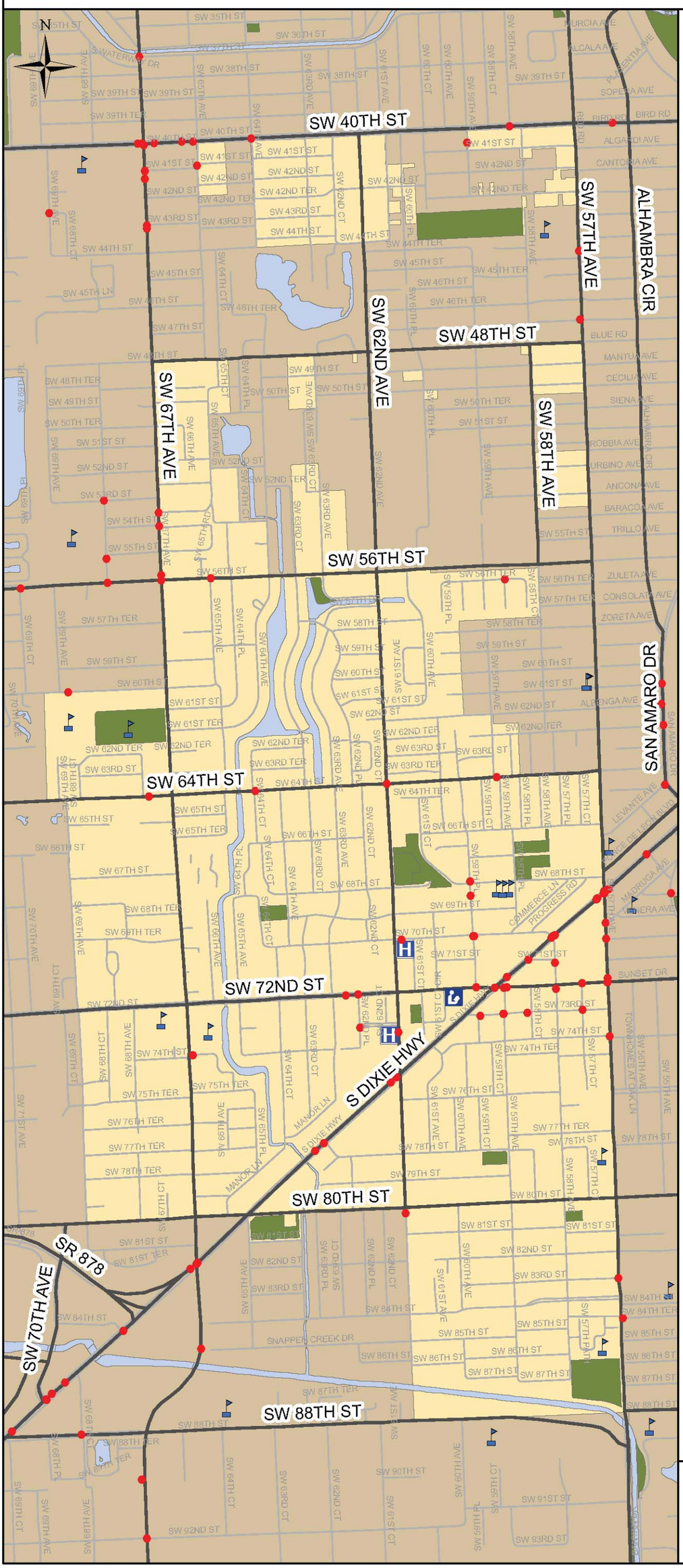
LEGEND

- Bicycle Crashes
- Fatal Bicycle Crashes
- Schools
- Libraries
- Hospitals
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 12: PEDESTRIAN CRASHES ('05-'11)



LEGEND

- Pedestrian Crashes
- Fatal Pedestrian Crashes
- Schools
- Libraries
- Hospitals
- Major Roads
- Other Roads
- Parks
- Water
- City of South Miami
- Other Jurisdictions

0 0.125 0.25 0.5 Miles

SOUTH MIAMI INTERMODAL TRANSPORTATION PLAN

FIGURE 13: BICYCLE PARKING INVENTORY

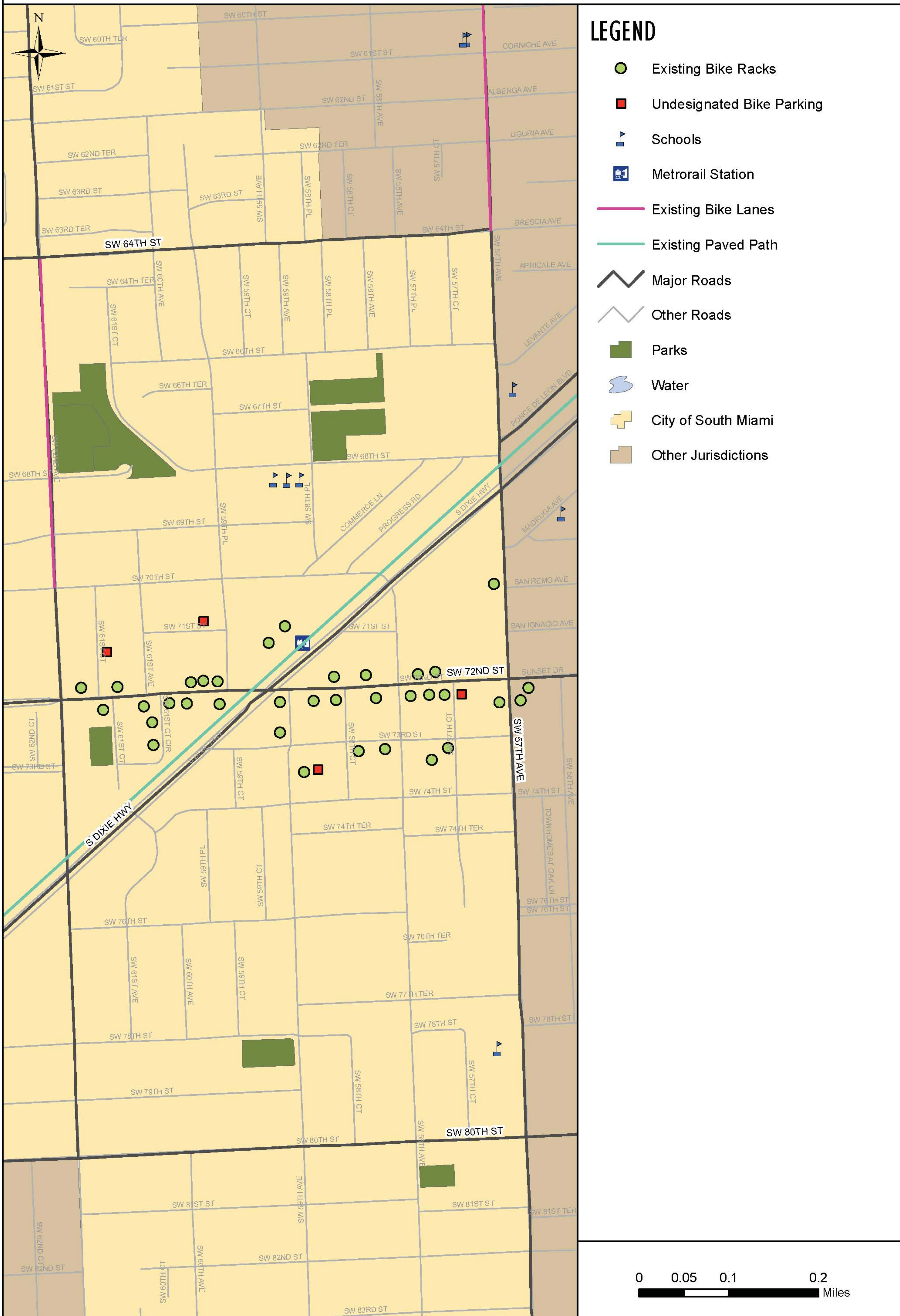
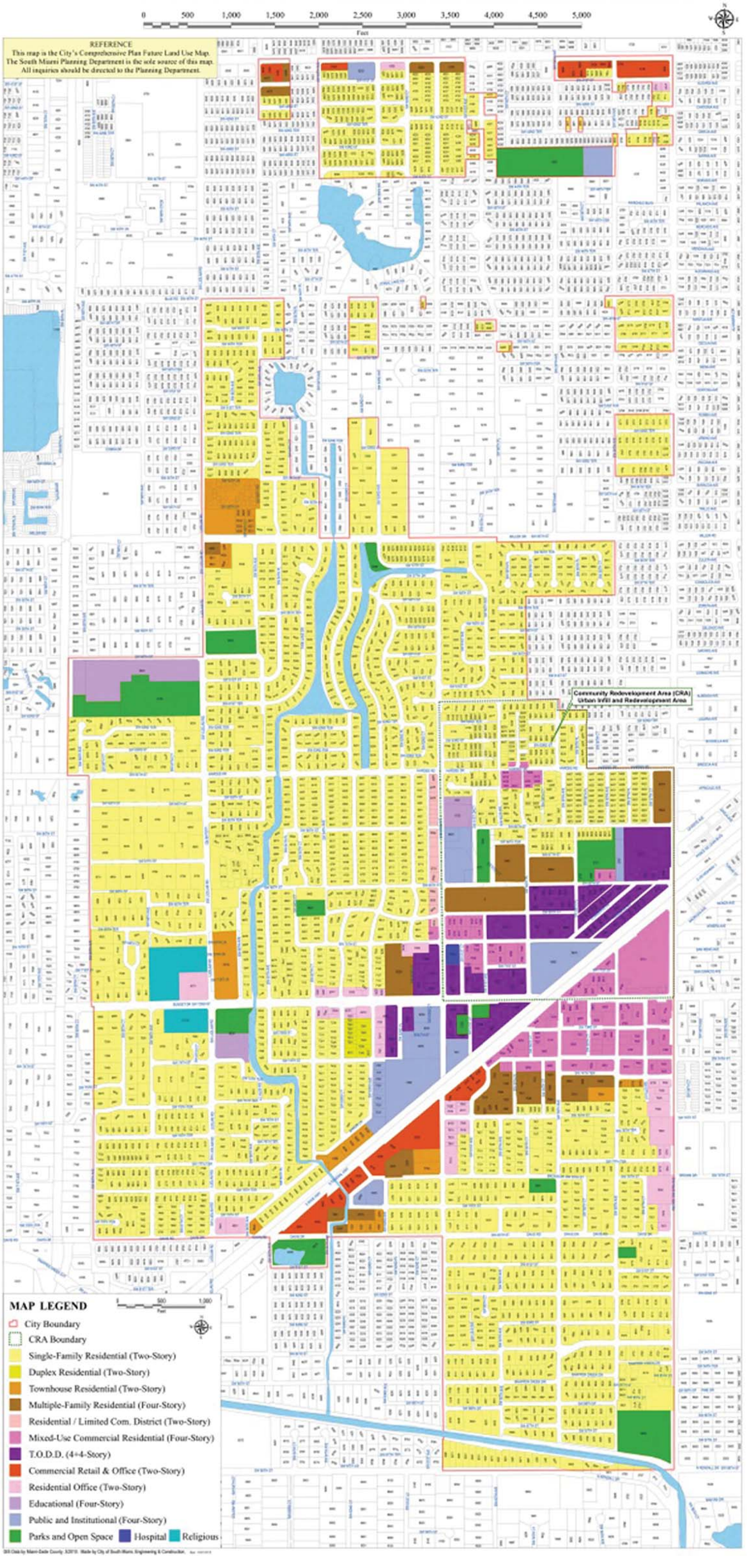


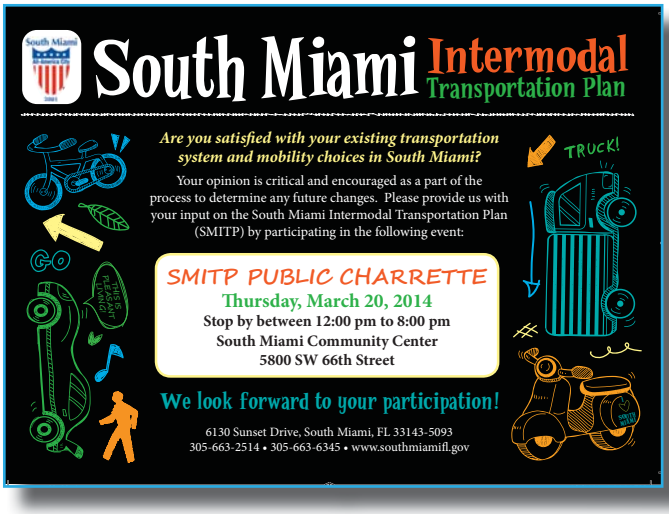
Figure 14: South Miami, Florida 2012 FUTURE LAND USE MAP



Public Engagement

Public Engagement

In order to help broaden the master plan process and facilitate greater and more immediate interaction among City officials and stakeholders, the master planning team scheduled and held public engagement events for the project. SMITP public engagement strategies included a public workshop, several presentations to the Green Task Force, a bike path inspection(public meeting on bikes), and an online public survey. This section of the report describes the various events and outcomes of the public engagement process.



Community Aspirations

Residents and other South Miami stakeholders participated in an on-line survey regarding their perception and use of transportation in South Miami. Residents also attended public meetings to discuss how they would like to see their streets designed in the future. The following statements reflect general desires expressed by South Miami citizens and stakeholders during the public engagement process.

- Supports sustainable economic development that fosters neighborhoods with more transportation choices; are closer to shops, schools, and jobs; and are more energy efficient.
- Supports complete streets that encourage citizen safety, public health, and economic viability by promoting pedestrian safety, limiting widening of existing streets, and providing public transportation options.
- Supports public-private partnerships for the implementation of complete streets.
- Supports safer streets, an improved economic environment, and enhanced walking and biking conditions in future street investments.

Bicycle and Pedestrian Mobility Survey

In January 2014, an online survey link was added to the City of South Miami main web page. This link explained that the City of South Miami desires to enhance the existing transportation system and mobility choices available to residents, workers, and visitors to the City. An integral component of this effort is to establish and implement a South Miami Intermodal Transportation Plan (SMITP), which identifies an interconnected network of mobility and safety improvements based on smart growth and complete streets principles. The goal of this Plan is to identify and prioritize pedestrian and bicycle transportation projects throughout the City, as well as enhancing access to public transportation.

One of the questions in the survey was to rank a set of bicycle-pedestrian amenities in order of importance: (1) being the most important and (6) being the least important. The composite results indicate that respondents believe that crosswalks are the most important elements for South Miami. Table 2 shows the results of this survey question. Detailed survey results are included in Appendix B.

Table 2: Bicycle/Pedestrian Infrastructure Survey Results Ranking

Ranking	Infrastructure
1	Crosswalks
2	Traffic Calming
3	Bicycle Lanes/Vehicle Lane Share
4	Canopy Trees/Shade
5	Street Lighting
6	Wayfinding & Signage

Bike Path Inspection

The master planning team along with City staff conducted and led a three-hour bicycling tour on March 8, 2014. Other interested parties such as citizens, other stakeholders, inter-agency representatives, and city officials also participated in the bike path inspection. During the bike path inspection, comments and concerns were collected from tour participants regarding specific opportunities and constraints within the City street network.

SMITP bicycling tour "Hot Spots" included the following:

Avenues:

- 57th Avenue and US 1
- 58th Avenue - implement as a major north/south neighborhood greenway
- 58th Place at Community Center - one way/no bikes
- 58th Avenue - route to get to Dante Fascell Park
- 62nd Avenue - Miller to 48th Street - spotty or missing sidewalk
- 62nd Avenue and US 1
- 63rd Court - 63rd Street to Miller - needs traffic calming
- 67th Avenue south of Miller - no sidewalk
- M-Path at Manor Lane

Streets:

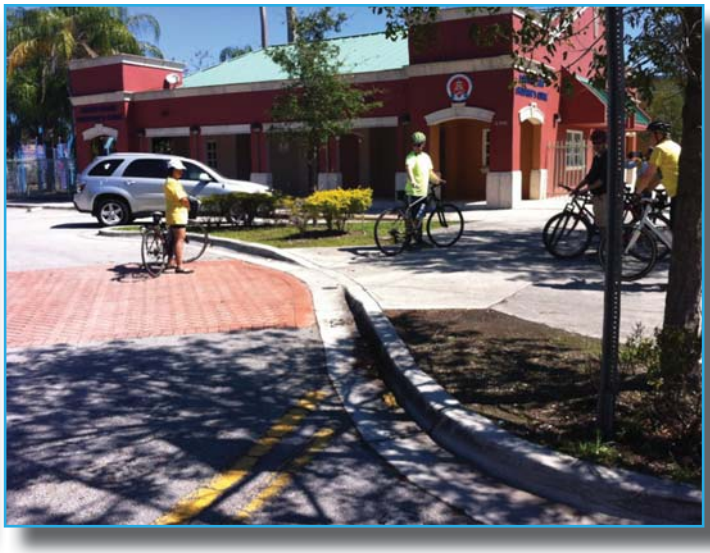
- 60th Street near South Miami K-8
- 61st Street - 67th Avenue to 65th Avenue
- 64th Street
- 68th Street and 59th Place - due to park, school
- Sunset Drive north side of 67th Avenue
- Sunset Drive - 59th Avenue to 70th Avenue
- 73rd Street at US 1 (westbound) - no bike access to M-Path, need curb cut
- 80th Street
- Connection to Banyan Boulevard between Snapper Creek Canal and Church

Participants of the SMITP Bike Path Inspection riding through the streets of South Miami

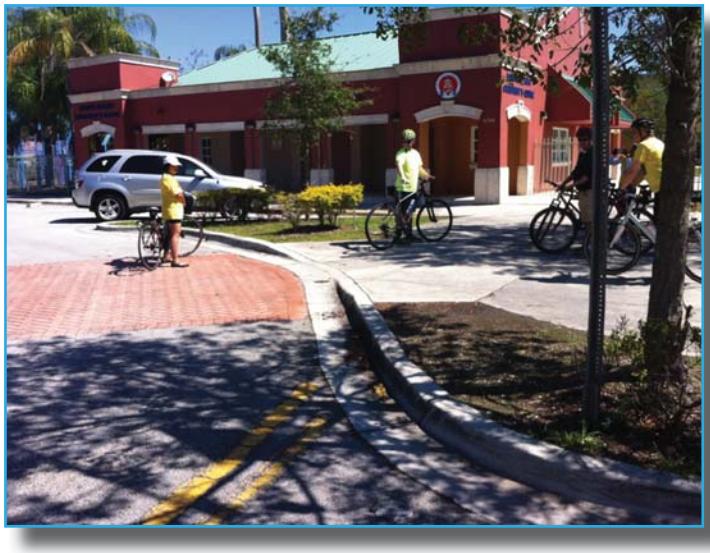
Following the bike path inspection, comments and concerns were collected as listed below.

- Need for curb ramps and sidewalk channels at the East side of SW 74th Street and SW 63rd Avenue to allow for barrier free bike mobility through that intersection. An existing catch basin is in conflict with bike mobility.
- The standard catch basins and drainage structure covers for the City Public Works manual should be bike friendly and that the grate openings should be perpendicular to the edge of the pavement.
- A good solution for bike mobility (through street ends that are blocked-off to vehicular traffic) at the intersection of Manor Lane and SW 64th Court where a gap in a raised curb allows for easy movement of bikes and pedestrians.
- The need to adjust and add signage to the M-Path at the corner of SW 80th Street and US 1. Part of the M-Path dead ends into 80th Street without drop curbs and crosswalks. Also, a better pedestrian and bike connection needs to happen between the M-Path and the crosswalk at the North side of US 1 and SW 80th Street. Vehicular signage needs to be added at all the intersections of the M-Path with roadways to alert the drivers that they are approaching a bike/pedestrian path.
- There is a need for a pedestrian crossing at the intersection of US 1 and SW 63rd Avenue. Pedestrians are currently crossing US 1 unsafely because the nearest existing crosswalks are at SW 62nd Avenue and SW 80th Street. Mayor Philip Stoddard tried to get this approved by FDOT last year, but the idea was rejected by Miami-Dade PWWM. This item needs to be revisited.
- The M-Path needs to be adjusted at the intersection of SW 62nd Avenue and US 1, making it easier for bikers to cross this intersection at the correct location with drop curbs. Also, the existing concrete "pork chop" makes it tricky for bikers to navigate across the intersection. The MDT construction plans designed by Kimley-Horn, showing revisions to the M-Path including this item, have been completed and will begin construction soon.
- The need for a crosswalk at the intersection of SW 73rd Street and US 1. Mayor Philip Stoddard explained that this is another item he tried to get approval for last year but was rejected by Miami-Dade PWWM. This item needs to be revisited.
- The need to have both a vehicular and a pedestrian/bike connection between City Hall driveway and SW 73rd Street.
- Possible crosswalks at all sides of the signalized intersections of US 1 with other roadways.
- The need to adjust the crosswalk at the north side of US 1 and SW 72nd Street.

- The need to adjust the M-Path surrounding the drive into the South Miami Metrorail station from US 1. This current design does not properly address potential conflicts between bikers, pedestrians, and buses.
- The need to have a pedestrian and bike path connection between SW 70th Street and the South Miami Metrorail Station bus boarding area. A paved path can be added along the east edge of the parking garage or along the east edge of the bus exit drive. An existing fire hydrant at the edge of the bus exit drive is blocking the walkway along the east end of the parking garage.
- The need to add a crosswalk along the north side of SW 58th Avenue, SW 70th Street, and US 1.
- The need to provide a bike lane starting at the east side of US 1 and SW 58th Avenue and heading east along SW 58th Avenue and removing one of the SW 58th Avenue westbound turn lanes and adjusting the existing landscape area along the west side in order to add a two-way bike lane along the west side of SW 58th Avenue.
- Possibly adding parking bumpers wherever parked cars overhang adjacent walkways or bike paths.
- Possibly adding a bike lane or sharrows along the SW 80th Street.
- The need to have better bicycle access into the west side of Dante Fascell Park at the intersection of SW 87th Street and SW 58th Avenue. The current paved connection is difficult to maneuver via bicycles.
- Possibly building a separate paved bicycle path connecting the east and west ends of Dante Fascell Park. The existing path is paved with the rubber material which is more suited for exercise and pedestrians than for bicycles.
- The need to have a paved connection that continues south along the Snapper Creek (C-2) Canal SFWMD right-of way at SW 88th Street and SW 57th Avenue to Banyan Drive Park and Banyan Drive. A short, approximately 500-linear-foot, connection of trail to low-volume Banyan Drive would offer convenient access via a shared road to Miami-Dade County Matheson Hammock Park Trail that connects to Old Cutler Trail. The Matheson Hammock Park Trail connects to the 10.3 mile Old Cutler Trail which itself ties into a larger 26.5 regional network of trails that expand all the way from Black Point Park and Marina to Bill Baggs Cape Florida State Park. Note that this is outside of the City of South Miami city limits and, therefore, would need to be implemented by the City of Coral Gables.
- Possibly removing the on-street parking along the south side of 74th Street in order to add a bike lane.



- The need to revisit the pedestrian and bicycle connections at the intersection of SW 58th Place and SW 68th Street adjacent to the South Miami Community Pool currently under construction.
- The need for an east/west bike path across Marshal Williamson Park between SW 62nd Avenue and SW 61st Court.
- The need to improve the bike mobility which is currently cumbersome due to multiple transitions in elevation at the east edge of SW 58th Place and SW 67th Street.
- The opportunity to add bike lanes and canopy trees along SW 64th Street between SW 57th Avenue and SW 67th Avenue.
- Opportunities to connect to the Ludlam Trail going west along SW 64th Street past SW 69th Avenue.
- Opportunities to add street trees along SW 63rd Avenue between SW 64th Street and SW 57th Avenue.
- The need to improve bicycle travel along SW 62nd Avenue between SW 40th Street and SW 64th Street.
- Problematic angles of the pedestrian/bicycle path along the south side of Miller Drive where it crosses north/south roads and the need for these angles to be adjusted for easier bike movement across these intersections.
- Pros and cons of expanding the existing walk in order to create a shared bike/pedestrian path versus adding bike lanes along the existing edges of pavement.
- The desire to reduce turning radii in order to help slow down vehicular traffic exiting Miller Drive and, therefore, reducing possible conflicts between vehicles and pedestrian/bicycles.



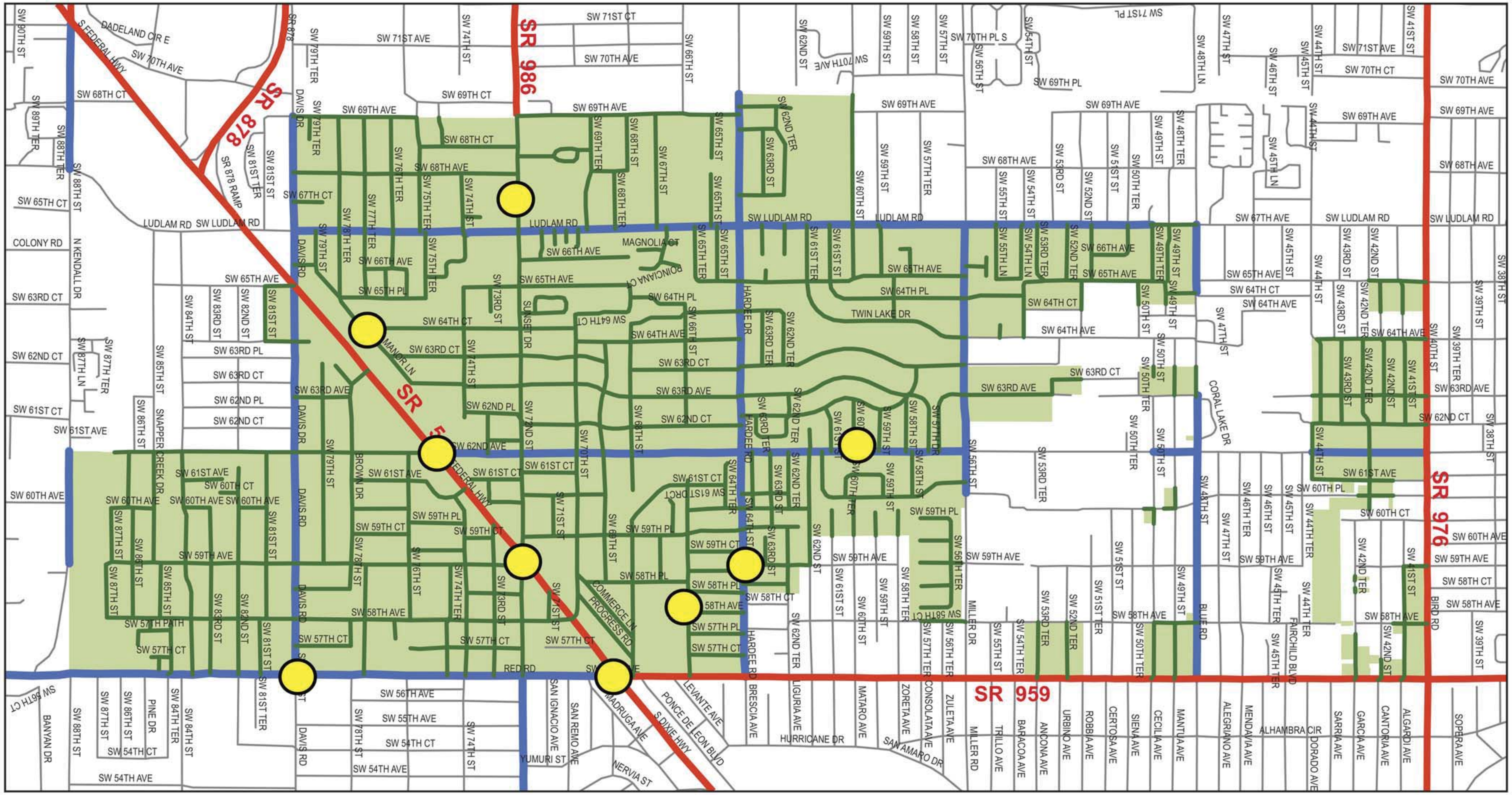
Green Task Force Workshop

The workshop process is a highly collaborative exercise to engage the participants. During the workshop, information and ideas were exchanged with the purpose of generating a common vision for the project. The first meeting was on March 3, 2014, with a formal presentation to the Green Task Force members about the SMITP tasks. Information was presented for the bike path inspectction and "Hot Spot" locations were determined as shown on the Figure 15 on the follo. Additional formal presentations to the Green Task Force were conducted on July 15, 2014 and August 12, 2014 during which progress on the SMITP was discussed. The following information was discussed and gathered during the July and August presentations:

- There is a bike/vehicular conflict area due to a bike lane merge at 62nd Avenue, SE of 70th Street, in front of the hospital. A possible solution was shown on a YouTube video sent by Douglas Thompson.
- At 57th Avenue and Miller Drive, cars turning south and turning right have to cross the bike lane.
- Flooding at SW corner of 57th Avenue and Miller Drive.
- Include "Street Classification Map" as per Buck Riley's email.
- Possibly add crosswalk section in the Master Plan report addressing where crosswalks are needed, including mid-block crossings and crosswalks at bus stops as well.
- 63rd Avenue and Bird Road is wide and a good location for a mid-block crosswalk.
- Possibly show suggested artistic crosswalk ideas in Master Plan report.
- Possibly show 50th Street as an east/west greenway.
- Along 57th Avenue, add crosswalks at Cecilia (name on Coral Gables side), at the Montessori school, at 53rd Terrace, and at Ancona Street (name on Coral Gables side).
- Suggestion to remove median along 57th Avenue where it intersects with Ponce De Leon Boulevard and add a traffic circle. May be too close to US 1 for this.
- Possible use of "Bike Boxes" at signalized intersections.
- Right-of-way width of 48th Street may be wide enough for proposed bike lanes and not just sharrows.
- Bird Road between 57th Avenue and 67th Avenue suggest reducing cross section to two lanes each way plus a median similar to how it is east of 57th Avenue.
- Suggest reducing posted speed limits in residential streets from 30 MPH to 25 MPH.
- Suggest adding a traffic circle at 62nd Avenue and Miller Drive, and removing the traffic signal.
- Suggest adding a "Pedestrian Strategies" section in the Master Plan report with a focus on pedestrian links to and from the downtown area into the surrounding neighborhoods.
- Extend the 64th Avenue greenway north to connect to 44th Terrace.

In addition to the three meetings listed above, monthly Green Task Force meetings were attended by the Master Planning Team in order to inform and update the Green Task Force members on the progress of the SMITP.

City of South Miami - R O A D S



N
W E
S

Legend

- City's Roads
- State Roads
- County Roads
- Roads2010around
- City of South Miami
- Hot Spots

0 0.1 0.2 0.3 0.4
Miles

Mileage totals
for each category:

City of South Miami
(CSM) roads = 46.80 miles;

(Miami-Dade) County
roads = 8.33 miles;

State (of Florida)
roads = 2.57 miles.

Made by City of South Miami
Engineering & Construction,
3/19/2010
GIS Data by Miami-Dade County,
3/2010

Figure 15:
B I K E P A T H I N S P E C T I O N
H O T S P O T M A P

Public Workshop

A facilitated Public Workshop was attended by City residents, stakeholders, and staff in order to help identify a vision and guiding principles for the project. A briefing of the existing City streets and their characteristics was held. A PowerPoint of Complete Streets best practices and analogues, as well as current standards, impacts, costs, methodologies, and trends that relate to the SMITP was presented. The workshop format was structured for individuals to come at their leisure, work directly with the team, and take part in creating the draft network plan. The information collected was depicted on maps and aerials. Maps included information such as where bike facilities currently exist and where they do not. This gaps analysis enabled participants to look for route alternatives based on where facilities do or do not exist. Participants could also look for ways to fill in short gaps instead of selecting a route requiring all new facilities, such as bike lanes or a separated path. The findings of the workshop helped frame the project recommendations and proposed network plan map.

Public Presentation

Following the Public Workshop, a Public Presentation was held during which information was presented on the data collection and analysis, bicycle tour, and information gathered during the Green Task Force Committee Workshop, and from the Public Workshop attendees.

South Miami Intermodal Transportation Plan (SMITP)

SMITP Public Workshop Comment Card

Contact Information (Optional)

Name: _____

Address: _____

Email: _____

Representing: _____

Comments:

_____

_____

_____

_____

_____

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n to a project representative during the Workshop

Exhibits and comment card used during the Public Workshop

Inter-Agency Coordination

Inter-Agency Coordination

In addition to public engagement activities, the master plan team also coordinated and scheduled an inter-agency committee. This committee was comprised of staff from other local agencies in order to ensure connectivity to projects that may be ongoing, through other agencies or in neighboring jurisdictions. The committee also discussed concurrence for SMITP recommendations that impact other agencies. The agencies that participated in the Inter-Agency Coordination Committee include:

- Miami-Dade Metropolitan Planning Organization (MPO)
- Miami-Dade County Public Works and Waste Management Department
- Miami-Dade County Parks, Recreation, and Open Spaces Department
- Miami-Dade Expressway Authority (MDX)
- Florida Department of Transportation (FDOT)
- City of Coral Gables
- Bike 305
- Bike SOMI
- Miami-Dade County Transit

The first inter-agency coordination meeting was held on February 20, 2014, during which a formal presentation was given regarding the tasks associated with the SMITP. The following items were discussed during this meeting.

- FDOT's 57th Avenue project (from 40th Street to US 1) is under way. This project includes sharrows and bike/pedestrians sidewalks. The City of South Miami installed approximately 15 bike racks in 2012, when the parking meters were removed, and intends to install more bike facilities for residents and visitors. The possibility of a BRT/Trails project along the old Ludlam railroad tracks, just west of the City limits. Research, showed that people in Miami-Dade will not walk more than ¼ to ½ mile. South Miami Metrorail station is one of three stations that allow for overnight parking, up to 30 days, for $4.50 per day. Miami-Dade County has similar crash data statistics as the rest of urban areas in Florida. SMITP survey was available on the South Miami main webpage.
- Making Sunset Drive (from US 1 to SW 57th Avenue) pedestrian only (no vehicles) was discussed and suggested the installation of bike corrals in some car parking spots, as well as rumble striping. A paved ramp down to the Snapper Creek Canal at Dante Fascell Park and sharrows along 62nd avenue.
- Crossing US 1 for both pedestrians and bicycles came up several times. It divides the City and hinders pedestrians from walking and biking. The City, County, and FDOT need to work together to find a solution for crossing US 1.
- Colored pavement for bike lanes (green) and the County is leaning towards the green pavement only in conflict zones.
- The second inter-agency coordination meeting was held on July 17, 2014. Progress since the last meeting was discussed, Green Task Force workshops attended, bicycle tour, public workshop held, the development of the SMITP vision, goals and objectives, and the recommended improvements master plan diagrams and exhibits. At the conclusion of the meeting, next steps were discussed including design consideration and costs, and draft and final master plan report.

Recommendations

Recommendations

Bicycle and pedestrian mobility recommendations have been developed for the City of South Miami based on the prior work tasks of this Plan, including the online survey results, field observations from the bike path inspection, public engagement events, and inter-agency coordination meetings. All improvements have been developed under an overarching principle to support and prioritize pedestrians and bicyclists within South Miami through the use of context sensitive solutions (CSS) and complete streets principles as discussed in the National Trends component of this report. The recommendations are first summarized by type (pedestrian design, street design, intersection design, and green streets). At the end of this section includes a list of recommended specific improvment projects based on strategies identified to promote safe, healthy, and sustainable bicycle and pedestrian mobilty within the City of South Miami.

Pedestrian Design Elements

A safe pedestrian zone is an essential component of a well-designed street. The pedestrian zone is composed of several elements including the sidewalk, the landscaping/street furnishings area between the sidewalk and the street, and in some cases the building frontage on the outside of the sidewalk. In addition to the provision of a basic sidewalk, the walking experience is affected by numerous elements that are contained within this pedestrian zone, such as driveways, utilities, transit stops, street furniture, and public art. This section covers the essential design elements of the pedestrian zone ensuring that people can safely and comfortably walk along streets throughout South Miami. It provides a menu of components and specific guidance to make the pedestrian experience more welcoming and safe.

NEW SIDEWALKS

Creating a place for pedestrians to walk comfortably and safely while providing pedestrian elements such as landscape and street furnishing. Sidewalks are an important part of the streetscape and pedestrian zone. Below are a list of applications and recommendations for new sidewalk connections within the City.

Applications

Sidewalks should be provided along both sides of all streets except those residential streets where pedestrians can comfortably walk within the street due to the low-volume, low-speed characteristics of the street (shared space). In particular, the City and partner agencies, such as Miami-Dade County Public Works and Waste Management Department (MDCPWWM) and the Florida Department of Transportation (FDOT), should ensure that sidewalks are provided along both sides of arterial and collector roadways. In addition, streets with Metrobus service should have sidewalks connecting to all bus stops.

Southwest corner of Miller Drive and SW 58th Avenue

Recommendations

The following new sidewalk projects were recommended as part of the SMITP. It should be noted that this is not an exhaustive list of all streets missing sidewalks, but rather a listing of critical pedestrian mobility gaps for residents of the City.

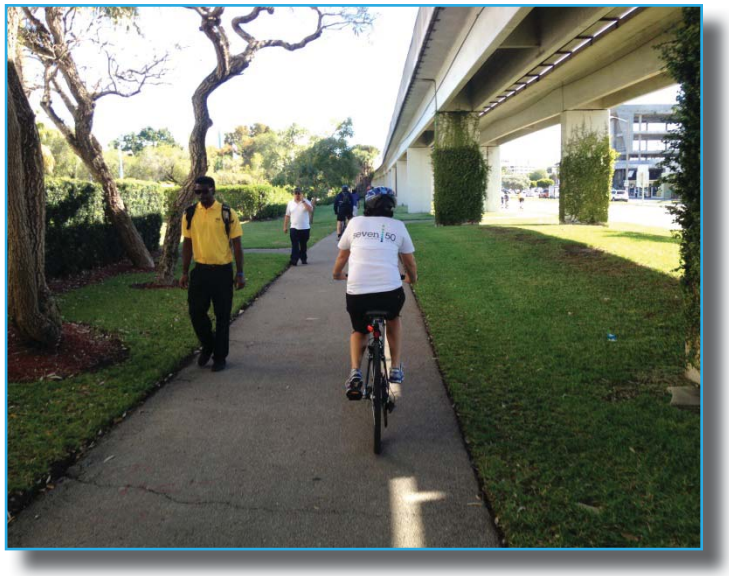
- SW 56th Street (Miller Drive) – north side between SW 65th Avenue and SW 58th Avenue (portions located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
- SW 80th Street (Davis Road) – south side between US 1 and SW 63rd Place
- SW 80th Street (Davis Road) – south side between SW 63rd Court and SW 57th Avenue
- SW 80th Street (Davis Road) – north side between US 1 and SW 57th Avenue
- SW 62nd Avenue – both sides between SW 56th Street and SW 50th Street (located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
- SW 62nd Avenue – both sides between SW 80th Street and SW 78th Street

WIDER SIDEWALKS

Typical sidewalk widths in South Miami vary from 5 to 6 feet (if adjacent to roadway curb-and-gutter). Wider sidewalks should be provided as a matter of course along downtown commercial streets, mixed-use streets, key school walking routes, streets with frequent transit service, all streets within ¼-mile radius of the South Miami Metrorail Station, and in any location where the sidewalk is likely to be shared between pedestrians and bicyclists. Other factors to consider when determining sidewalk widths include materials, placement of trees and landscaping, ensuring continuous walking surfaces, and transitioning between different street types, and between the sidewalk and building entrances. In addition, the sidewalks should be designed in coordination with the placement of utilities to minimize potential obstructions.

SHARED USE PATHS

Shared use paths are non-motorized transportation trails that are typically used by pedestrians, bicyclists, and in-line skaters. Shared use paths can be paved trails in separate rights-of-way (such as canal banks and transit corridors) or in street rights-of-way as a wide sidewalk.



Bicyclist riding through the M-Path

Applications

Examples of shared use paths in or near South Miami include the M-Path along the Miami-Dade Transit (MDT) Metrorail corridor, the Red Road Linear Park along the east side of SW 57th Avenue south of SW 88th Street, and the Miller Drive shared use path on the north side of SW 56th Street west of SW 67th Avenue. Shared use paths are distinct from sidewalks in that they are designed for shared use by pedestrians, bicyclists, and skaters. Modern shared use path design standards call for path widths of 10 to 14 feet depending on expected usage. Older paths are sometimes more narrow and should be widened to modern standards as funding becomes available.

Recommendations

The following proposed new shared use paths were recommended as part of the SMITP to help meet the goal of creating a more robust network of off-road greenway trails suitable for users of all ages and abilities.

- SW 56th Street (Miller Drive) – south side between SW 67th Avenue and SW 57th Avenue
- Snapper Creek Trail – north side of Snapper Creek Canal bank between SW 62nd Avenue and SW 57th Avenue with connections to Dante Fascell Park
  - Part of the adopted Miami-Dade County Greenways Network and included within the overall Snapper Creek Trail Segment B project which would link K-Land Park, Dadeland North Metrorail Station, South Miami, Dante Fascell Park, and the Red Road Linear Park
- Theoretical SW 58th Avenue – unbuilt street right-of-way between the Snapper Creek Canal right-of-way and SW 87th Street
- Future SW 64th Avenue – unbuilt street right-of-way between SW 85th Street and SW 84th Street (located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
- Ludlam Trail – shared use path rails-to-trails project consistent with Miami-Dade County Parks, Recreation, and Open Spaces Department (MDPROS) master plan (located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
  - The Ludlam Trail right-of-way is currently privately-owned by Florida East Coast Industries (FECI)

SIGNAGE/WAYFINDING

Vehicle and pedestrian wayfinding signs direct people to destinations within a city and influence the safe travel of all street users. Messages typically include guidance toward important destinations, landmarks, and parking areas.

Signs intended for vehicles should be placed in the curb zone or the median. A limited number of messages should be included on these signs for ease of reading while driving. Pedestrian signs are intended to be read while walking and may be placed in either the edge, curb, or furnishing zones. Bikeway wayfinding signs are intended for bike users and may include route options, direction of travel, time/distance to destinations, and bicycle safety information. Informational signs are intended to give more detail about the City surroundings. They may include parking information, location maps, area business directories, and other public information.

Applications

The downtown South Miami area is an ideal area to implement a pedestrian wayfinding sign system to identify streets, walking routes, and to direct pedestrians to points of interest (such as City Hall, the Library, and hospitals), the South Miami Metrorail Station, parking lots, bicycle parking, and other local amenities.

Sample wayfinding signs in an urban environment

Recommendations

It is recommended that the City implement a pedestrian wayfinding sign system for downtown South Miami that identifies the location of the user, nearby points of interest, and includes maps and walking radii distances and times. The following downtown streets should be included in the design of the pedestrian wayfinding program.

- Sunset Drive between SW 63rd Avenue and SW 57th Avenue
- SW 70th Street between SW 62nd Avenue and US 1
- SW 73rd Street between US 1 and SW 57th Avenue
- SW 74th Street between US 1 and SW 57th Avenue
- SW 62nd Place between SW 74th Street and Sunset Drive
- SW 62nd Avenue between US 1 and SW 70th Street
- SW 61st Court between Sunset Drive to SW 70th Street
- SW 61st Avenue between Sunset Drive and SW 70th Street
- SW 59th Place between Sunset Drive and SW 70th Street
- SW 59th Avenue between SW 74th Street and Sunset Drive
- SW 58th Court between SW 74th Street and Sunset Drive
- SW 58th Avenue between SW 74th Street and US 1
- SW 57th Court between SW 74th Street and Sunset Drive
- SW 57th Avenue between SW 74th Street and US 1
- South Miami Metrorail Station
- South Miami City Hall
- South Miami Library
- M-Path

Considerations

- Overuse of wayfinding should be avoided as to not create a cluttered streetscape.
- Design of wayfinding signs can enhance a distinctive corridor or district identity by use of a standard design, format, color scheme, and logo.

South corner of Miller Drive and SW 63rd Avenue

TREES AND GREENSPACE

Trees and other greenscape plantings have a variety of functions. They can provide shade, buffer pedestrians from passing vehicles, and provide aesthetic enhancements. Trees and other plantings must conform to the South Miami Development Code. When placing trees, consideration should be given to the placement and interaction of pedestrian lighting utilities and street furniture. Tree and plant selection is very important, including consideration to the tree's anticipated mature canopy height, which will affect the clearance for pedestrians, buses, and utilities. With proper considerations of all of these elements, they can function together efficiently.

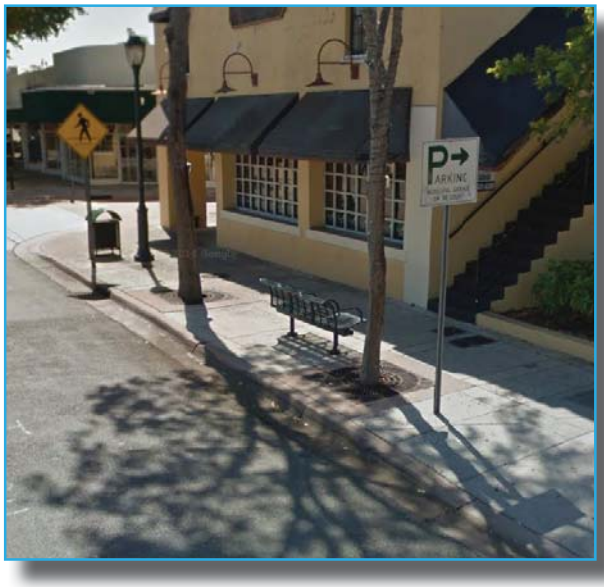
STREET FURNITURE

Well-designed street furniture makes the sidewalk realm more comfortable. Benches provide places to rest, catch-up with neighbors, or have lunch. Properly distributed trash receptacles help to keep the street clean and presentable. Appropriately located bicycle racks and shelters are easier to use than improvising with meters and fences. In addition to providing amenities, street furniture can also provide a buffer from the noise and commotion of vehicles in the street. Street furniture that is not thoughtfully laid out can result in obstructions and clutter in the sidewalk environment. This section provides design guidelines for street furniture that is frequently located in the pedestrian zone, including bicycle parking and waste receptacles. Street furniture is normally installed in the buffer/furnishing zone, although it can also be installed in the frontage zone, on curb extensions, and on medians.

A key goal of these guidelines is to organize the City's street furniture in a way that maximizes safety, comfort, and function for all users. In addition to location considerations, the design of street furniture should be simple and compatible with the existing environment. Street furniture should be durable, maintenance-free, and should utilize green material (recycled plastics and metals), whenever possible. Ultimately, City staff will review and approve all proposals for the placement of street furniture in the public right-of-way and may request the addition of street furniture for some projects.

SEATING

Providing a place to sit is a basic necessity, particularly for mixed-use streets in South Miami. Seating gives pedestrians a place to rest, wait, or simply to relax and enjoy street life. Providing comfortable, inviting places to sit can transform a sidewalk into a gathering area and enhance its role as a public space. Providing a shaded seating area is particularly important during hot weather. Seating is also important to provide for seniors who may be walking between transit and their destination.



Street furniture along Sunset Drive in downtown South Miami

Applications

Seating comes in a variety of temporary and permanent forms, such as chairs, benches, seating walls, steps, monuments, planters, and raised tree beds. People enjoy watching others move about, and the design and location of seating should respond to how the surrounding space is used.

Recommendations

Where possible, seating should be arranged to define social spaces. The following considerations apply to seating areas in the public right-of-way.

- Seating should be affixed in such a way that it is not easily damaged or removed. Care should be exercised to ensure that seating does not interfere with entrances to buildings, heavily used loading zones, parked vehicles, access to fire hydrants, and other potential conflicts.
- Seating should accommodate a minimum of two people. Seating can be integrated into buildings and building frontages.
- Seating should be situated to enable pedestrians to view street activity while being outside of

the immediate flow of pedestrian traffic and should be buffered from noise and vehicle exhaust whenever available. Where possible, seating should provide a sense of protection to the person seated.

- Benches at bus stops with no shelter should be located at the back of the sidewalk and face the street.
- The following clear widths must be maintained when installing benches:
  - 3' minimum on either side of the bench
  - 5' minimum from fire hydrants
  - 2' recommended clearance from all utilities and utility appurtenances
  - 5' minimum, ideally 6' clear path in front of the bench when located at the back of the sidewalk, facing the curb
  - Where the back of the bench abuts a building, wall, or other obstruction, a one-foot minimum clear width should be provided for maintenance and debris removal

Considerations

Seating should be provided with and without armrests, if possible. Armrests provide stability for those who require assistance sitting and standing. Armrests in the middle prevent sleeping while still allowing access from the side. Seating without armrests allows a person in a wheelchair to maneuver adjacent to seating or to slide on easily. Climatic conditions should be taken into consideration when seating materials are determined. Bare metal and other heat absorbing materials should not be used. Movable seating allows the flexibility for an individual to control the amount of sun exposure or an allowance for groups to determine their desired seating arrangement. Movable seating may be most appropriate for plazas, street parks, or in association with certain retailer groups where activities may spill out into streets. However, movable seating requires a commitment to continually maintain and replace elements that become damaged or stolen.

BICYCLE RACKS

Providing ample, well-designed bicycle parking is a key component of the City's strategy to increase bicycling. When bike parking is provided, bicyclists are less likely to lock their bikes to sign posts, trees, or railings, which can cause damage or create obstructions.

Applications

The following guidelines cover the design of bicycle racks in the public right-of-way. They can be sculptural or utilitarian, and hold one or multiple bicycles. Good bicycle parking designs allow bicycles to be securely locked and support the bicycle frame with two points of contact while maintaining an orderly appearance. Bicycle rack designs should meet the following criteria:

Bike rack in front of South Miami City Hall

- The rack should be securely affixed with theft-resistant hardware to a paved surface
- The rack should support the frame of the bicycle at two points (in consideration of different frame sizes and styles)
- The rack should be simple and easy to use
- The rack should permit the parking of two bicycles parallel to each other facing in opposite directions

- The rack should allow easy locking of the frame and at least one wheel with a standard size U-shape lock
- The rack should be placed so that bicycles park parallel to the curb or building frontage, or angled if there is additional space available, while still meeting the minimum clearances
- The rack should meet ADA guidelines to be detected with a cane

Bike rack along Sunset Drive in downtown South Miami

Considerations

Some bicycle rack designs that are commercially available do not meet these criteria and, therefore, should not be used. The dimensions that follow represent the recommended minimum clearance between the nearest emergent of an unoccupied bicycle rack and the adjacent object. Racks should be installed so that parked bicycles do not obstruct the pedestrian through zone or access to fire hydrants. Refer to Figure 1 and Figure 13.

- The rack should be placed in such a way to maintain at least 6 feet of unobstructed width in the sidewalk between the rack and the far edge of the sidewalk The rack should be placed in such a way to maintain an access aisle of at least 4 feet in width for the user to park and remove the bike
- Racks placed in series should be parallel and separated by a minimum of 30 inches
- Minimum clearance dimensions:
  - 5' from ADA ramp and fire hydrant
  - 4' from curb, loading zone, bus stop, bus shelter, bus bench
  - 3' from other vertical elements including signs, utility poles, parking meters, mailboxes, waste receptacle, utility meter, and other sidewalk obstructions
- Wall/fence setbacks:
  - For racks set parallel to a wall/fence:
    - 24 inches minimum; 36 inches preferred
  - For racks set perpendicular to a wall/fence:
    - 28 inches minimum; 36 inches preferred

BUS STOPS

Bus stops are the interface between the pedestrian mode and the transit mode and should be comfortable, safe, and accessible. Bus stop accommodations improve operations, ridership, and the value of transit to the community. Accommodations can include shelters, benches, trash and recycling receptacles, lighting, bicycle racks, bus schedules, maps, real-time next bus arrival information, newspaper boxes, and public art. Stops should be visible, providing a clear sight line between bus operators and users of the system. Simple stops without shelters are appropriate for lower volume routes. Installation of bus stop infrastructure with the City should be done in consultation with Miami-Dade County, as most amenities will require maintenance agreements between the City and the County.

Applications

The length of the bus stop depends on the length of the vehicle, as well as the placement of the stop (i.e., nearside, farside, or midblock). In general, bus stops should be a minimum of 40' in length (80' long if midblock). The pedestrian walking zone of the sidewalk should extend to the curb at stops so that passengers may access the sidewalk directly from the bus doors. The area on the sidewalk where passengers load and unload at bus doors is called the landing pad. The landing pad at the front of the bus stop must provide a clear zone 5' long, parallel to the curb, and a minimum of 8' deep. The landing pad should consist of ADA accessible surface materials, such as concrete or asphalt. Trees should not be planted within the landing pad or door zones of a bus stop. Bus stops should be set back a minimum of 5' from crosswalks. Where feasible, a 10' setback is preferred. Where possible, trash and recycling receptacles should be placed to the front of the bus stop, at a minimum of 18" from the landing pad, a minimum of 3' away from benches, and in the shade. Bus stop infrastructure should also be anchored to the pavement with theft resistant hardware.

Considerations

Curb extensions can provide additional pedestrian space and improve bus travel time by reducing the time needed for loading and unloading. The width of the curb extension is determined by the width of the adjacent parking lane, and the length should be long enough to allow passengers to board and exit at all doors of the bus.

BUS SHELTERS

Well-designed bus stops can help make transit use more comfortable and convenient. Transit shelters should be provided on all key bus routes, if sidewalk space allows. When providing a bus shelter, the bus stop must be ADA compliant with a 5' long (parallel to the curb) by 8' deep landing pad and a 4' minimum clear path. Shelter placement must allow for unobstructed loading, unloading, and unimpeded pedestrian through movements on the sidewalk.

Example of a "bus shelter" along a city street

Applications

The following minimum clear widths for shelter placement must be maintained:

- 1' from the building face
- 4' from the back of curb
- 15' from crosswalks at nearside bus stops for visibility
- 1' from any ground obstruction (i.e., manhole, tree pit, sign)
- 10' from fire hydrants
- 3' from the landing pad (maximum 25' to the right of the landing pad)

Considerations

Bus shelters should be prioritized and installed based on ridership, with the goal of benefitting the largest number of riders. Special consideration should be given to areas where high numbers of transfers are expected, where waiting times for riders may be longer, or where stops are close to facilities such as

schools, medical centers, rehab centers, or high density housing and senior centers. Other considerations include the physical constraints of bus stop sites, preferences of adjacent property owners, bus stop requests by riders, and construction costs.

DRIVEWAYS AND CURB CUTS

Driveways cross through the pedestrian zone and put vehicles in direct conflict with people who are walking. Therefore, driveway design and the number of driveways have a considerable influence on pedestrian safety and comfort. Generally, the frequency of driveways should be minimized and access should be provided via alleys, where possible. Driveway consolidation should be evaluated where driveway spacing is less than 50 feet. Vehicles entering the right-of-way are required to yield to all cross traffic, including pedestrians. It is important to convey this requirement through design of the driveway/sidewalk interface. Driveways should be designed to look like driveways, rather than like roadway intersections.

Driveway along Sunset Drive in downtown South Miami

Applications

Different roadway types require distinct driveway treatments, depending on the adjacent property use, the relationship between the property and the street, and the type of vehicles using the driveway. The following guidelines should be applied:

- The sidewalk should be clearly delineated across the driveway and maintain the grade, slope, and material of the adjacent sidewalk on either side of the driveway.
- Driveway design should meet current ADA guidelines.
- Maintain a 5' minimum sidewalk across driveways with no more than a 2% cross slope.
- The driveway apron should be contained within the buffer/furnishings zone to avoid a cross slope on the sidewalk. Where no buffer/furniture zone is present, the sidewalk approaches and crossing of driveway should be pulled back to ensure no more than a 2% cross slope.

Considerations

Place driveways a minimum of 20' from crosswalks to provide good sight lines between vehicles and pedestrians and so that vehicles do not block the visibility of pedestrians. Consolidate driveways whenever possible to minimize the number of conflict points along the sidewalk.

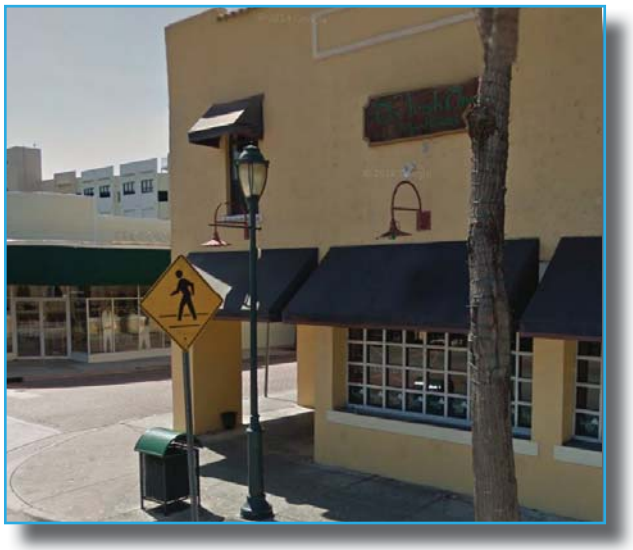
PEDESTRIAN LIGHTING

Appropriate pedestrian lighting facilitates safe movement and provides a sense of safety and security for pedestrians. Adequate street lighting lends character to a street and, by highlighting salient features, can reveal a unique identity. Pedestrian lighting is particularly important in business districts along mixed-use street types where it can enhance the environment and highlight businesses.

Applications

Lighting is critical to ensure the safety of intersections and midblock pedestrian crossings. Lamps

are needed on both sides of crosswalks. Pedestrian-scale lighting (lampposts lower than 20' tall) should be used alone or in combination with roadway scale lighting in high activity areas.



Pedestrian light along Sunset Drive in downtown South Miami

- Light poles should typically be located in the furnishing zone and should not impede the pedestrian zone. The location of light poles must coordinate with landscape, civil, utility, and traffic control plans to ensure that appropriate clearances are maintained and that lighting is not obscured by tree canopies.
- Light poles should be placed a minimum of 3' from the curb face and 5' from fixed objects such as fire hydrants.
- Lighting should coordinate with structures.
- Coordinate the position of light poles with current and future planned street trees.
- Overhead pedestrian lighting should be 12-15' above the sidewalk.
- Light spacing should be determined by the type of light fixture and amount of light emitted to maintain continuous illumination along the sidewalk and to avoid dark spots between light poles.
- Banners and plants must be installed parallel to the roadway.
- Minimum vertical clearance for attachments are as follows:
  - 15' banner brackets
  - 9' bottom of banner
  - 13' hanging plant brackets
  - 9' bottom of hanging plant

Considerations

Paired alignment of light poles across a street provides a more formal look, while staggered arrangement of light poles provides a less formal look that may allow for fewer lights. Lighting designs on neighborhood residential streets are often affected by existing utilities. Staggered spacing is preferred to provide more uniform lighting. As LED technology develops, future consideration should be given to providing network control devices to allow for dimming and/or color control as a way to highlight locations during emergencies or to reduce energy consumption and dark sky impacts during periods of lowest activity (12 a.m. to 5 a.m.).

Street Design/Biking Elements

Street design elements consist of features within the road traveled way including on-road bicycle facilities, neighborhood greenways, traffic calming, on-street parking, and shared streets.

ON-ROAD BICYCLE FACILITIES

Bicyclists should be considered and anticipated on all streets in South Miami. The bicycle is an ideal vehicle for trips that are too far to comfortably walk, but are still fairly short. Bicycling is an excellent option for

trips that are less than three miles in length, which are almost half of all trips made on a daily basis. Like pedestrians, bicycles are vulnerable road users who can be seriously injured in a simple collision. For many people, bicycling in close proximity to faster moving traffic can be an uncomfortable experience. Lack of bicycle accommodations on the street can increase the number of bicyclists riding on the sidewalk, which conflicts with pedestrian traffic and may increase the likelihood of an intersection crash due to reduced visibility from the perspective of motorists. Well-designed bikeways reduce these conflicts and create a more predictable traffic environment for everyone. Bikeways can be divided into two general categories: exclusive facilities, where roadway space is designated for bicycle use; and shared facilities, where bicycles and other vehicles share roadway space. In general, shared facilities are more appropriate in low speed environments where motorists are going slow enough to be able to see and react to the presence of bicyclists. As vehicular speeds increase, so does the need for greater separation between the bicyclists and motor vehicles.

Graphic representation of sharrow street markings

General Design Considerations for Bicyclists

- In order to provide adequate space for bicycle facilities, road diets (lane eliminations), and lane diets (lane width narrowing) should be considered. Bicyclists provide their own energy and, as such, are sensitive to distance and frequent stops. They typically choose the most direct, continuous route that does not require a lot of stops and starts. Bicycle facility designers should always keep this in mind.
- Bicyclists are more sensitive to broken or uneven pavement, which can cause them to lose balance or swerve suddenly. This includes potholes, uneven or sunken drainage structures, and utility access covers. Where possible, the installation of bicycle facilities should be coupled with an evaluation of pavement conditions and improvements, as necessary, to ensure a smooth riding surface.
- Drainage inlets should be safe for bicycle wheels. Refer to the AASHTO Guide for the Development of Bicycle Facilities and the Florida Department of Transportation drainage inlet design standards for additional guidance on bicycle-friendly drainage grates.
- More detailed information on several common on-road bicycle facility types is provided on the following pages, including a list of project recommendations specific to South Miami.


Bike lanes along SW 57th Avenue (Red Road)

BIKE LANES

Bike lanes provide an exclusive space for bicyclists through the use of edge lines and pavement marking symbols on the roadway surface. Bike lanes are for one-way travel and are normally

provided on both sides of two-way streets or on one side of one-way streets. Bicyclists are not required to remain in a bike lane when traveling on a street and may leave the bike lane, as necessary, to make turns, pass other bicyclists, or to properly position themselves for other necessary movements. Bike lanes may only be used temporarily by vehicles accessing parking spaces, and entering and exiting driveways and alleys.

Applications

- Bike lanes are normally placed on the right-hand side of the road to reflect the general traffic principle of slower traffic keeping to the right.
- The minimum width of a bike lane next to an on-street parking space or right-turn lane is five feet. Bike lanes on open shoulders or adjacent to a curb-and-gutter drainage system may be a minimum of four feet wide.
- Bike lanes are typically installed by reallocating existing street space narrowing other travel lanes, removing travel lanes, and/or reconfiguring parking lanes.
- Bike lanes require on-going maintenance to ensure debris does not collect in the lane.
- Refer to the Manual on Uniform Traffic Control Devices (MUTCD) and the AASHTO Guide for the Development of Bicycle Facilities for more information on bike lane design.

Recommendations

The following bike lane projects were recommended as part of the SMITP to improve bicycle mobility and safety in the South Miami area.

- SW 67th Avenue – Snapper Creek Drive to SW 40th Street
- SW 62nd Avenue – SW 64th Street to SW 40th Street (portions located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
- SW 57th Avenue – SW 88th Street to Sunset Drive (includes a segment of buffered bike lanes, see below)
- SW 80th Street – SW 69th Avenue to SW 57th Avenue
- SW 72nd Street (Sunset Drive) – SW 69th Avenue to SW 64th Court
- SW 64th Street – SW 69th Avenue to SW 57th Avenue (includes a segment of buffered bike lanes, see below)
- SW 56th Street – SW 67th Avenue to SW 57th Avenue
- SW 48th Street – SW 67th Avenue to SW 57th Avenue (portions located in unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)
- SW 40th Street – SW 67th Avenue to SW 57th Avenue

Considerations

On one-way streets and streets with wide medians, a left-side bike lane can be advantageous, particularly in locations with heavy bus traffic or frequent right-turns.

- Where additional space is available, consider providing a buffered bike lane (three-foot minimum buffer recommended). The buffer can either be placed between the bike lane and the travel lane (in locations with higher speeds and volumes), or between the bike lane and the parking lane (in locations with a high rate of parking turnover).
- Where there is insufficient space to provide a buffered bike lane on a street with designated on-street parking, offsetting the bicycle symbol to encourage bicyclists to ride in the left side of the bike lane, away from the door zone of parked vehicles, should be taken into consideration.

- Contra-flow bike lanes, a bike lane that is in the opposite direction to traffic flow, may be used on one-way streets to provide more convenient connections for bicyclists, where other alternative routes are less desirable or inconvenient.
- Wider bike lanes enable bicyclists to pass one another on heavily traveled corridors and increase separation from faster traffic.

CYCLE TRACKS

Cycle tracks are a portion of the right-of-way contiguous with the traveled way but separated from motor vehicles by a barrier. Cycle tracks (also known as separated bike lanes) generally enhance the experience of bicycling on streets due to the physical separation, which can be achieved through a variety of methods. Some cycle tracks are placed at a higher elevation than the adjacent street (i.e., curb height or at an intermediate height between the curb and the street level). Other cycle tracks are placed at street level, but are physically separated from the adjacent travel lane by a raised median, a row of parked cars, flexible bollards, or some combination of these elements.

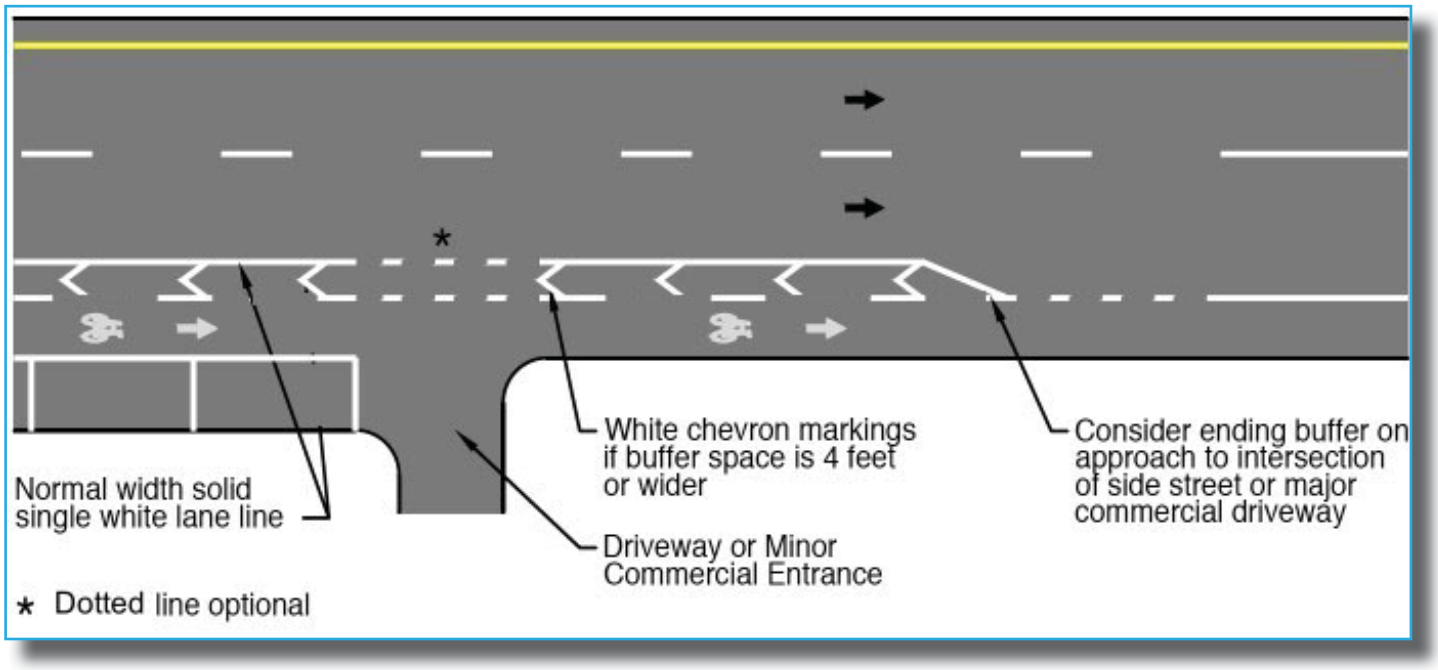
Example of a "cycle track" along a city street

Applications

- Cycle tracks may be placed between the parking zone and the pedestrian zone. Other configurations are acceptable as well, such as a cycle track that is separated from the adjacent motor vehicle lane by a concrete curb or when adjacent to on-street parking, a minimum 3-foot buffer should be provided between parking and the cycle track. The buffer serves as a pedestrian loading and unloading zone.
- Cycle tracks can either be one-directional (one-way on each side of a street) or two-directional (two-way on one side of a street).
- Cycle tracks can be useful on streets that provide connections to off-street trails, since bicyclists on these streets may be more accustomed to riding in an area separated from traffic.

Considerations

- Cycle tracks require more space than conventional on-road bicycle facilities because of the additional space needed to achieve physical separation from the adjacent motor vehicle lane. In addition, cycle track lanes are generally wider than conventional bike lanes since bicyclists cannot deviate from the cycle track, if needed, to avoid pedestrians, slower moving bicyclists, open car doors, debris, and other objects.
- Intersection design for cycle tracks is very complex and requires careful attention to conflicts with turning vehicles. For example, turning movements across cycle tracks should be carefully assessed to reduce or eliminate conflicts. If intersection conflicts cannot be adequately addressed, it is likely that a cycle track will not be a feasible solution due to safety concerns.
- Cycle tracks require increased parking restrictions as compared to bike lanes to provide for visibility at intersection transitions. Frequency of driveway crossings is a factor in determining if a cycle track is feasible. Frequent driveway crossings are incompatible with cycle track design.
- Colored pavement can be beneficial to highlight the presence of a cycle track, particularly at



Plan showing buffered bike lane between travel lane

intersections and other locations where motor vehicle traffic crosses the cycle track. When a cycle track is provided on the same side of the road as transit operations, transit stops, and waiting areas should be provided between the cycle track and the roadway to reduce conflicts with pedestrian load in and unloading.

- The presence of drainage and utility structures along the curb may reduce the effective width of the cycle track.

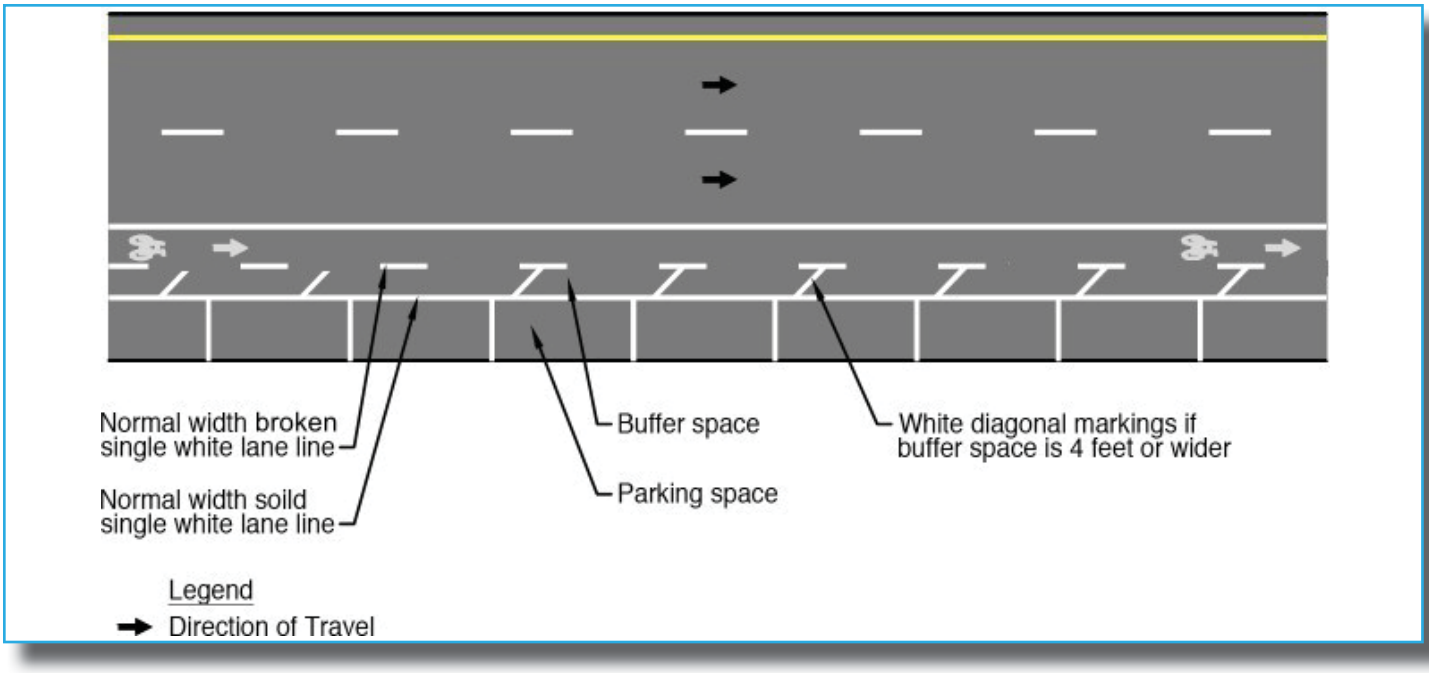
Although no street in South Miami was identified during the SMITP process specifically for cycle track implementation, future consideration for cycle tracks warrants their inclusion within the report as a tool in the bicycle facility strategy list.

BUFFERED BIKE LANES

Buffered bike lanes are conventional bike lanes paired with a designated striped buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. A buffered bike lane is optional for all bike lane facilities per MUTCD guidance for buffered preferential lanes found in the 2009 MUTCD Section 3D-01. Buffered bike lanes tend to require less space within the street traveled way than cycle tracks.

Example of a "buffered bike lane" on a city street

According to E*valuation of Innovative Bicycle Facilities: SW Broadway Cycle Track & SW Stark/Oak Street Buffered Bike Lanes* (Portland State University, Center for Transportation Studies, 2011), nine in ten bicyclists preferred a buffered bike lane to a conventional bike lane, seven in ten bicyclists indicated they would go out of their way to ride on a buffered bike lane over a conventional bike lane, and bicyclists indicate they



Plan showing buffered bike lane between parking lane

feel lower risk of being "doored" in the buffered bike lanes when adjacent to on-street parking.

Applications

Sample "buffered bike lane" on a city street

- Buffer space may be used to separate the bike lane from the adjacent motor vehicle lane or to separate the bike lane from an adjacent on-street parking lane.
- When used adjacent to motor vehicle travel lanes, buffered bike lanes provide greater shy distance between bicyclists and motor vehicles. In addition, the buffer space provides an area for faster moving bicyclists to pass slower moving bicyclists without having to encroach into the motor vehicle travel lane.
- When used adjacent to on-street parking, buffered bike lanes provide a "door zone" space to encourage bicyclists to ride in a safe lateral placement within the street and provide space for pedestrians to get in and out of parked cars without walking and standing in the bike lane.
- The buffer should be marked with a wide solid single white line along both edges of the buffer space.
- Buffered bike lanes provide greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane.
- The buffer should be at least 2 feet in width (minimum), 3 feet (preferred).
- Diagonal hatching should be used within the buffer if the buffer space is wider than 2 feet.
- Buffered bike lanes appeal to a wider range of bicyclists and encourage bicycling.

Recommendations

The following buffered bike lane projects were recommended as part of the SMITP to improve

bicycle mobility and safety in the South Miami area.

- SW 57th Avenue (Red Road) – between SW 74th Terrace and Sunset Drive
  - This project would be implemented by modifying the existing angled on-street parking to proposed conventional parallel on-street parking. The additional space gained from modifying the parking could be used to provide buffered bike lanes separating the parallel parking spaces from the bike lane.
- SW 64th Street – between SW 59th Place and SW 57th Avenue
  - This project would be implemented by narrowing the existing wide lanes and striping a buffered bike lane.

Considerations

- Buffered bike lanes can be considered anywhere a standard bike lane is being considered.
- Although there are no standard criteria for when buffered bike lanes are required, in general, buffered bike lanes should be provided on streets with on-street parking, high travel speeds, high traffic volumes, high percentage of trucks or buses, and streets with extra space within the traveled way.
- Consider dashing the inside buffer boundary where cars are expected to cross, such as adjacent to on-street parking.
- Where buffers are used, bike lanes can be narrower because the shy distance function is assumed by the buffer. For example, a 4-foot bike lane and a 3-foot buffer could be provided adjacent to on-street parking since the "bike lane width" would be considered 7 feet.

SHARED LANE MARKINGS (SHARROWS)

Shared lane markings, or sharrows, are pavement markings that are placed within the vehicular travel lane of the roadway to indicate a shared lane. Unlike bike lanes, shared lane markings do not designate a particular part of the roadway for the exclusive use of bicyclists. The pavement marking symbols alert motorists to the expected lateral placement of bicyclists within the shared lane, and encourage safer passing behaviors.

Sample "sharrows" on a city street

Applications

- Shared lane markings are typically used on streets where space constraints make it impractical to provide designated bike lanes.
- Sharrows should not be used on streets with speed limits higher than 35 MPH.
- Sharrows make motorists aware of the expectation to find bicyclists sharing the travel lane.
- Sharrows recommend proper lateral spacing guidance for bicyclists.
- Sharrows show bicyclists the correct direction of travel.
- On streets with narrow lanes (12 feet wide or less), the shared lane marking is typically placed in the center of the lane to indicate that motorists must change lanes to pass bicyclists.

- When used adjacent to on-street parking, shared lane markings should be placed in a location that is outside of the door zone of parked vehicles. This is typically in the center of the travel lane. Sharrows remind bicyclists to ride farther from parked cars to prevent "dooring" collisions.
- Refer to the MUTCD and the AASHTO Guide for the Development of Bicycle Facilities for more information on the application of shared lane markings.

Recommendations

The following shared lane markings projects were recommended as part of the SMITP to improve bicycle mobility and safety in the South Miami area.

- Sunset Drive – between SW 64th Court and SW 57th Avenue
  - It is recommended that the sharrows on Sunset Drive be combined with innovative use of green colored pavement backing to make sharrows more conspicuous and since Sunset Drive is the focal street for downtown South Miami
- SW 62nd Avenue – between SW 76th Street and SW 70th Street
  - Sharrows recommended in constrained corridor to fill in bike lane gap
- SW 57th Avenue – between Sunset Drive and SW 64th Street
  - Sharrows recommended in constrained corridor to fill in bike lane gap
- All Neighborhood Greenways
  - See section below for more details

Considerations

- Shared lane markings should not be considered a substitute for bike lanes, cycle tracks, buffered bike lanes, or other designated bicycle facilities where these types of facilities are otherwise warranted or space permits.
- Shared lane markings are less effective on streets with an on-street parking lane that is frequently unoccupied, because bicyclists often feel more comfortable riding in the parking lane.
- Shared lane markings can be used in constrained corridors as a temporary solution to complete connections between bike lanes and other facilities.
- Shared lane markings should be accompanied by a "Bicycles May Use Full Lane" sign (MUTCD R4-11 sign).
- Shared lane markings can be used as the standard element in the development of neighborhood greenways (bicycle boulevards), which is discussed in more detail in the next section.

NEIGHBORHOOD GREENWAYS

Neighborhood greenways, also called bicycle boulevards, are enhanced shared streets. Neighborhood greenways are streets with low motor vehicle speeds that are designed with a variety of elements, including shared lane markings, traffic calming, bike route signage, and wayfinding signs, to allow bicyclists to travel comfortably in a low-stress environment. Neighborhood greenways often give priority to bicycle use and discourage through-traffic by motor vehicles. Ideally, they are designed to minimize the number of stops that a bicyclist must make along the route through the use of neighborhood traffic circles or re-orienting stop signs at intersections so bicyclists can ride with fewer interruptions. Separated bicycle facilities (i.e., bike lanes) are not necessary on neighborhood greenways because motor vehicle speeds and traffic volumes are low.

Applications

- Neighborhood greenways are usually more feasible in neighborhoods with a grid street network (one street is chosen as the neighborhood greenway), but can also be accomplished by combining a series of road and trail segments to form one continuous route.
- At major street crossings, neighborhood greenways may need additional crossing measures for bicyclists, such as bicycle-sensitive loop detectors (at signalized intersections), actuated flashing beacons (at unsignalized intersections), median refuge islands, and/or curb extensions.

SW 58th Avenue Featured Greenway

- Traffic calming measures, such as neighborhood traffic circles, speed cushions, and diverters can be used to maintain low speeds (ideally 25 MPH or less) on neighborhood greenways.

Recommendations

Numerous neighborhood greenway projects were recommended as part of the SMITP to improve bicycle mobility and safety in the South Miami area. Most neighborhood greenways were originally identified by the South Miami Green Task Force and studied during the course of the SMITP. The map in Figure 1 identifies the network plan of neighborhood greenways, although too many to list. A few of the key neighborhood greenways are listed below.

- Manor Lane/SW 63rd Avenue – between SW 80th Street and SW 74th Street
- SW 64th Court/SW 64th Avenue/SW 63rd Court – between Manor Lane and SW 44th Street
- SW 59th Place – between Sunset Drive and SW 64th Street
- SW 59th Avenue – between SW 87th Street and Sunset Drive
- SW 58th Avenue/SW 70th Street/Commerce Lane/ SW 58th Place/SW 58th Court/SW 58th Avenue – between SW 87th Street and SW 40th Street
- SW 78th Street/SW 77th Terrace – between U.S. 1 and SW 57th Avenue
- SW 68th Street – between SW 64th Avenue and SW 57th Avenue
  - Includes non-motorized path connection in Marshal Williamson Park to join the two pieces of SW 68th Street for bicyclists and pedestrians
- SW 50th Street – between SW 64th Avenue and SW 57th Avenue (portions located in

Sample "sharrow" on a city street

unincorporated Miami-Dade County, shown for illustrative purposes due to mobility benefits identified in SMITP)

Considerations

- Ideally, neighborhood greenways should not carry more than 3,000 motor vehicles per day to be compatible with a broad range of bicyclist skill levels.
- Each neighborhood greenway may be designed with different elements depending on the needs of that particular street; however, shared lane markings, "Bicycles May Use Full Lane" signs (MUTCD R4-11 signs), wayfinding signs, and bicycle crossing improvements where neighborhood greenways cross major roadways should be considered basic elements consistent with all neighborhood greenways.
- Where the neighborhood greenway crosses high-speed or high-volume streets, providing neighborhood greenway crossing treatments such as the following to help bicyclists cross.
  - Signals, where a traffic study has shown that a signal will be safe and effective. To ensure that bicyclists can activate the signal, bicycle-sensitive detection should be installed where bicyclists ride.
  - Roundabouts where appropriate.
  - Median refuges wide enough to provide refuge for a bicyclist (8 feet minimum) and with an opening wide enough to allow bicyclists to pass through (approximately 6 feet wide). The design should allow bicyclists to see the travel lanes they must cross.

Old Cutler Trail bicycle route wayfinding signage

- Neighborhood traffic circles, diverters, speed cushions, and other traffic management devices are typically used to discourage motor vehicle through-traffic, while still enabling local traffic access to the street.
- Replacing stop-controlled intersections with neighborhood traffic circles and mini-roundabouts help reduce the number of stops bicyclists have to make and assist with traffic calming.
- Neighborhood greenways should be long enough to provide connectivity between neighborhoods and common destinations, such as downtown South Miami.

BICYCLE ROUTE SIGNAGE

A bicycle route wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bike routes. A bike route is a term used for planning purposes or to designate recommended bicycle transportation or recreation routes. A bike route is not a facility type. A bike route can be any bikeway type. Bicycle route signs are wayfinding signs that guide bicyclists along preferred, designated routes to destinations within the City of South Miami and throughout the region. The intent is to create a single, integrated signing system that is instantly recognizable by bicyclists.

Applications

It is expected that as the South Miami bike network is built out over time that many bicycle facilities will have bicycle route signage. Shared use paths, bike lanes, and neighborhood greenways should all be incorporated into the bicycle route signage system.

- Wayfinding signs are typically placed at decision points along bike routes.
- There are three general types of wayfinding signs.
  - Confirmation signs indicate to bicyclists that they are on a designated bikeway. Confirmation signs can include destinations and distance/time but do not include arrows. Confirmation signs have an added benefit of making motorists aware of the bicycle route.
  - Turn signs indicate where a bikeway turns from one street to another street. Turn signs include arrows, and may include destinations and distance/time. Turn signs should be placed on the near-side of intersections and may be supplemented with pavement markings.
  - Decision signs mark the junction of two or more bike routes. Decision signs inform bicyclists of the designated bike route to access key destinations. Decision signs include destinations and arrows. Distances and travel times are recommended but are optional

Recommendations

- The City should work with MDCPWWM to incorporate South Miami bike routes into the overall Miami-Dade County bike route numbering and signing system.
- Neighborhood Greenways

PARKLETS

A parklet is a small space, typically along a commercial street, serving as an extension of the sidewalk to provide amenities and green space for people using the street. Parklets are most often implemented by replacing one to three on-street parking spaces; therefore, they are the width of the adjoining on-street parking spaces. Parklets are intended for people rather than cars.

Applications

- Parklets offer a place to stop, sit, and rest while taking in the activities of the street.
- Parklets often provide café seating for nearby eating establishments or coffee houses.

Sample "parklet" within existing on-street parking

- Parklet design is somewhat flexible in that parklets may also provide greenery, art, or some other visual amenity instead of café seating.
- A parklet may accommodate bicycle parking, or bicycle parking may be located adjacent to it.
- The purpose of parklets is to benefit local businesses, residents, and visitors by providing unique public spaces that attract customers and foster community.

Sample "parklet" within existing on-street parking

Recommendations

Sunset Drive is one of the top streets in Miami-Dade County to enjoy local businesses, restaurants, and street life. However, many areas of Sunset Drive are characterized by narrow, crowded sidewalks, especially near café seating. Parklets can provide additional space for seating while maintaining pedestrian walking zones on the sidewalk. In addition, parklets have been shown to enhance the economic vitality of the businesses along a street by attracting customers and encouraging people to stay longer and enjoy the street. Ultimately for a parklet to be successful, the benefits need to outweigh the loss or relocation of one to three on-street parking spaces.

It is recommended that the City install parklets on Sunset Drive within the downtown area to enhance personal experience along the street. Initially consider providing two parklets, one on the north side of the street and one on the south side of the street.

Traffic Calming Elements

Managing vehicular speed is particularly important on streets where pedestrian and bicycle use is desired. In crashes involving these more vulnerable users, vehicular speed at the point of impact is directly related to pedestrian or bicyclist survival. For example, a pedestrian who is hit by a motor vehicle traveling at 20 MPH has a 95 percent chance of survival, whereas pedestrian hit by a motor vehicle traveling at 40 MPH has a 15 percent chance of survival. Studies have also shown that motor vehicle crashes decline where roadway speed is reduced. In addition, drivers are far more likely to yield to pedestrians at crosswalks when speeds are lower. Mixed-use and residential streets in South Miami should be designed for a target design speed of 25 MPH. The context of an individual street should factor into whether or not adjustments to this base design speed are appropriate. Target design speed will be lower at intersections and crossings.

Traffic circle along SW 48th Street and Alhambra Circle

Planning and Street Operations should take the lead on determining target design speeds during the corridor planning stage of the Complete Streets design process in the context of the community vision. For major roadway construction and reconstruction projects, the geometric design of the roadway should be such that excessive speeds feel uncomfortable. This can be accomplished through a creative approach to roadway design. Curves (chicanes) should be incorporated, long vistas should be broken with vertical elements, such as street trees, and traffic calming features should be introduced.

The following speed-reduction strategies should be considered for traveled way design.

- Lane width narrowing
- Road diets (lane elimination)
- Center medians/islands
- Midblock curb extensions (neckdowns)
- Bikeways
- Transit lanes
- On-street parking
- Paving treatments
- Shared streets
- Chicanes
- Speed tables
- Street lighting

ROAD DIETS (LANE ELIMINATION)

Some streets may be wider than necessary given the volume of traffic that they carry during peak hours. Therefore, road diets are a solution that can be useful for the purpose of implementing a bicycle facility, wider pedestrian zone, and/or landscaping. A road diet reduces the number of travel lanes on a roadway, typically removing one lane of traffic in each direction. Road diets not only provide additional space necessary to build a Complete Street, but they also provide measurable safety benefits to all users. Research has shown that road diets reduce the total crashes from 81 to 53 percent. Road diets are officially recognized by the Federal Highway Administration (FHWA) as a proven safety countermeasure. In a January 2012 memorandum, FHWA division offices were advised to advance the use of road diets with their State DOT counterparts.

Applications

Road diets are an important measure in the implementation of Complete Streets principles. The following issues should be considered when reducing travel lanes on streets:

- Four-lane roads with average daily traffic volumes up to 20,000 and six-lane roads with up to 35,000 vehicles per day are candidates for road diet treatments. An intersection capacity analysis may be necessary to ensure the reduction of travel lanes does not create significant delays for motor vehicles.
- Road diets should also be considered for roadway sections that have capacity constraints on either side of the section.
- On four-lane undivided roadways, road diets typically remove two travel lanes and convert the road to a two-lane road with a center-turn lane and bike lanes. However, many of the roads that are eligible for road diets already have left-turn lanes, thus the additional space can be used for buffered bike lanes, transit lanes, and expanded streetscape improvements.

- Some road diets will be implemented as a part of the roadway repaving/reconstruction process, as this offers an opportunity to reconfigure the roadway with new pavement markings.
- Particular to the individual project, a thoroughfare plan amendment might be necessary.
- Road diets require special attention to public involvement of surrounding communities. Bringing public support is a key aspect the success of a road diet. A low-cost road diet reconfigures existing roadway space and does not require curb reconstruction. While sidewalk width remains the same, these types of road diets still benefit pedestrians due to the increased buffer between the sidewalk and the nearest motor vehicle travel lane.
- Where road diets are implemented through the repaving/reconstruction process, consideration should be given to the long-term maintenance needs of the resulting bike lanes. They will need periodic maintenance to remove debris and ensure that they are usable facilities. Road diet projects require careful attention to motor vehicle capacity issues and intersections.

Recommendations

In South Miami, one road diet candidate is SW 40th Street (Bird Road) between SW 67th Avenue and SW 57th Avenue. SW 40th Street is a six-lane divided roadway in the South Miami area. However, east of SW 57th Avenue in Coral Gables, SW 40th Street narrows down to a four-lane divided roadway. The City should coordinate with FDOT regarding the possibility of matching the capacity of the Coral Gables section of Bird Road throughout the South Miami area between SW 67th Avenue and SW 57th Avenue. The re-purposed space from the proposed road diet can be utilized to provide designated bike lanes and enhanced landscaping to provide a viable pedestrian experience along the corridor.

CENTER MEDIANS/ISLANDS

Medians are raised barriers in the center portion of the roadway. Median width can vary greatly, from a minimum of 6' to 20' or more along parkways and light rail transit lines. Medians with street trees or other landscaping can be used to add prominence to a segment of road, extend a park-like environment along a corridor, and to reduce the heat island effect. Medians can also provide a location for transit and a refuge for pedestrians crossing multi-lane roadways. Studies show that intermittent (midblock) islands can result in up to a 7 percent reduction in motor vehicle speeds. Concrete medians were mainly constructed to channelize turning movements and to control access to adjacent land uses. Through a Complete Streets approach, medians on roadways should be pedestrian-friendly, reduce travel speeds, and should provide landscaping whenever possible.

Landscape median along Sunset Drive South Miami City Hall

Applications

- Medians are particularly helpful as pedestrian refuges at controlled and uncontrolled crossings. When designed properly, medians offer protection to pedestrians crossing the road.
- The minimum width for a center median is 6 feet. This width is necessary to ensure the median serves as an adequate pedestrian refuge. A wider median is necessary if it will serve a dual purpose as a left-turn lane, to accommodate both the width of a turn lane, as well as adequate space for the pedestrian refuge.

- Signalized intersections with medians should be designed to allow pedestrians to cross the entire roadway during a single signal cycle.
- Pedestrian cut-through medians should be of at least equal width to the approaching sidewalks. At midblock locations, consider angling the pedestrian cut to direct pedestrian sight lines to on-coming traffic.
- Care should be taken to ensure median plantings do not limit the sight lines for pedestrians and motorists at intersections.
- Center medians should be carefully designed to ensure proper drainage and maximize potential for on-site stormwater retention and filtration. Drought resistant and low-maintenance plant species should be used.
- Trees and landscaping should be maintained for sight lines and vehicle operation.
- Sidewalks should not be reduced in width, and bike lanes should not be eliminated, to provide space or additional width for medians.

MIDBLOCK CURB EXTENSIONS (NECKDOWNS)

At midblock locations with on-street parking, curb extensions, also called neckdowns, can be installed on both sides of the road to create a visual pinch-point, helping to calm motor vehicle traffic. They are particularly useful on streets with longer block lengths where motorists tend to gain speed at midblock locations. They can be combined with midblock pedestrian crossings to further enhance pedestrian safety by lowering motor vehicle speeds, reducing crossing distances, and increasing visibility.

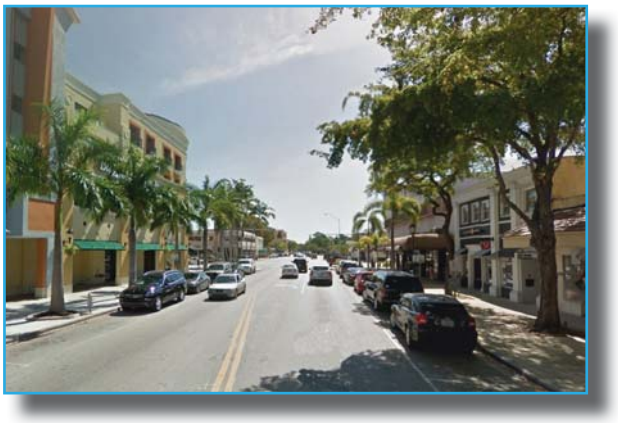
Applications

- Midblock curb extensions should only be used on streets with on-street parking. They can be used on two-way streets with one lane in each direction, and one-way roads. Where used on streets with multiple lanes in one direction, other crossing enhancements, such as crossing islands which allow pedestrians to cross the street in two stages and rapid flashing beacons, should be considered. Midblock curb extensions are sometimes combined with intermittent medians to reduce speeds along the length of a roadway and provide a crossing refuge in the center of the street, allowing pedestrians to cross the street in two stages.
- Where curb extensions provide pedestrian crossings, ADA compliant curb ramps, tactile warning strips, and cross slopes must be provided.
- Street trees are encouraged within midblock curb extensions. However, sight distances are a primary issue at midblock pedestrian crossings. Therefore, shrubs and other types of vegetation that would block drivers' views of approaching pedestrians should be avoided.
- Midblock curb extensions can be combined with speed tables to provide raised crossings for pedestrians.
- Bicycle lanes should not be eliminated at midblock curb extensions. In constrained spaces, care should be taken to avoid suddenly squeezing bicyclists into the traffic flow on streets with higher volumes of traffic, particularly in locations with steep uphill grades where bicyclists may be travelling considerably slower than motor vehicle traffic.
- On low-volume residential streets, midblock curb extensions can reduce the street to one lane, requiring on-coming drivers to alternate passage through the midblock curb extensions, while keeping enough space for fire trucks and other large vehicles.

Recommendations

The following midblock pedestrian crossings were recommended as part of the SMITP.

- SW 40th Street - East of SW 64th Avenue
- SW 40th Street - East of SW 60th Avenue
- S Dixie Highway - North of SM Hospital Exit Driveway



On-street parking along Sunset Drive in downtown South Miami

ON-STREET PARKING

On-street parking is clearly a key to the success of small business districts and can add energy and excitement to the street. This encourages the concept of park once. On-street parking has a very positive impact on the pedestrian realm—research shows that pedestrians feel far more comfortable and safe on streets with occupied on-street parking. Parked cars provide a traffic calming effect by visually narrowing the roadway and increasing friction along the edge of the roadway. It is important to get the ingredients right to achieve the maximum benefit from on-street parking. When on-street parking is underutilized, the result is a wider street with faster speeds.

On-street parking is most appropriate for mixed-use and residential streets. In these types of streets, it can provide a traffic-calming effect and convenience to local shops and residences. On-street parking is ideally created by these parking types: parallel, angle, reverse angle, and unmarked parallel spaces. Parking lanes should be a minimum of 7-feet wide, with 8 feet being the desired width. The potential hazard of opening car doors should be considered when developing an appropriate design. Crashes can occur in locations with high parking turnover, such as main streets and commercial streets with restaurants and businesses. Adjacent to a narrow parking lane (7 feet) with high turnover, a six-foot bicycle lane is recommended.

In mixed-use, a parking lane can be designated for different purposes throughout the day, such as commercial loading during the morning, public parking during the day, and valet at night. On-street parking should be prohibited, approaching intersections or driveways, since it can obscure site lines for all users of the road. Angled parking maximizes the parking supply and is appropriate when sufficient curb-to-curb widths are available. Where angled parking is used, the preferred orientation is back-in angled parking. This configuration has been shown to provide numerous safety benefits for pedestrians, bicyclists, and motorists. It provides more visibility when pulling back into traffic, and more visibility between bicyclists and motorists. Back-in angled parking requires the use of wheel stops to ensure parked vehicles do not encroach upon the sidewalk. Consideration should be given to outdoor cafes and seating areas adjacent to back-in parking. Parallel parking is appropriate on streets with narrower curb-to-curb widths and when trying to accommodate other elements, such as bicycle lanes and wider sidewalks. Higher volume arterial streets should primarily use the parallel configuration.

SHARED STREETS

Streets where the curb and gutter are eliminated create roadways with no designation between the traveled way and the side of the road. These are often called shared streets since all roadway users share the same space. Shared streets work well when the total right-of-way is relatively narrow and motor vehicle speeds and volumes are low. They create zones of extreme traffic calming ensuring that the difference

in speed between different modes of travel is minimal. Shared streets maintain vehicular access for and emergency vehicles, but otherwise function as extensions of the sidewalk to accommodate free-flowing pedestrian movements bicyclists, street vendors and cafes, and occasionally on-street parking. Shared streets can be paved with special materials to help indicate the special type of low-traffic zone, described later in this chapter, can be used to ensure speeds are low on shared streets.

Shared streets, or secondary networks, can be a permanent installation or can be shared for events or on certain days of the week. Planters, bollards, or other vertical markers can be used to designate zones within a shared street. Paint and roadway materials can also delineate zones of the street. Since the goal of a shared street is to mix roadway uses and pedestrians as much as possible, treatments to delineate space should be limited. In addition, care should be taken when using bollards to delineate space, since they can become tripping hazards for pedestrians during crowded events. Shared streets are also appropriate for some residential streets, as well as in subdivisions, campuses, and parks, where there is a desire to limit motor vehicle traffic while placing a high priority on non-motorized traffic. A system of linked shared streets or alternating shared streets with standard streets can create a pedestrian-oriented district that maintains access for local traffic.

Applications

- Parking is sometimes allowed on shared streets. Paint or special paving can be used to demarcate a parking zone or individual spaces.
- Because there are no curbs, shared streets require special drainage treatments and grading to prevent ponding of water.

Recommendations

Although no street in South Miami was identified during the SMITP process specifically for shared streets implementation, future consideration for shared streets warrants their inclusion within the report as a tool in the bicycle facility strategy list.

CHICANES

Chicanes are curb extensions that alternate from one side of the street to the other, creating an "S" curve that drivers must weave through. Chicanes provide opportunities to increase sidewalk space and introduce green street elements in the right-of-way. Chicanes can be created with curb extensions, tree pits or planters, or by alternating parking from one side of the roadway to the other. In addition to slowing vehicular traffic, chicanes can provide opportunities to increase sidewalk space and introduce landscaping in the right-of-way. They can be used in combination with other traffic calming devices, such as speed tables, discussed below, and with midblock neckdowns or center islands.

Sample "chicane" on a neighborhood street

Applications

- Chicanes are appropriate for mixed-use and residential streets.

- On residential streets, chicanes can serve as an alternative to speed tables and provide additional areas for landscaping or neighborhood amenities.
- Chicanes and neckdowns can be used on two-way streets with one lane in each direction and one-way roads with no more than two lanes.
- The amount of horizontal deflection in a chicane should be based on the target design speed of the roadway.
- Vegetation used in chicanes should generally be low-growing (less than two-feet tall) and low-maintenance. In locations with midblock pedestrian crossings, sight lines should be maintained.
- Bikeways should be continuous through chicanes so that bicycles are not squeezed into the traffic flow. Shared bikeways are appropriate on streets with chicanes that result in low-speed environments.
- Chicanes can serve in conjunction with SWM Principles as bioswales.

Recommendations

Although no street in South Miami was identified during the SMITP process specifically for chicanes implementation, future consideration for chicanes warrants their inclusion within the report as a tool in the bicycle facility strategy list.

SPEED TABLES

Speed tables are raised pavement areas that are placed at midblock locations to reduce vehicle speeds. They are gentler than speed bumps (which are not recommended for public streets) but have been shown to effectively reduce 85th percentile speeds by 13 to 15 MPH. Well-designed speed tables enable vehicles to proceed comfortably over the device at the intended speed, but cause discomfort when traversed at inappropriately high speeds. Speed tables are a good tool for retrofitting streets with traffic calming devices. If full reconstruction is planned, consider achieving traffic calming with horizontal devices, such as roadway width and chicanes, which are more subtle and require less signage. Speed tables should be used in combination with other traffic calming devices such as curb extensions, chicanes, and crossing islands.

Applications

- Residential streets and mixed-use are appropriate locations for speed tables.
- Speed tables are usually 3 inches higher than the roadway surface. They are typically 10- to 14-feet in length and extend the full width of the roadway, although sometimes they are tapered at the edges to accommodate drainage patterns.
- Speed tables should be designed with a smooth leading edge and a parabolic profile, which provides a smoother transition for bicyclists.
- Speed tables should be clearly marked with reflective pavement markings (per the MUTCD) and signage that motorists and bicyclists are aware of their presence and can adjust their speed accordingly. Speed tables are generally not appropriate for streets with bus routes. However, they can be installed on streets with school bus service.
- Longer speed tables (up to 22' in length) have a design speed of 25 to 30 MPH and are easier for large vehicles to negotiate.
- Avoid placing speed tables at the bottom of steep inclines where bicyclists travel at higher speeds and may be surprised by their presence.
- When used alone without complimentary traffic calming devices, speed tables may result in speed spiking where motorists may travel at higher speeds between tables.

Recommendations

Although no street in South Miami was identified during the SMITP process specifically for speed table implementation, future consideration for speed tables warrants their inclusion within the report as a tool in the bicycle facility strategy list.

STREET LIGHTING

Street lighting is an important consideration in the design of the traveled way. A well-lit street contributes to the safety and comfort of vulnerable users, but is also a factor in economic development. It is important to provide increased illumination where modes merge or cross paths, such as at intersections, bus stops, and midblock crossings.

Sample street lighting on a neighborhood street

Applications

The street type, hours of activity, and adjacent uses are all important factors in setting street lighting levels.

- Mixed-use streets require the highest level of illumination. These streets are designed to encourage all modes of travel, especially those along the edges of the traveled way. Street activity is encouraged to extend into the evening.
- Parkways may require lower overall levels of illumination. However, trail crossings and intersections should meet the recommended safety standards for light levels. It may also be appropriate to operate street lights on parkways for longer periods than on other street types, since side-paths have increased recreational activity at dawn and dusk.
- Residential streets should have lower levels of illumination, except in the vicinity of transit stops, schools, other public buildings, and parks. Meeting illumination minimums is essential in order to encourage pedestrian travel, particularly for trips to and from school and transit which may occur around dawn and dusk. Dimming the lights during the middle of the night when there is very low activity on residential streets, can cut down on light pollution and energy costs. Street lighting should illuminate the public right-of-way, but be shielded from private property.
- Over-illumination should be avoided to diminish light pollution and conserve energy.
- Requests for lighting above the guidelines in the Street and Pedestrian Lighting Criteria require cost participation for the portion in excess of the City's standard expenditure.
- Street lighting and pedestrian lighting fixtures may be combined in some locations.
- Special fixtures are allowed in historic districts and plazas. Where possible, they should meet the same energy standards as other types of fixtures.
- Tree growth can reduce the amount of light that reaches the roadway or side of the road. Regular tree maintenance is recommended so that crossings and critical points along the traveled way, such as neckdowns or chicanes, are sufficiently illuminated. Pedestrian-scaled lighting along the side of the road closer to pedestrians and bicycles can also mitigate heavy foliage along the traveled way.

Intersection Design Elements

Intersections are where streets converge, modes come together, and most conflicts occur on the roadway. Traditionally, intersection design has been focused on maximizing the efficient movement of vehicles through the City. The Complete Streets approach expands this focus so that safety is the primary driver of intersection design. All intersections must safely accommodate people whether they are walking, bicycling, driving, or riding transit. Intersections should be designated and planned in context with the existing land uses, as well as cultural and environmental considerations. Intersections should highlight the unique spaces where streets converge, making seamless connections from one street type to another. These street guidelines emphasize the need to create multimodal intersections that are vibrant public spaces, balance the needs of all users, and enhance the quality of street life.

MULTIMODAL INTERSECTIONS

Multimodal safety, with an emphasis on safety for vulnerable users, should be the driving factor for intersection design in South Miami. It is important to recognize that non-motorized users are more vulnerable, and suffer far greater injuries in the event of a crash. Regardless of whether a trip is made on foot by bicycle, via transit, or in an automobile, people should feel safe, comfortable, and experience a minimal amount of delay during all trips. Extensive guidance exists to design streets for motor vehicles. Specific engineering factors, such as horizontal and vertical alignments, sight distance calculations, capacity, and coordinated signal timing, are covered by a range of design manuals. Traditionally, the manuals listed below have been used by engineers to design intersections and roadways:

- U.S. Access Board's Public Right-of-Way Accessibility Guidelines (PROWAG)
- AASHTO's Policy on Geometric Design of Highways and Streets
- Florida Department of Transportation (FDOT) Greenbook
- Highway Capacity Manual (HCM)
- Manual on Uniform Traffic Control Devices (MUTCD)
- Institute of Traffic Engineers (ITE) Traffic Signal Timing Manual

The National Association of City Transportation Officials (NACTO) has published recent design guidance aimed at a more balanced transportation system that focuses on vulnerable user safety. The NACTO manuals listed below offer guidance to engineers regarding urban intersection design.

- Urban Bikeway Design Guide
- Urban Street Design Guide

INTERSECTION CONTROL TYPES

Uncontrolled and midblock crossings can be the most challenging places to provide safe pedestrian crossings.

Uncontrolled Intersections

Uncontrolled intersections are those where no traffic control devices facilitate the movement of traffic, and users yield the right-of-way to those who have already been established in the intersection, or those approaching from the right. Intersections may also have uncontrolled approaches where the minor street has a stop sign(s) and the major street has no traffic control.

An example of an uncontrolled intersection approach is SW 57th Avenue (Red Road) at SW 73rd Street. SW 57th Avenue traffic does not stop, while SW 73rd Street traffic is controlled by a stop sign (see image below).

By Florida law, any intersection of two public streets is a legal pedestrian crossing, even if it is an uncontrolled approach.

Midblock Crossings

A midblock crossing is a pedestrian crossing that is not located at a roadway intersection. If a midblock crossing is not designated by a marked crosswalk, then pedestrians must yield the right-of-way to motorists. Specific warrants provided in the MUTCD must be met in order to create signalized midblock crossings.

Applications

Crosswalks at uncontrolled intersections and midblock crossings should aim to maximize safety for all users by providing the following:

- Clear sight lines
- Appropriate lighting levels
- Regulatory and warning signage
- Marked crosswalks, as determined by an engineering study (see Crosswalk Markings at Uncontrolled Locations)
- Traffic calming strategies

Uncontrolled intersection approach along SW 57th Avenue at SW 73rd Street

Stop-Controlled Intersections

Stop-controlled intersections are easiest for pedestrians to cross because motorists and cyclists must stop, encouraging them to yield to pedestrians and reducing pedestrian wait time. However, the use of STOP signs must balance safety with efficient traffic flow for all modes, including bicycles and transit vehicles. STOP sign installation on a major street requires that specific certifications be met, as determined by the MUTCD. In general, STOP signs may be appropriate if one or more of the following conditions exist:

- Where the application of the normal right-of-way rule (yield to those already in the intersection or to those approaching from the right) would not provide reasonable compliance with the law
- A street entering a highway or through street
- An unsignalized intersection in a signalized area
- High speeds, restricted view, or crash records indicate a need for control by a STOP sign. STOP signs should be installed in a manner that minimizes the number of vehicles having to stop. At intersections where a full stop is not necessary at all times, consideration should be given to using less restrictive measures, such as YIELD signs. Where feasible, the use of STOP signs should also be limited on streets with bikeways, especially on bicycle boulevards, as it requires significant energy to stop and start for bicyclists, resulting in lower levels of compliance.

Signalized Intersections

All signalized intersections should contain signals for motor vehicles and pedestrians. Additionally, bicycle signals and transit signals should be considered where appropriate. Signal phasing and timing should be designed to make the unique needs of all users at the intersection. By optimizing signal phasing and timings, multiple modes are able to move safely and comfortably through the intersection with limited conflicts and delay. Signalized intersections should conform to the latest version of the MUTCD, HCM, and the Institute of Transportation Engineer's Traffic Signal Timing Manual. The MUTCD contains specific warrants for the installation of a traffic signal at an intersection. South Miami Public Works Department reviews and approves all proposed signal designs.

Signal Timing

The overall goal of signal timing is to minimize cycle lengths to reduce delay for all users. Long cycle lengths make walking less convenient and may encourage unsafe behavior, such as pedestrians not obeying pedestrian signals and bicyclists running red lights. Signals should be optimized to balance the needs of all users and to minimize delay for pedestrians, bicyclists, motor vehicles, and transit vehicles. Signal timing is a tool used to optimize safety and efficiency for all modes of travel through an intersection. Over time, traffic volumes and patterns change. Retiming signals requires evaluating changes in traffic patterns to minimize signal cycle lengths, reduce delay, improve safety, and reduce fuel consumption and emissions.

Applications

- In South Miami, signal timing is controlled by the Miami-Dade County Public Works and Waste Management Department, Signals and Signs Division.
- Signal retiming should be considered to optimize intersection operations and to globally coordinate the function of signals in relation to one another. This will allow groups or platoons of vehicles to efficiently travel through a series of intersections along a corridor. Vehicles can progress along a corridor at a set speed in order to obtain green lights at signalized intersections. Signal progression at slower speeds can help calm traffic, but should be used in conjunction with other methods to deter speed spiking in between signals.
- Proper optimization of a traffic signal system is performed by a traffic engineer. The process includes taking an inventory of the system, collecting traffic and pedestrian volume data, reviewing intersection safety, and updating signal timing software.
- Traffic changes, which can occur due to new development along a street, may require the adjustment of traffic signal timing.
- Signal retiming should be evaluated regularly to better optimize the performance of signalized intersections due to changing development and traffic flow patterns.
- Technology improvements in signal timing hardware and software should be considered during system upgrades.
- Changes in the number of travel lanes, switching direction of traffic, and other travel way enhancements can be considered with the signal retiming process.
- Factors of effective signal timing include a lack of travel way capacity, a high use of midblock access points, irregular signal spacing, transit/rail influence, and pedestrian signal demands. These should be assessed during the regular reviews of the system performance.

Traffic Circles and Modern Roundabouts

Traffic circles or modern roundabouts are circular intersections designed for yield-controlled entry and typically channelized approaches. Traffic circles can reduce delay for all users when compared to signalized intersections at low and moderate traffic volumes.

Applications

- Traffic circles should be designed to encourage slow entry speeds.
- Traffic circles should include splitter islands on all approaches, which serve to properly align entering traffic, to slow vehicles on the approaches, and to provide a pedestrian refuge for the crosswalks. Multi-lane roundabouts require accessible pedestrian signals at all crosswalks. Care should be exercised to provide safe pedestrian crosswalks with splitter island refuges at traffic circles.
- Another type of circular intersection is a neighborhood traffic circle, which is a smaller type of roundabout, and generally used for low-speed residential street types.
- Roundabouts and traffic circles provide an opportunity to incorporate stormwater management techniques through bioretention or other techniques.

Recommendations

An example of a traffic circle in South Miami is the intersection of SW 62nd Avenue and SW 48th Street (see image above).

The following traffic circle projects were recommended as part of the SMITP to improve multimodal intersection safety in the South Miami area.

- SW 62nd Avenue at SW 56th Street
  - Conversion of existing signalized intersection
- SW 62nd Avenue at SW 64th Street
  - Conversion of existing signalized intersection
- SW 62nd Avenue at SW 80th Street
  - Conversion of existing signalized intersection
- SW 57th Avenue at SW 68th Street/Ponce de Leon Boulevard
  - This is a potential long-term strategy to re-open access to SW 68th Street from SW 57th Avenue and improve general circulation in the area. However, the impact of the proximity of the U.S. 1 intersection must be evaluated.

Considerations

When determining whether to install traffic circles, general considerations would include the design vehicle, pedestrian volumes, and effects on pedestrian route directness. Traffic circles are not recommended if they would create greater vehicle delay or increased difficulty for pedestrians navigating the intersection. Intersections with more than four legs can be good candidates for conversion to modern roundabouts. However, an engineering study must be conducted in order to determine whether a modern roundabout would be appropriate. Modern roundabout designs should reduce relative speeds and improve traffic flow. ADA compliant pedestrian crosswalks with detectable warning strips and ramps at least 20' from the entry of the roundabout should be provided. Sight distance for drivers entering the roundabout must be maintained to the left so that drivers are aware of vehicles and bicycles in the circle (visibility across the center of the circle is not critical). Proper signing and pavement markings must conform to the latest version of the MUTCD.

- Yield lines should be provided at the entry of the roundabout.
- High pedestrian volumes may require larger crosswalk widths.
- At-grade pedestrian cut-throughs should be provided at splitter island medians with ADA compliant detectable warning strips.
- Where there are high pedestrian volumes, signal controls should be considered.
- Permitting bicyclists to use the sidewalk at roundabouts should be considered for comfort and safety of all types of bicyclists, such as young children. Ramps from the street to the sidewalk, as well as appropriate signage to inform pedestrians of a mixing zone, should be installed.
- Visibility and sight distances must not be obstructed due to plant growth.

Traffic circle along SW 62nd Avenue and SW 48th Street

Neighborhood Traffic Circles

Neighborhood traffic circles are smaller versions of traffic circles and should only be utilized on low-volume, low-speed roadways. The typical application of a neighborhood traffic circle is at the intersection of two local streets in a residential neighborhood. Neighborhood traffic circles serve to provide traffic control at intersections while eliminating inefficient stop signs and helping to control vehicular speeds. Whereas speeding vehicles may violate stop signs, neighborhood traffic circles cause the motorist to make a physical alteration of the vehicle's path, thereby helping to control speeds.

Neighborhood traffic circle along SW 66th Street and SW 64th Avenue

Applications

Neighborhood traffic circles can be useful street crossing treatments along neighborhood greenways because they provide traffic calming effects, as well as allow bicyclists to maintain pedaling momentum rather than stopping at stop signs.

An example of a neighborhood traffic circle in South Miami is at the intersection of SW 66th Street and SW 64th Avenue (see image above).

Recommendations

The following neighborhood traffic circle projects were recommended as part of the SMITP to provide traffic calming and neighborhood greenway crossing treatments in the South Miami area.

- SW 62nd Avenue at SW 85th Street
- SW 69th Avenue at SW 75th Terrace
- SW 65th Avenue at SW 60th Street
- SW 58th Avenue at SW 50th Street
- SW 65th Avenue at SW 44th Street

KEY GEOMETRIC DESIGN GUIDANCE

Well-designed intersection geometry is crucial for creating safe, efficient, and multimodal intersections. Changes in geometry can help to reduce vehicle turning speeds, increase pedestrian comfort and safety, and create space for dedicated bicycle facilities. Intersections must combine well-designed geometry with efficient traffic control measures to maximize safety for all users.

Curb Radii

Corner design has a significant impact on how well an intersection serves the diversity of roadway users. Larger curb radii typically result in higher-speed turning movements by motorists, while smaller curb radii require sharper turns that reduce speeds, shorten crossing distances for pedestrians, and improve sight distances. Two of the most important corner design elements are the effective radius and the actual curb radius. Actual curb radius refers to the curvature along the curb line. Effective radius refers to the curvature that vehicles follow when turning, which may be affected by on-street parking, bicycle lanes, medians, and other roadway features.

The smallest practical actual curb radii shall be chosen to accommodate the design vehicle while balancing the needs of pedestrians. When designing the actual curb radii to accommodate the chosen design vehicle, assessments should be based on how the effective radius interacts with the design vehicle's turning radius. An actual curb radius of 5' to 10' should be used wherever possible, including where:

- There are higher pedestrian volumes
- There are low volumes of large vehicles
- Bicycle and parking lanes create a larger effective radius
- The desired maximum effective curb radius is 35' for large vehicles

There are several factors that may affect the curb radii and must be taken into consideration. These include:

- The street types
- The angle of the intersection
- Curb extensions
- The receiving lane width

Where there are high volumes of large vehicles making turns, inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area.

A variety of strategies can be used to accommodate large vehicles while preserving benefits for pedestrians:

- Adding parking and/or bicycle lanes increases the effective radius of the corner.
- Striping advance stop lines on the destination street of multi-lane roadways (at least two lanes in each direction) enables large vehicles to make the turn by encroaching into the opposing lane.

- Installing a textured, at-grade paving treatment discourages high-speed turns while permitting turns by larger vehicles.
- Varying the actual curb radius over the length of the turn, also known as a compound curve, creates a radius that is smaller as vehicles approach a crosswalk and larger as they make the turn.
- Restricting access and operational changes prohibit certain turning movements.

Curb Ramps

A curb ramp is a ramp that provides a smooth transition from the sidewalk to the street. Appropriately designed curb ramps are critical for providing access across intersections for people with mobility and visibility disabilities. One of the key considerations of intersection geometry is the location of curb ramps and crossings relative to desired lines and vehicle paths.

Curb ramp along Sunset Drive and SW 57th Avenue

Title II of the ADA requires that all pedestrian crossings be accessible to people with disabilities by providing curb ramps. Curb ramps must comply with standards established by the South Miami Public Works Department. Curb ramps, not including flares, must be a minimum of 4' wide and contained within the marked crosswalk. Curb ramps shall have a slope of no more than 8.33 percent, a minimum 2' detectable warning strip, and level landing pads at the top and bottom of the ramp. Detectable warning strips include a series of truncated domes and are colored to contrast with the surrounding pavement. Intersection geometry should be influenced by the following curb ramp design principles:

- Wherever feasible, curb ramps should be located to reflect pedestrians' desired path of travel through an intersection, while also considering sight lines of approaching motor vehicles.
- If possible, two separate curb ramps should be provided at corners instead of a single ramp that opens diagonally at the intersection.
- Curb ramps should be designed to avoid an accumulation of water or debris to the maximum extent feasible.
- Drainage inlets should be considered with the design of curb ramps.

There are a variety of standard curb ramp designs, including perpendicular ramps and parallel ramps. The appropriate design for a particular location is determined on a site-by-site basis. Key factors to consider include pedestrian desire lines, sidewalk widths, buffer widths, curb heights, street slopes, and drainage patterns. Raised crossings extend the sidewalk environment across a roadway and do not require people to navigate curb ramps. Consider installing raised crossings at locations with high pedestrian volumes, and where low speeds are desired. Detectable warning strips are also required at crossings where there is no grade separation between the sidewalk and the roadway, such as at raised crossings and intersections

Curb Extensions

Curb extensions, also known as neckdowns or bulbouts, reduce the effective width of the street by extending the curb line across a parking lane to the beginning of the adjacent travel lane. Curb extensions have a variety of potential benefits:

- Additional space for pedestrians to queue before crossing.
- Improved safety by slowing motor vehicle traffic and emphasizing pedestrian crossing locations.
- Less exposure for pedestrians by reducing crossing distances.
- Space for ADA compliant curb ramps where sidewalks are narrow.
- Enhanced visibility between pedestrians and other roadway users.
- Restricting cars from parking too close to the crosswalk area.
- Space for utilities, signs, and amenities, such as bus shelters or waiting areas, bicycle parking, public seating, street vendors, newspaper stands, trash and recycling receptacles, and stormwater management elements or street parks.
- Curb extensions should be considered only where on-street parking is present, including at corners and midblock.
- A typical curb extension extends 6' from the curb (the approximate width of a parked car).
- The minimum length of a curb extension shall be the width of the crosswalk, allowing the curvature of the curb extension to start after the crosswalk. Note that the angle of curvature should deter parking, supplemented by NO STOPPING signs. The length of a curb extension can vary depending on the intended use (i.e., stormwater management bus bulb, restrict parking).
- Curb extensions should not reduce a travel lane or a bicycle lane to an unsafe width.
- Curb extensions at intersections may extend into either one or two legs of the intersection, depending on the configuration of parking. Street furniture, trees, plantings, and other amenities must not interfere with pedestrian flow, emergency access, or visibility between pedestrians and other roadway users.
- Curb extensions are particularly valuable in locations with high volumes of pedestrian traffic, near schools, where there are demonstrated pedestrian safety issues.
- The turning needs of larger vehicles should be considered in curb extension design. When curb extensions conflict with turning movements, they should be reduced in size rather than eliminated.
- Emergency access is often improved through the use of curb extensions, if intersections are kept clear of parked cars.
- Curb extension installation may require the relocation of existing storm drainage inlets.
- Curb extensions may also impact underground utilities, curbside parking, delivery access, garbage collection, and street sweepers. These impacts should be evaluated when considering whether to install a curb extension.
- Curb extensions are not desirable on arterials that have peak hour parking restrictions to move traffic more efficiently.

Crossing Islands

Crossing islands are raised, protected areas within a crosswalk that divide a roadway into segments so pedestrians only have to cross one direction of traffic at a time. Crossing islands reduce pedestrian exposure and are particularly valuable when used along multi-lane roadways. Crossing islands can be used at signalized intersections, but signal timing should always be designed to allow pedestrians to cross the entire roadway in one stage.

Crossing islands design should:

- Include at-grade pedestrian cut-throughs as wide as the connecting crosswalks, and detectable warning strips, and be gently sloped to prevent ponding and ensure proper drainage.

- Direct pedestrians at an angle to face on-coming traffic.
- Be at least 6' wide, but preferably 8' wide.
- Accommodate turning vehicles, if applicable.
- Extend beyond the crosswalk at intersections.
- Incorporate diverging longitudinal lines on approaches to crossing islands, per MUTCD standards.
- Crossing islands should be considered where crossing distances are greater than 50'.
- Where possible, stormwater management techniques should be utilized on crossing islands with adequate space, but not in the pedestrian clear path to and from crosswalks.
- Plantings should not obstruct sight lines.

Diverters

Diverters are curb extensions or traffic islands at intersections used specifically to restrict motor vehicle access and deter heavy volumes of through vehicle traffic on residential street types. All diverters should maintain pedestrian and bicycle access. There are many types of diverters:

- Full-closures - restricts travel in both directions
- Half-closures - restricts travel in one direction on an otherwise two-way street
- Diagonal diverters - placed diagonally across an intersection, preventing through traffic by forcing turns in one direction
- Forced turns - forces travel in a specific direction
- Diverters should be installed on streets where eliminating cut-through traffic is desired.
- Diverters should only be considered as part of an overall traffic calming strategy. Include street direction changes for an area when less restrictive measures, such as signs, are not effective. Diverters should be designed to impact motor vehicle movement, but should facilitate bicycle and pedestrian access.
- The design of diverters must consider impacts to emergency vehicle response times. Designs that allow emergency vehicle access are preferred and should be coordinated with a local emergency response program.
- Diverter designs should be carefully thought out to ensure proper drainage and maximize the potential for on-site stormwater retention and infiltration.
- Vegetation used in diverters should be low growing to maintain sight lines and also be drought-resistant.
- Diverters directly affect people living in the neighborhood and so require strong local support. A highly interactive public input process is essential.
- Different elements can be used as a diverter, including concrete medians, stormwater planters, public art sculptures, etc. Diverters provide excellent opportunities to introduce green elements at intersections, and can be used to absorb stormwater and reduce the heat island effect.
- Temporary diverters can be installed to test how permanent diverters might affect traffic flow.
- Diverters are an important component of bicycle boulevards, which allow through bicycle traffic but discourage through motor vehicle traffic. A diverter's impact on speeding is generally limited to the intersection. Additional countermeasures are usually necessary to address speeding at mid-block locations.

KEY PEDESTRIAN TREATMENTS

Pedestrians are the most vulnerable users of the transportation system. As a pedestrian, motor vehicle speeds greatly affect the severity of crashes and impact fatality rates. Streets with high pedestrian activity should maintain slow motor vehicle speeds, which can be achieved through roadway design and traffic calming strategies. In addition, areas close to parks, schools, and similar pedestrian destinations require special pedestrian consideration. Pedestrian-oriented designs should also aim to minimize conflicts with other modes and exposure to motor vehicle traffic. Intersections must be designed for pedestrians of all ages and abilities. ADA compliant curb ramps, crosswalks, and accessible pedestrian signals should be provided to the maximum extent feasible following the minimum guidelines set by the U.S. Access Board PROWAG.

Crosswalk Design

Well-designed crosswalks are crucial to creating pedestrian-friendly walking environments. Crosswalks may be marked or unmarked. While most intersections have marked crosswalks at each approach, other locations can be marked specifically to emphasize unique pedestrian desire lines and to ensure safe access to local institutions, parks, and housing for the elderly. Safety for all pedestrians, especially for those with disabilities, is the single most important criteria informing crosswalk design. Crosswalks serve a dual function of guiding pedestrians to locations where they should cross the street and alerting drivers of pedestrian movements.

Applications

- All crosswalk designs must conform to the latest edition of the MUTCD.
- Crosswalks should be at least 10' wide or the width of the approaching sidewalk, if it is greater. In areas of heavy pedestrian volumes, crosswalks can be up to 25' wide.
- ADA-compliant curb ramps should direct pedestrians into the crosswalk and the bottom of the ramp should lie within the area of the crosswalk. Flares do not need to fall within the crosswalk.
- The MUTCD provides guidance on crosswalk markings for an intersection with an exclusive pedestrian phase that permits diagonal crossings.

The location of crosswalk markings should be designed at right angles where practical and must be balanced with pedestrian desire lines, accessibility requirements, and the constraints of the site. Particularly at complex intersections, crosswalks should be placed at locations that reflect pedestrian desire lines while also considering the safest location to cross—that is, where there is the least amount of exposure to conflicts with other modes. Crosswalk placement should also maximize the visibility of pedestrians to turning vehicle movements. Crosswalk markings should consist of non-skid, thermoplastic, retro-reflective material. Durability and ease of maintenance must be a consideration in material selection. Signalized intersections generally should have crosswalk markings on all approaches.

Recommendations

The following new crosswalk projects at signalized intersections were recommended as part of the SMITP. These signalized intersections are missing crosswalks on at least one approach.

- U.S. 1 @ SW 70th Street
  - Add crosswalk across the north leg of the intersection.
- U.S. 1 @ SW 73rd Street
  - Add crosswalk to at least one of the north or south legs to cross U.S. 1. No crosswalk is currently provided.

The following crosswalks are recommended at locations that are currently unsignalized. These crosswalks may require design techniques that are described in the section below regarding crosswalk markings at uncontrolled locations. An engineering study would determine the appropriate technique for each location ranging from signage to full signalization.

- U.S. 1 between South Miami Hospital exit driveway and SW 62nd Avenue
  - Serves pedestrian trip pattern between hospital and shopping center/restaurants on the east side of U.S. 1. Likely will require pedestrian hybrid beacon (HAWK) or rectangular rapid flashing beacons (RRFBs).
- SW 57th Avenue at SW 76th Street
- SW 57th Avenue at SW 73rd Street (see street section diagram)
- SW 57th Avenue at SW 60th Street
- SW 57th Avenue at SW 53rd Terrace
- SW 57th Avenue at SW 50th Street
- SW 40th Street east of SW 64th Avenue
- SW 40th Street east of SW 60th Avenue

Crosswalk Markings at Uncontrolled Locations

This section presents guidance as to when and where it is appropriate to provide marked crosswalks at uncontrolled locations, as well as when additional safely enhancements are required to increase visibility, awareness, and yielding to pedestrians. The NCHRP Report 562, Improving Pedestrian Safety at Unsignalized Intersections, found that "the safest and most effective pedestrian crossings use several traffic control devices or design elements to meet the information and control needs of both motorists and pedestrians." Additional safely improvements, which are discussed on the following pages, include:

Sample "flashing beacon" at a midblock crossing

- Raised crossings and intersections
- Advance yield markings and signs
- In-street YIELD TO PEDESTRIAN signs
- Rectangular rapid-flashing beacons (RRFBs)
- Pedestrian signal leads
- Signal phases for pedestrians
- Pedestrian hybrid beacon (HAWK) signals
- Accessible pedestrian signals

An engineering study should be performed to determine the feasibility of a marked crosswalk at uncontrolled locations. Components of such a study include the following:

Sample "specialty paving treatment" on a city street

- Traffic speeds and volumes
- Crossing distances
- Need or demand for crossing
- Distance from adjacent signalized intersections and other crosswalks, and the possibility to consolidate multiple crossing points
- Sight distance and geometry of the location
- Availability of street lighting
- Locations of drainage structures

Locations where crosswalk markings alone are insufficient to address pedestrian safety include any street where any of the following conditions exist:

- The roadway has four or more lanes of travel without a raised median or pedestrian crossing island and an ADT of 12,000 vehicles per day or greater
- The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater
- The speed limit exceeds 35 MPH

There are a number of measures that can be used at uncontrolled locations, in addition to marked crosswalks, to improve the safety of pedestrians crossing the street:

- Reduce the effective crossing distance for pedestrians by providing curb extensions, providing raised pedestrian crossing islands, and/or performing road diets or lane diets
- Install traffic calming measures to slow vehicle speeds
- Provide adequate nighttime lighting for pedestrians
- Using various pedestrian warning signs, advance stop lines, rapid-flashing beacons, and other traffic control devices to supplement marked crosswalks (see the following sections for more details)
- Install traffic signals with pedestrian signals where warranted

Special Paving Treatments

Special paving treatments can be used on roadway surfaces to reduce speeds, increase durability, manage stormwater, or to demarcate a special zone like a bike lane, bus stop, or speed table. A change of color or material can produce a traffic calming effect. Examples of special roadway materials include colored asphalt or concrete, textured asphalt or concrete, pervious pavement stamped patterns, and pavers. The location and extent of special paving materials depends on the design of the roadway and the expected vehicle types and volume. The choice of a contrasting paving material affects the safety and maintenance of the road. Different materials have different qualities with respect to road noise, porosity, heat absorption, surface friction, bicyclist comfort, and maintenance.

Applications

- Light colored asphalt and concrete should be utilized wherever possible to reduce heat.
- Colored pavement can be used to delineate special lanes for transit, bicycles, or parking on mixed use streets. Limits to durability make this treatment less appropriate for lanes on parkways, industrial, and commercial streets. On these street types, colored pavement may be more appropriate for conflict zones, such as merge areas and intersections, or for special districts, shared paths, or streets meant for slower speeds.
- Special paving treatments may be used on crosswalks, in special districts such as Downtown South Miami to delineate the distinct streets designed for slower speeds, and streets intended to be shared with pedestrians.
- Consideration should be given to long-term maintenance of porous pavement materials.
- Care must be taken to ensure textured pavements are structurally sound and able to support the type and volume of vehicles that are likely to use the street.
- Particular care should be taken with placing different materials adjacent to each other (for example, concrete pavers adjacent to an asphalt roadway). Over time, the edges between the two pavement materials can become uneven.
- Noise can be a concern with textured pavements.

Recommendations

The following specialty paving treatment projects were recommended as part of the SMITP to provide traffic calming and neighborhood greenway crossing treatments in the South Miami area.

- SW 58th Avenue between U.S. 1 and SW 71st Street
- SW 58th Avenue between SW 80th Street and SW 72nd Street
- SW 62nd Avenue between SW 64th Street and SW 56th Street
- SW 72nd Street between U.S. 1 and SW 57th Avenue
- SW 64th Street between SW 62nd Avenue and SW 57th Avenue
- SW 56th Street between SW 62nd Avenue and SW 57th Avenue
- SW 57th Avenue between SW 74th Terrace and SW 72nd Street

Advance Yield Markings and Signs

Advance yield markings are yield markings that are striped further back from the crosswalk and used in conjunction with YIELD HERE TO PEDESTRIAN signs. Advance yield markings make it easier for pedestrians and motorists to see one another. On multi-lane roadways, they help reduce multi-threat collisions. Multiple-threat collisions occur when blocking the view of the motorist in the far lane.

Advance yield marking and signs can be used on two-lane, three-lane and four-lane roadways. They are less effective on four-lane roadways unless vehicle operating speeds are 25 MPH or less. On four-lane roads with higher speeds, the flashing beacon may be a better solution. Yield markings on unsignalized crossings should be accompanied by YIELD HERE TO PEDESTRIAN signs. Advance yield markings and signs should be placed 20' to 50' in advance of crosswalks on unsignalized multi-lane approaches. Parking should be prohibited in the area between the yield line and the crosswalk. Pavement markings can be used to reinforce NO PARKING signage. Yield lines should not be used at locations where drivers are required to stop in compliance with a STOP sign, a traffic control signal, or other traffic control device.

When determining where to place advance yield marking and signs with the 20' to 50' range, consideration should be given to the number of lanes pedestrians must cross, motor vehicle speeds, sight lines, on-street parking and turning movements. Advance yield markings may be staggered so that yield markings in one lane are closer to the crosswalk than the yield markings in an adjacent lane. Staggered yield lines can improve a driver's view of pedestrians, provide better sight distance for turning vehicles, and increase the turning radius for left-turning vehicles.

In-street STOP FOR PEDESTRIAN Signs

A variety of signs may be used to indicate locations where drivers must yield to or stop for pedestrians. In-street pedestrian crossing signs (MUTCD sign R1-6a) have been found to be particularly effective at increasing motorist yielding compliance. In-street pedestrian crossing signs are placed in the roadway to alert drivers to be aware of the crossing and to effectively yield to pedestrians. In-street signs can be permanently installed in the roadway or mounted on a portable base. In-street STOP FOR PEDESTRIAN signs are a cost-effective treatment to increase motorists' compliance to pedestrian laws.

In-street STOP FOR PEDESTRIAN signs must only be used at unsignalized intersections. They are prohibited from use at signalized intersections. In-street STOP FOR PEDESTRIAN signs should be placed in the roadway prior to the crosswalk location on the center line, on a lane line, or on a median island. They should not obstruct the crosswalk and should be designed to bend over and bounce back when struck by a vehicle. In-street STOP FOR PEDESTRIAN signs work best on low speed, two-lane streets. They are not recommended on roads with high motor vehicle speeds or volumes, where drivers are less likely to see them.

In-roadway STOP FOR PEDESTRIAN signs require regular monitoring and should be replaced when damaged. Damaged signs send the message to pedestrians that a crossing is not safe.

KEY PEDESTRIAN SIGNALS

At some unsignalized crossings, particularly those with four or more lanes, it can be very challenging to get drivers to yield to pedestrians. Vehicle speeds and poor pedestrian visibility combine to create conditions in which very few drivers stop. One type of device proven to be successful in improving yielding compliance at these locations is the rectangular rapid flashing beacon (RRFB). The rectangular rapid flashing beacon's effectiveness has been confirmed by multiple studies, including an FHWA study called the Effects of Yellow Rectangular Rapid-Flashing Beacons on Yielding at Multilane Uncontrolled Crosswalks.

Rectangular Rapid Flashing Beacons

Rectangular rapid flashing beacons are placed curb side below the pedestrian crossing sign and above the arrow indication pointing at the crossing. They should not be used without the presence of a pedestrian crossing sign. The LED flash is an irregular flash pattern. The beacons are activated by a pedestrian call button. Another LED panel should be placed facing the pedestrian to indicate that the beacon has

been activated. The push-button and other components of the crosswalk must meet all other MUTCD accessibility requirements.

- Design of rapid flashing beacons should be in accordance with FHWA's Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons issued July 16, 2008.
- Rectangular rapid flashing beacons can be used when a signal is not warranted at an unsignalized crossing. They are not appropriate at intersections with signals or STOP signs.
- Rectangular rapid flashing beacons are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median, a beacon should be installed in the median rather than the far side of the roadway.
- Rectangular rapid flashing beacons are considerably less expensive to install than mast-arm mounted signals, but they are more expensive than signs alone. They can also be installed with solar-power panels to eliminate the need for a power source.
- Rapid flashing beacons should be used in conjunction with advance yield pavement markings and signs.

Many examples of RRFB installations can be found in Miami-Dade County including at the intersection of Bayshore Drive and Darwin Street in the Coconut Grove district of Miami.

Pedestrian Hybrid Beacons

A pedestrian hybrid beacon is a special type of hybrid beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants for full pedestrian signalization.

The beacon head is distinct from conventional signal heads, which helps to provide notification to motorists of a special type of signal. The beacon head consists of two red lenses above a single yellow lens. The beacon is not lit until a pedestrian desires to cross the street. At this point, the pedestrian will push a button that activates the beacon. After displaying brief flashing and steady yellow intervals, the device displays a steady red indication to drivers and a "WALK" indication to pedestrians, allowing them to cross a major roadway while traffic is stopped. After the pedestrian phase ends, the "WALK" indication changes to a flashing orange hand to notify pedestrians that their clearance time is ending. The hybrid beacon displays alternating flashing red lights to drivers while pedestrians finish their crossings before once again going dark at the conclusion of the cycle.

Sample "pedestrian hybrid beacon" on a city street

Applications

The pedestrian hybrid beacon is a good intermediate option between the operational requirements and effects of a rectangular rapid flashing beacon and a full pedestrian signal because it provides a positive

stop control in areas without the high pedestrian traffic volumes that typically warrant the installation of a signal. In addition, the alternating red signal heads allows vehicles to proceed once the pedestrian has cleared their side of the travel lane, thus improving vehicle traffic flow.

Installation of the pedestrian hybrid beacon has been shown in FHWA studies to provide the following safety benefits:

- Up to a 69 percent reduction in pedestrian crashes; and
- Up to a 29 percent reduction in total roadway crashes

Recommendations

The pedestrian hybrid beacon should be considered for future mid-block crosswalks across busy arterials such as U.S. 1 and SW 40th Street.

Pedestrian Signal Heads

Well-designed signalized intersections help reduce delay for all modes, minimize conflicts between modes, and help reduce risk-taking behavior. Pedestrian signal heads display each part of the pedestrian phase as listed below:

- The WALK indication, represented by a walking person symbol, signifies the WALK interval.
- The Flashing DON'T WALK indication, represented by a flashing upraised hand, signifies the pedestrian change interval. Typically, the flashing DON'T WALK indication is accompanied by a countdown display depicting how much time is left to cross the street. Countdown displays are required on new installations to encourage pedestrians to finish crossing before the DON'T WALK indication and better serves pedestrians with faster walking speeds.
- The DON'T WALK indication, represented by a steady upraised hand, signifies that pedestrians are not permitted to cross. The DON'T WALK indication should be displayed for a three-second buffer interval prior to the release of any conflicting motor vehicle movements.
- Accessible pedestrian signals are discussed later in this chapter and on the next page.

Pedestrian signal heads should be provided at all signalized intersections for all marked crosswalks. Additionally, it is highly recommended to install crosswalks on all legs of a signalized intersection unless determined otherwise by an engineering study. The timing for each phase must account for the walking speeds of people of all ages and abilities, especially children, the elderly, and disabled.

One of the primary challenges for designers is to balance the goal of minimizing conflicts between turning vehicles with the goal of minimizing pedestrian and motorist delay. Requiring pedestrians to wait for extended periods can encourage crossing against the signal. The 2010 Highway Capacity Manual states that pedestrians have an increased likelihood of risk-taking behavior (i.e., jaywalking) after waiting longer than 30 seconds at signalized intersections. Strategies to achieve this balance include minimizing signal cycle lengths, restricting right-turn-on-red, introducing leading pedestrian intervals, and reducing turning speeds to increase yielding times. Opportunities to provide a WALK indication should be maximized, whenever possible. Vehicular movements should be analyzed at every intersection in order to utilize non-conflicting movements to implement WALK indications. For example, at a four-leg intersection with the major road intersecting a one-way street, when the major road has the green indication, pedestrians can always cross the approach where vehicles cannot turn. Pedestrian signal head intersection geometry and traffic controls should facilitate turning vehicles, yielding to pedestrians unless providing an exclusive

turning internal or protected/exclusive pedestrian phase. At unsignalized intersections, turning vehicles yield to pedestrians. The expectation should be carried over to signalized intersections to the greatest extent possible.

Accessible Pedestrian Signals

Accessible pedestrian signals (APS) and accessible detectors are devices that communicate the WALK and DON'T WALK intervals with nonvisual indications at signalized intersections to people with visual and/or hearing disabilities. Accessible pedestrian signals and detectors may include features such as audible tones, speech messages, detectable arrow indications, and/or vibrating surfaces. The major functions of accessible pedestrian signals are to provide information for:

- Location of push buttons, if used
- Beginning of WALK indication
- Direction of crossing
- Location of destination sidewalk
- Intersection street name in Braille or raised print
- Intersection signalization with speech messages
- Intersection geometry through detectable maps or diagrams or through speech messages

Push-button locator tones are used for locating the pedestrian push-button needed to actuate the WALK indication. Vibrotactile devices vibrate to communicate when the WALK indication is in effect. Detectable arrows indicate the direction of travel on the crosswalk.

- All pedestrian signal designs must conform to the latest edition of the MUTCD.
- Accessible pedestrian signals and detectors must be used in combination with pedestrian signal timing.
- The proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way require accessible pedestrian signals and push buttons when pedestrian signals are newly installed, when the signal controller and software are altered, or when the signal head is replaced. The MUTCD currently states that accessible pedestrian signals shall be provided based on engineering judgment.
- Information provided by an accessible pedestrian signal must clearly indicate which pedestrian crossing is served by each device.
- At corners where two push buttons are present, to the maximum extent feasible, they should be separated by at least 10 feet.
- Accessible pedestrian signal detectors may be push buttons or passive detection devices. At locations with pre-timed traffic control signals or non-actuated approaches, pedestrian push-buttons may be used to activate the accessible pedestrian signals.
- APS are typically integrated into the pedestrian push-button, and the audible tones and/or messages come from the push-button housing. APS also have a push-button locator tone and detectable arrow, and can include audible beaconing and other special features.
- Detectable arrows should be aligned toward the destination across the street; they should not point toward the beginning of the crosswalk or the curb ramp location. Misalignment of the arrow may direct pedestrians with disabilities into the center of the intersection.
- Audible WALK indications should coincide with the pedestrian WALK. If the pedestrian signal rests

in the WALK phase, the audible indication should be provided in the first seven seconds of the WALK phase.
- Detailed information on accessible pedestrian signals is also provided through the United States Access Board.

Signal Phases for Pedestrians

There are three ways to time a pedestrian phase:

- A concurrent pedestrian phase occurs when pedestrians have the WALK indication while parallel and conflicting (turning) vehicular traffic is permitted.
- A protected pedestrian phase occurs when pedestrians have the WALK indication while conflicting movements are prohibited by a signal or NO TURN ON RED sign.
- An exclusive pedestrian phase occurs when pedestrians have the WALK indication while all other movements are prohibited by a signal or NO TURN ON RED sign.

Concurrent pedestrian phases are the most common application at signalized intersections where pedestrian accommodations exist. Protected pedestrian phases can be used when there are high volumes of vehicle turning movements conflicting with pedestrian traffic. This phasing will provide a pedestrian WALK indication at the same time as the through movement in the same direction, while prohibiting the conflicting turning movements that could cross an active crosswalk. Exclusive pedestrian phases can be used when there is a very high volume of pedestrians. This phase allows all pedestrian movements at once and may increase motorist delay. It may not be ideal at intersections with high volumes of motor vehicle traffic. Exclusive pedestrian phases and protected pedestrian phases should generally be considered at intersections where:

- Sight distance is restricted
- Intersection geometry is complex
- The intersection is near elderly housing, schools, recreational areas, medical facilities, or other facilities within a safety zone
- The intersection is near special event locations with high pedestrian volumes
- Exclusive pedestrian phases increase pedestrian safety, but also increase delay for vehicular intersection users.
- Leading pedestrian intervals may be considered for concurrent phasing where appropriate and are discussed in Signalization Strategies to Reduce Conflicts.
- NO TURN ON RED signs should be considered at intersections with exclusive pedestrian phases.
- TURNING VEHICLES YIELD TO PEDESTRIANS and WATCH FOR TURNING VEHICLES signs may be used to provide additional awareness at intersections with concurrent pedestrian phases where conflicting vehicle/pedestrian movements are present.

Signalization Strategies to Reduce Conflicts

There are several signalization strategies to reduce conflicts between pedestrians and other modes of transportation.

These typically involve separating movements, including the following:

- Exclusive and protected pedestrian signal phases
- Leading pedestrian intervals

- Lagging vehicle turn arrow
- Restricting turns on red

Exclusive and protected signal phasing separates pedestrian traffic and reduces conflicts between pedestrians and motorists; however, there are significant impacts to signal cycle lengths that need to be considered. Another strategy is called the Leading Pedestrian Interval (LPI), which initiates the pedestrian WALK indication three to seven seconds before motor vehicles traveling in the same direction are given the green indication. This technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, increasing visibility for all modes. Left-turn arrow indications can be provided before the opposite direction through movements (leading left-turn) or after the opposite direction through movements (lagging left-turn). NO TURN ON RED signs can also be used to restrict vehicles from turning right or from turning left on intersecting one-way streets during the red indication. Restricting this movement eliminates conflicts with pedestrians crossing in front of vehicles making turns.

The LPI should be used at intersections with high volumes of pedestrians and conflicting turning vehicles, and at locations with a large population of elderly or school children who tend to walk slower. The LPI should be at least three seconds to allow pedestrians to cross at least one lane of traffic to establish their position ahead of turning traffic. The FHWA has determined that the LPI currently provides a crash reduction factor of 5 percent. Newly-installed LP should provide accessible pedestrian signals to notify visually-impaired pedestrians of the LPI. Additionally, without an accessible pedestrian signal, visually-impaired pedestrians may begin to cross with the vehicular movement when motorists are not expecting them. Accessible pedestrian signals are discussed further on pages 184. NO TURN ON RED signs should be considered when one or more of the following conditions apply:

- An exclusive pedestrian phase is provided
- LPI is provided
- Poor sight distances reduce visibility
- Geometry of the intersection may result in unexpected conflicts
- More than three accidents are reported in a 12-month period between pedestrians and vehicles where turns-on-red are permitted that could be prevented with this action
- NO TURN ON RED signs can be provided at all times or by a dynamic sign that changes when pedestrians are present, by time of day, by a call made by an emergency vehicle, and/or at rail or light transit crossings.
- If concurrent phasing is provided in conjunction with NO TURN ON RED signs, there may be an increase of conflicts with pedestrians by forcing motorists to turn only when the green indication and pedestrian WALK indication overlap. At locations with high volumes of pedestrians crossing during a concurrent pedestrian phase, permitting turns on red or implementing exclusive pedestrian phasing should be considered.
- In general, concurrent pedestrian phasing should appropriately match the motor vehicle signal phasing. At intersections with high pedestrian volumes where drivers have difficulty finding gaps to turn, the green time can be intentionally extended past the DON'T WALK indication in order to allow the turning movement.
- Intersections with LPIs should be accompanied by appropriate signage, such as TURNING VEHICLES YIELD TO PEDESTRIANS.
- In addition to LPIs and NO TURN ON RED signs, bicyclists traveling in the same direction as pedestrians may be provided a leading bicycle interval using a bicycle signal head.

KEY BICYCLE TREATMENTS

The majority of motor vehicle crashes involving bicycles occur at intersections. In Florida, on-street bicycles are operating vehicles and are required to follow the same rules of the road as motorists. Yet traditionally, intersection designs do not take into account the needs of bicyclists. Well-designed intersections that make bicycling more convenient and attractive, minimize delay, reduce conflicts with motor vehicles and pedestrians, and contributed to reduced crashes and injuries are of critical importance in order to increase bicycling. The following principles are applied to intersection design in order to accommodate bicyclists:

- Provide a direct, continuous facility to the intersection
- Provide a clear route for bicyclists through the intersection
- Reduce and manage conflicts with turning vehicles
- Provide signal design and timing to accommodate bicyclists, based on an engineering study
- Provide access to off-street destinations.

Bicycle Lanes at Intersections

Bicycle lanes provide a dedicated space for bicyclists to predictably ride along roadways and at intersections. When designing intersections for bicyclists, the approaches should be analyzed and designs should maintain continuity of bicycle facilities to the maximum extent possible. Streets with dedicated bicycle lanes may continue striping through unsignalized and complicated intersections to provide additional guidance and safety measures for bicyclists. This design principle is especially important at intersections where there are conflicting vehicular movements, unsignalized crossings, and/or crossings of more than four moving traffic lanes. Signalized intersections may not require striping through each intersection, and should be evaluated on a case-by-case basis.

- Standard details for bicycle lane markings at intersections are provided in the MUTCD and MSHTO Guide for the Development of Bicycle Facilities.
- Dedicated bicycle lanes should be provided on all major intersection approaches on street types that support on-street bicycle lanes and are recommended in the South Miami Bike Plan. For higher speed roadways, dedicated bicycle lanes may not be well-suited for the context and land-use of the street type, and grade separated cycle tracks or off-street facilities may be more appropriate. Also, shared lane markings may be appropriate on residential, lower volume roadways.
- At intersections with a dedicated right-turn lane, bicycle lanes should be provided to the left of the right-turn-only lane, unless bicycle signals and dedicated phasing is provided.
- Bicycle lane markings, including green colored pavement shared lane markings, dashed bicycle lane lines, and signage, may be provided through intersections, per engineering judgment.
- Selective removal of parking spaces may be needed to provide adequate visibility and to establish sufficient bicycle lane width at approaches to intersections.
- Shared lane markings may be used where space is not available for bicycle lanes at intersections.
- Although the preferred recommended width of a bicycle lane is 5 feet, 4-foot minimum bicycle lanes may be considered at constrained intersections, in order to provide a dedicated space for bicyclists, per engineering judgment.
- Bicycle lanes at the entrance and exit of a roundabout should allow direct access to a shared-use bicycle/pedestrian path around the perimeter of the roundabout through properly designed ramps. They should also enable bicyclists to mix with traffic and proceed through the roundabout as a vehicle.

Bicycles at Signalized Intersections

Bicycles have different operating characteristics than motor vehicles, and special considerations are necessary to design traffic signals that serve both motorists and bicyclists. In general, bicyclists have slower acceleration and velocity than motorists. To offset this disadvantage, traffic signal design should include considerations of minimum green intervals, clearance time, and extension time to ensure that bicyclists can safely traverse South Miami's intersections. Signal progression should balance the needs of all users with appropriate design speeds and traffic signal coordination settings. Appropriate signal timing can also minimize cyclist delay, discourage red-light running, and reduce potential crashes.

Where actuated signals (loop or video detectors) are present, the signal system should detect bicycles as well as motor vehicles. In order for bicyclists to prompt the green indication at these intersections, loop or video detectors should be adjusted to detect bicycles, or separate bicycle-detectors should be installed.

- Detection devices should be located within bicycle lanes or bicycle boxes, marked with a bicycle detector symbol, and supplemented by appropriate signage according to the MUTCD.
- When it is not feasible for the detection device to be located within the bicycle lane or bicycle box, detection devices should be located prior to the stop bar and span an appropriate distance to provide for left-, through-, and right-turning bicyclists.
- Bicycle signals can be used to separate conflicting movements, provide leading bicycle intervals, provide controls at shared-use paths, or to accommodate an exclusive left-turn phase.

Please reference the latest edition of the AASHTO Guide for the Development of Bicycle Facilities for more details on the signal timing needs of bicyclists at intersections. Special attention should be given to signal timing at locations with higher vehicular speeds and longer crossing distances. At these locations, bicyclists are more likely to have different signal timing needs than motorists. Bicycle signal heads can be used to provide dedicated signal indications to bicyclists and should be positioned to maximize visibility to bicycle traffic. They should be coordinated with pedestrian and non-conflicting vehicular movements to increase safety and minimize overall delay. Bicycle signal heads should be installed on a case-by-case basis determined by an engineering study.

Bicycle Boxes

A bicycle box is dedicated space located between the crosswalk and the motor vehicle stop line used to provide bicyclists a dedicated space to wait during a red light at signalized intersections. Placing bicyclists ahead of stopped vehicular traffic at a red light improves visibility and reduces conflicts among all users. Bicycle boxes also provide bicyclists a head start to get through an intersection, which aids in making difficult turning movements and improves safety and comfort due to the difference in acceleration rates between bicycles and motor vehicles. In all cases, the bicycle box places bicyclists in front of motor vehicles, allowing them to "claim the lane," if desired. Bicycle boxes also provide more space for multiple bicyclists to wait at a red light, as opposed to being constrained to a five-foot wide bicycle lane.

Sample "bike box" at an intersection

Applications

In locations with high volumes of turning movements by bicyclists, a bicycle box should be used to allow bicyclists to shift towards the desired side of the travel way. Depending on the context of the bicycle lane—left or right side of the road—bicyclists can shift sides of the street to align themselves with vehicles making the same movement through the intersection. In locations where motor vehicles can continue straight or turn right and cross a right side bicycle lane, the bicycle box allows bicyclists to move to the front of the traffic queue and make their movement first. This minimizes conflicts between the right turning motorist and the bicyclist. In order to successfully minimize this conflict, right-turn-on-red movements should be prohibited.

W11-15 (trail crossing warning) and W16-7P signs

- Bicycle boxes are currently an experimental treatment that requires FDOT and FHWA approval.
- Bicycle box design should be supplemented with appropriate signage according the latest version of the MUTCD.
- Where right-turn-only lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane.
- If right-turn-on-red is desired, consider ending the bicycle box at the edge of the bicycle lane to allow motor vehicles to make this turning movement.

Recommendations

The following bicycle box projects were recommended on existing bike lane corridors as part of the SMITP. If approval for the bicycle box installation is not received, the optional use of green color pavement in the intersection conflict areas can be used as an alternative treatment.

- SW 62nd Avenue at SW 70th Street
- SW 57th Avenue at SW 64th Street
- SW 57th Avenue at SW 56th Street
- SW 57th Avenue at SW 48th Street
- SW 57th Avenue at SW 40th Street

M-Path Crossing at Sunset Drive and U.S.1 in South Miami

M-Path Crossing Improvements at Sunset Drive

Operational challenges exist at the intersection of U.S. 1 and Sunset Drive. Several of these operational challenges impact the experience of M-Path users traversing the west leg of the intersection. Three primary concerns include the unprotected bend in the crosswalk near the center of the M-Path crossing; visibility challenges due to the narrowness and alignment of the curb ramps; and the protrusion of the center island into the crosswalk, which forces a pinch-point in crosswalk traffic very close to U.S. 1 traffic.

Recommendations

The following improvements were identified for the M-Path intersection across Sunset Drive to correct ADA deficiencies and to address traffic operational concerns. The improvements recommended below are consistent with other M-Path intersections already implemented by the M-Path Extension project south of SW 67th Avenue.

R10-15 (modified) sign

- Correct ADA cross-slope deficiencies in the west side crosswalk across Sunset Drive.
- Provide a median refuge (raised concrete island with accessible cut-through) in the median of Sunset Drive to address the unprotected change of direction in the west side crosswalk.
- Re-build the curb ramp on the southwest corner of the channelized right-turn lane from eastbound Sunset Drive to southbound U.S. 1 to address running slope deficiencies. Provide detectable warning surface per FDOT Standard Index 304.
- Widen curb cut ramps to shared-use path standards throughout the west side crosswalk per PPM Volume I, Chapter 8, Section 8.3.2. Provide detectable warning surface per FDOT Standard Index 304.
- Correct ADA cross-slope deficiencies in the path between the channelized eastbound right-turn lane and the eastbound through lane.
- Consider the possibility of sign relocation to address sign clutter causing obstructions within the M-Path between the channelized eastbound right-turn lane and the eastbound through lane.
- Replace the overhead text-only R10-15 sign on the southbound mast arm with the graphic R10-15 (modified) signage on the southbound U.S. 1 approach consistent with the M-Path Extension project.
- Replace the R1-2 YIELD sign on the eastbound channelized right-turn lane with an R1-1 STOP sign to be consistent with the existing STOP BAR pavement marking.
- Replace W11-2 (pedestrian warning) signs throughout the west side of the intersection with W11-15 (trail crossing warning) signs. Provide W16-7P supplemental plaques where not already provided.
- Provide STOP HERE ON RED (R10-6) sign for the eastbound Sunset Drive lanes.

Green Street Elements

Green Streets are defined as urban transportation rights-of-way that provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, and provide environmentally enhanced roads. Green streets improve water quality through the integration of stormwater treatment techniques using natural processes and landscaping. All of this works to reduce the heat island effect.

Cities across the country are looking for more sustainable solutions to handle stormwater. The most efficient and cost effective way to manage stormwater is to collect it where the water falls. Many cities are shifting their thinking on how to manage stormwater and are replacing conventional stormwater infrastructure with green infrastructure within the street right-of-way, as well as on development sites.

These types of stormwater filtering and holding systems allow water to infiltrate into the soil instead of rushing into storm sewers and streams, carrying a toxic mixture of pollutants and chemicals. This type of treatment potentially reduces infrastructure costs, as more water is treated and filtered at the source. By using bioretention areas, permeable surfaces, bioswales, and other green techniques, roadways can be built to help reduce runoff into the stormwater system.

This section summarizes some of the techniques that can be used when developing buffers, sidewalks, paths, parking areas, medians, and other street facilities.

BENEFITS OF GREEN STREETS ELEMENTS

Green street elements reduce the need for stormwater infrastructure. Greenscape practices provide trees, shrubs, grasses, and other landscape plantings that play an important role in making streets inviting, comfortable, and sustainable. Used appropriately, they can help define the character of a street or plaza, provide shade and cooling in strategic locations, reduce energy consumption in buildings, and absorb and clean stormwater. They also absorb greenhouse gases and help filter airborne pollutants.

In addition to providing environmental benefits, a healthy greenscape provides psychological and social benefits. Plants help reduce stress and restore a sense of calm and focus. Studies have shown that people are attracted to places that have well-maintained plantings. Healthy greenscapes are good for City life and business.

POROUS/PERMEABLE PAVEMENT

Permeable paving materials allow stormwater runoff to infiltrate through the material, unlike traditional paving materials that divert runoff to the storm sewer system. Water permeates through the material into the ground and recharge the water table or local waterway. Permeable materials filter pollutants, reduce flow rate, improve water quality, and reduce the volume of infrastructure necessary to direct and convey stormwater offsite. Permeable pavements are typically underlaid with an infiltration bed and subgrade soil. Permeable materials come in five basic varieties:

- Soft paving, such as grass, bark, mulch, crushed shells, and loose aggregate (gravel)
- Permeable concrete paving, created by mixing concrete with fewer fine particles, creating void spaces that allow air and water to navigate throughout the material or porous asphalt
- Open joined and open cell unit pavers filled with porous aggregate or turf
- Plastic grid systems covered with pavers, soil and grass, or gravel
- Bound resin with aggregates or bound recycled material, such as glass, rubber, and plastic

Sample "bio-swale" along a neighborhood street

Permeable paving can be utilized in a broad variety of settings. All designs must consider the drainage characteristics of the underlying soils, the depth of the water table, and the slope of adjacent land. Permeable pavements can be used in sidewalks, plazas, cafes, overflow parking areas, emergency access roads, and other low-traffic areas. Soft paving materials and loose aggregate are only appropriate for the

greenscape/furnishing zone or frontage zone, typically around trees, planters, and enclosed greenscape elements. Permeable concrete pavement can be used in the pedestrian zone, as long as the resulting surface is smooth, stable, slip resistant, and meets all other accessibility guidelines. Porous unit pavers that utilize gaps are only appropriate in the greenscape/furnishing zone or the frontage zone (except where there is active pedestrian use). In specific locations where infiltration is not desired, such as adjacent to building foundations, a geo-textile liner can prohibit infiltration and redirect discharge to an appropriate location while still providing the other benefits of permeable paving.

Permeable pavements provide increased traction when wet because water does not pool; nevertheless, permeable paving requires regular maintenance, including the following:

- Annual inspection of paver blocks for deterioration
- Periodic replacement of sand, gravel, and vegetation
- Annual vacuuming of pavements to unclog

Permeable Asphalt/Concrete

Permeable concrete is a concrete mixture using minimal cementitious materials to coat the aggregate, using little or no sand, leaving substantial void content through which water can drain. Porous asphalt is mixed at conventional asphalt plants, but fine aggregate is omitted from the mixture. The remaining large aggregate particles leave open voids that lend the material its porosity.

Permeable asphalt and concrete should be used on a level street above the high water table with low pedestrian traffic and no vehicular encroachment. There must be adequate subsurface conditions to detain stormwater.

This is not appropriate for use where there is water-sensitive subsurface infrastructure, or where there is the potential for soil contamination since porosity can convey harmful materials to the soil. Pervious concrete is not intended for use at greater than five percent slope. Routine vacuuming of the surface may be necessary to maintain porosity. Special features, such as the underlying stone bed, are more expensive than conventional pavements, but these costs are often offset by the elimination of many elements of a conventional storm drain system.

Permeable Brick Pavers

Permeable brick pavers enable stormwater to filter into the soil instead of draining into storms and rivers. They differ from conventional pavers in that they create more spacing between the pavers—a higher void area—which allows water to infiltrate through the pavement surface. The support system should consist of coarser aggregates found in conventional construction.

Commercial and residential applications are available and both can meet ADA requirements.

A system that uses permeable pavers can help developers obtain LEED credits.

Sample "permeable pavers"

BIO-SWALES

Bio-swale areas are shallow stormwater basins or landscaped areas that utilize engineered soils and vegetation to capture and treat runoff. Bio-swale areas function like stormwater planters, but generally have fewer structural elements. They may appear more like conventional landscaped areas, but are depressed rather than elevated from the surrounding area. They can be used in areas where a more natural, garden aesthetic is desired. Bio-swale areas feature high pollutant removal and good absorption of wind, noise, and sunlight.

Applications

Bio-swale areas are commonly used in residential areas and urban settings with planting room, such as bulbouts, medians, and landscape areas. They are often larger and more diverse in plant community than planters. A maximum contributing drainage area of less than two hours is recommended.

- Bio-swale areas have very small drainage areas
- They provide flexible siting and are good for highly impervious areas
- Bio-swale areas are good options for retrofits
- They require relatively low levels of maintenance
- They do, however, require extensive landscaping, if in public areas
- A maximum contributing drainage area of less than two hours is recommended

Landscape median along Sunset Drive in Downtown South Miami

Recommendations

The following bio-swale projects were recommended as part of the SMITP to provide improved treatment of runoff in the South Miami area:

- SW 72nd Street between SW 62nd Avenue to 69th Avenue
- SW 57th Avenue between SW 74th Terrace and SW 72nd Street
- SW 58th Avenue between SW 80th Street and SW 72nd Street
- SW 62nd Avenue between SW 64th Street and SW 56th Street
- SW 64th Street between SW 62nd Avenue and SW 57th Avenue
- SW 56th Street between SW 62nd Avenue and SW 57th Avenue

Infiltration Trenches

An infiltration trench is an area of soil that is covered with mulch, ground cover, grass, trees, or other plantings. Trenches are generally located in the furnishing zone, though they can also be located in the frontage zone. For stormwater benefits, the sidewalk should be pitched toward the open trench. Nonlinear open areas can also be used for planting trees in clusters. Trees planted in open trenches and areas with a sufficient amount of soil that is not compacted have the greatest chance of surviving and thriving in an urban environment.

Curbside open trenches are commonly used on neighborhood residential street types. Wide trenches provide sufficient rooting volume while maintaining appropriate sidewalk clearances. The trench should be filled to sidewalk level to avoid creating a tripping hazard.

Areas with heavily-used, high-turnover curbside parking are not ideal for open trenches, as the soils become compacted over time and will need to be replaced. Consideration should be given to planting bare-root trees, where permissible.

Enhanced Swales

Enhanced vegetated swales are linear bioretention areas that convey runoff that can be used to augment traditional pipe and gutter systems. They do this by slowing runoff velocity, filtering stormwater pollutants, reducing runoff temperatures, and-in low volume conditions-recharging groundwater.

Grasses are the most common plants in vegetated swales. Check dams, placed periodically along the length of the swale, slow runoff and promote infiltration. The bottom width of the swale should be 2 to 8 feet with side slopes 4:1 recommended.

Plant selection should reflect maintenance capacity, stormwater sources, and context. Low flow conditions may require a 100-year overflow path and engineered section. Combine stormwater treatment with runoff conveyance system. Swales are less expensive than curb and gutters; however, maintenance costs may be higher.

Landscaping in Medians

Landscaped medians are an effective way to improve the safety and accessibility of arterial streets. For pedestrians, a raised and landscaped median decreases the total crossing width of the street. Additionally, it gives the street a more natural, shaded appearance. Bio-swale areas can be located in landscaped medians.

Landscaped medians are most useful on high volume, high speed roads.

Landscaping in medians should not obstruct the visibility between pedestrians and approaching motorists. Landscaped medians should be at least six feet wide to allow enough room for a pedestrian and a wheelchair to meet within a pedestrian refuge while crossing the street. Desired turning movements need to be carefully provided so that motorists are not forced to travel on inappropriate routes, such as residential streets or an unsafe U-turn condition.

Underground Detention

In relatively dense urban areas where a large percentage of the landscape may already be developed, underground facilities may be the most practical way to achieve substantial flow volume and rate reductions. Although costs for constructing underground storage practices may be high, it may be the most economical way to detain stormwater in urban settings where land values are high. There are a number of types of underground storage available. In the simplest system, oversized pipes replace standard pipes in a storm drain, providing temporary storage of water. More storage can be achieved by using a series of interconnected pipes or a single, large storage vault.

The use of underground stormwater storage would be driven by project economics. Land cost, cost to remedy an inadequate receiving stormwater system, or some other unique condition or opportunity would warrant the typically substantial additional cost to construct such a system.

Underground storage is effective for reducing stormwater runoff, however, little reduction of sediments or pollutants occurs without supplemental means to filter stormwater. The size of the system will largely be defined by the amount of stormwater to detain the size of the site and the elevation of tie-in points. Large continuous areas are more suited to large vault-type systems, while more linear, angular sites are better suited for pipe-based system. Construction materials are influenced by the usable depth and size of the site. Sites requiring more shallow construction should use pipes, because corrugated steel and plastic must be surrounded by more fill.

Network Plan

The recommendations of this Plan are summarized in the Network Plan (refer to Figure 1), which shows the recommended future network of non-motorized transportation facilities. The Network Plan includes existing facilities, such as bike lanes and paved paths, as well as recommended projects such as proposed crosswalks, sidewalks, bike lanes, sharrows, shared use paths, neighborhood greenways, and traffic circles. The SMITP Network Plan was developed throughout the course of the SMITP process, which included several forms of public engagement, inter-agency coordination, technical analysis, use of complete streets design elements, and adherence to the vision, goals, and objectives of this Plan.

Project Listing

Figure 16 is a summary of the specific improvement projects recommended in the SMITP based on the strategies identified above to promote safe, healthy, and sustainable bicycle and pedestrian mobility within the City of South Miami.

Figure 16 - Summary of Improvements

Facility Type	Corridor	Location
Bike Lanes	SW 40th Street/Bird Road	Ludlam Trail Corridor to SW 57th Avenue/Red Road
	SW 48th Street	Ludlam Trail Corridor to SW 57th Avenue/Red Road
	SW 56th Street/Miller Drive	Ludlam Trail Corridor to SW 57th Avenue/Red Road
	SW 64th Street/Hardee Drive	Ludlam Trail Corridor to SW 57th Avenue/Red Road
	SW 72nd Street/Sunset Drive	Ludlam Trail Corridor to SW 64th Court
	SW 80th Street	Ludlam Trail Corridor to SW 57th Avenue/Red Road
	SW 67th Avenue/Ludlam Road	SW 40th Street to Snapper Creek Drive
	SW 62nd Avenue	SW 40th Street to SW 64th Street/Hardee Drive
	SW 57th Avenue/Red Road	SW 72nd Street/Sunset Drive to SW 88th Street
Sharrows	SW 72nd Street/Sunset Drive	SW 64th Court to SW 57th Avenue/Red Road
	SW 62nd Avenue	SW 70th Street to SW 76th Street
	SW 57th Avenue/Red Road	SW 64th Street/Hardee Drive to SW 72nd Street/Sunset Drive
Buffered Bike Lanes	SW 64th Street/Hardee Drive	SW 59th Place to SW 57th Avenue/Red Road
	SW 57th Avenue/Red Road	SW 72nd Street/Sunset Drive to SW 74th Terrace

Facility Type	Corridor	Location
Shared-Use Paths	SW 56th Street/Miller Drive	SW 67th Avenue/Ludlam Road to SW 57th Avenue/Red Road
	Palmer Park	Ludlam Trail Corridor to SW 67th Avenue/Ludlam Road
	Snapper Creek Trail – Segment B	U.S. 1/South Dixie Highway to SW 57th Avenue/Red Road
	SW 58th Avenue (theoretical)	SW 87th Street to Snapper Creek Trail – Segment B
	SW 64th Avenue (theoretical)	SW 84th Street to SW 85th Street
Sidewalks	SW 56th Street/Miller Drive (north side)	SW 65th Avenue
	SW 80th Street (south side)	U.S. 1/South Dixie Highway
	SW 80th Street (south side)	SW 63rd Court
	SW 80th Street (north side)	U.S. 1/South Dixie Highway
	SW 62nd Avenue	SW 56th Street/Miller Drive
	SW 62nd Avenue	SW 80th Street
Crosswalks	SW 57th Avenue/Red Road	At SW 50th Street
	SW 57th Avenue/Red Road	At SW 53rd Terrace
	SW 57th Avenue/Red Road	At SW 60th Street
	SW 57th Avenue/Red Road	At SW 73rd Street
	SW 57th Avenue/Red Road	At SW 76th Street
	U.S. 1/South Dixie Highway	At SW 70th Street/SW 58th Avenue
	U.S. 1/South Dixie Highway	At SW 73rd Street
Mid-Block Crosswalks	SW 40th Street	East of SW 64th Avenue
	SW 40th Street	East of SW 60th Avenue
	U.S. 1/South Dixie Highway	North of South Miami Hospital exit driveway
Green Bike Lane and/or Bike Box	SW 57th Avenue/Red Road	At SW 40th Street
	SW 57th Avenue/Red Road	At SW 48th Street
	SW 57th Avenue/Red Road	At SW 56th Street/Miller Drive
	SW 57th Avenue/Red Road	At SW 64th Street/Hardee Drive
	SW 62nd Avenue	At SW 70th Street
Shared-Use Path Crossing Improvements	M-Path	At SW 72nd Street/Sunset Drive
Neighborhood Greenways	See Network Map.	

Facility Type	Corridor	Location
Neighborhood Greenway Crossing Treatments	SW 44th Terrace	At SW 62nd Avenue
	SW 45th Street	At SW 62nd Avenue
	SW 58th Avenue	At SW 48th Street
	SW 48th Terrace	At SW 67th Avenue/Ludlam Road
	SW 50th Street	At SW 62nd Avenue
	SW 64th Place	At SW 56th Street/Miller Drive
	SW 64th Avenue	At SW 56th Street/Miller Drive
	SW 63rd Court	At SW 56th Street/Miller Drive
	SW 58th Avenue	At SW 56th Street/Miller Drive
	SW 58th Street	At SW 62nd Avenue
	SW 69th Avenue	At SW 64th Street/Hardee Drive
	SW 65th Avenue	At SW 64th Street/Hardee Drive
	SW 63rd Court	At SW 64th Street/Hardee Drive
	SW 59th Avenue	At SW 64th Street/Hardee Drive
Neighborhood Greenway Crossing Treatments	SW 58th Place	At SW 64th Street/Hardee Drive
	SW 58th Avenue	At SW 64th Street/Hardee Drive
	SW 68th Street	At SW 62nd Avenue
	SW 69th Court	At SW 72nd Street/Sunset Drive
	SW 69th Avenue	At SW 72nd Street/Sunset Drive
	SW 64th Court	At SW 72nd Street/Sunset Drive
	SW 75th Terrace	At SW 67th Avenue/Ludlam Road
	SW 78th Terrace	At SW 67th Avenue/Ludlam Road
	SW 69th Avenue	At SW 80th Street
	SW 59th Avenue	At SW 80th Street
	SW 58th Avenue	At SW 80th Street
Neighborhood Traffic Circles	SW 65th Avenue	At SW 44th Street
	SW 58th Avenue	At SW 50th Street
	SW 65th Avenue	At SW 60th Street
	SW 69th Avenue	At SW 75th Terrace
	SW 62nd Avenue	At Snapper Creek Drive
Parklets	SW 72nd Street/Sunset Drive	Replace two existing on-street parking spaces on both sides of the street

Street Type Diagrams and Exhibits

Street Type Diagrams and Exhibits

In order to graphically depict the recommendations of this Plan, maps, sections, elevations, character images, and before and after images were developed. These graphics include plan and cross section views of each street type showing relevant street features, such as sidewalks and bike lanes, on-street parking, bioswales, tree locations, specialty paving, and street lighting.

The street type diagrams consist of:

Streets

- SW 56th Street (Between SW 62nd Avenue and SW 57th Avenue) **Figure 17-18**
- SW 64th Street (Between SW 62nd Avenue and SW 57th Avenue) **Figure 19-20**
- SW 72nd Street (Between U.S. 1 and SW 57th Avenue) **Figure 21-22**

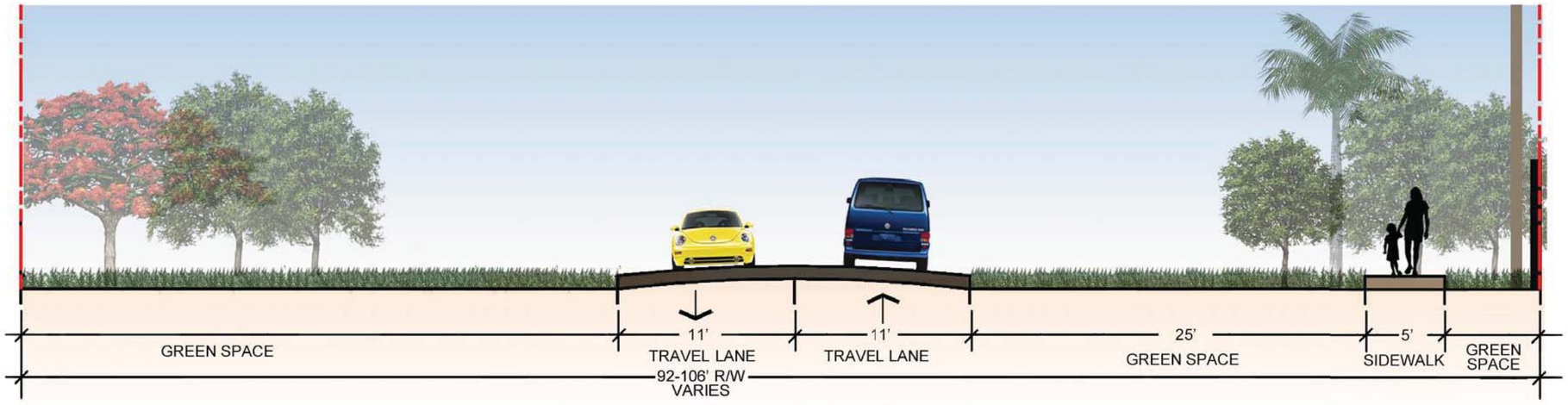
Avenues

- SW 57th Avenue (Between SW 74th Terrace and SW 72nd Street) **Figure 23-24**
- SW 58th Avenue (Between U.S. 1 and SW 71st Street) **Figure 25-26**
- SW 58th Avenue (Between SW 80th Street and SW 72nd Street) **Figure 27-28**
- SW 62nd Avenue (Between SW 64th Street and SW 56th Street) **Figure 29-30**

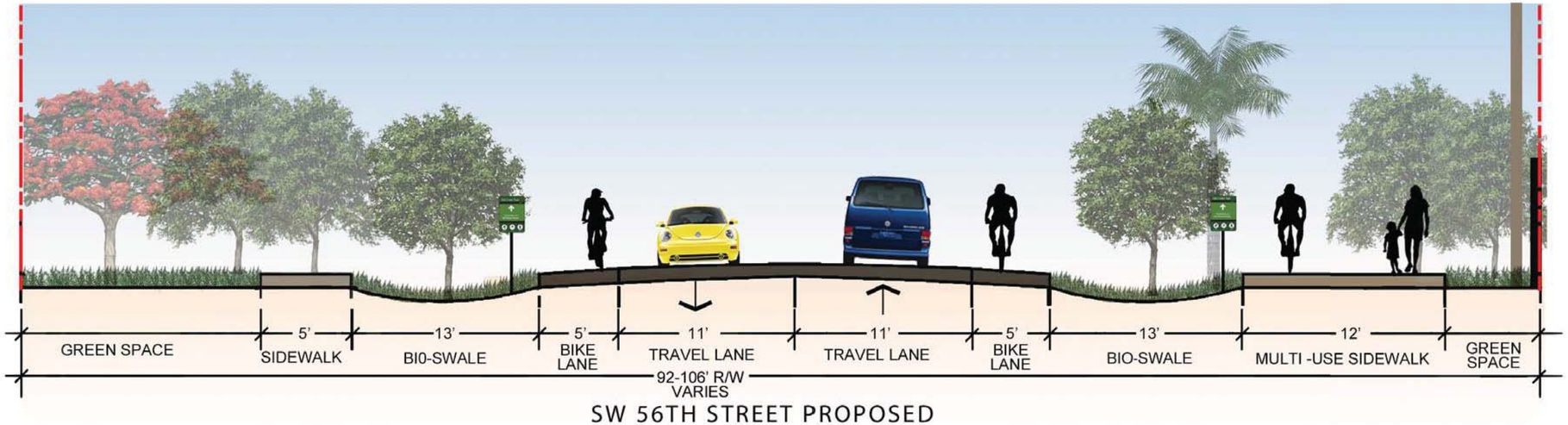
Figure 17:

SW 56th Street Improvements

- Converting 5' sidewalk to a 12' multi-use sidewalk
- 5' bike lanes along north and south side of SW 56th
- 13' bio-swales along north and south side of SW 56th
- Pedestrian wayfinding signage
- Specialty paving crosswalks



SW 56TH STREET EXISTING
(LOOKING EAST)

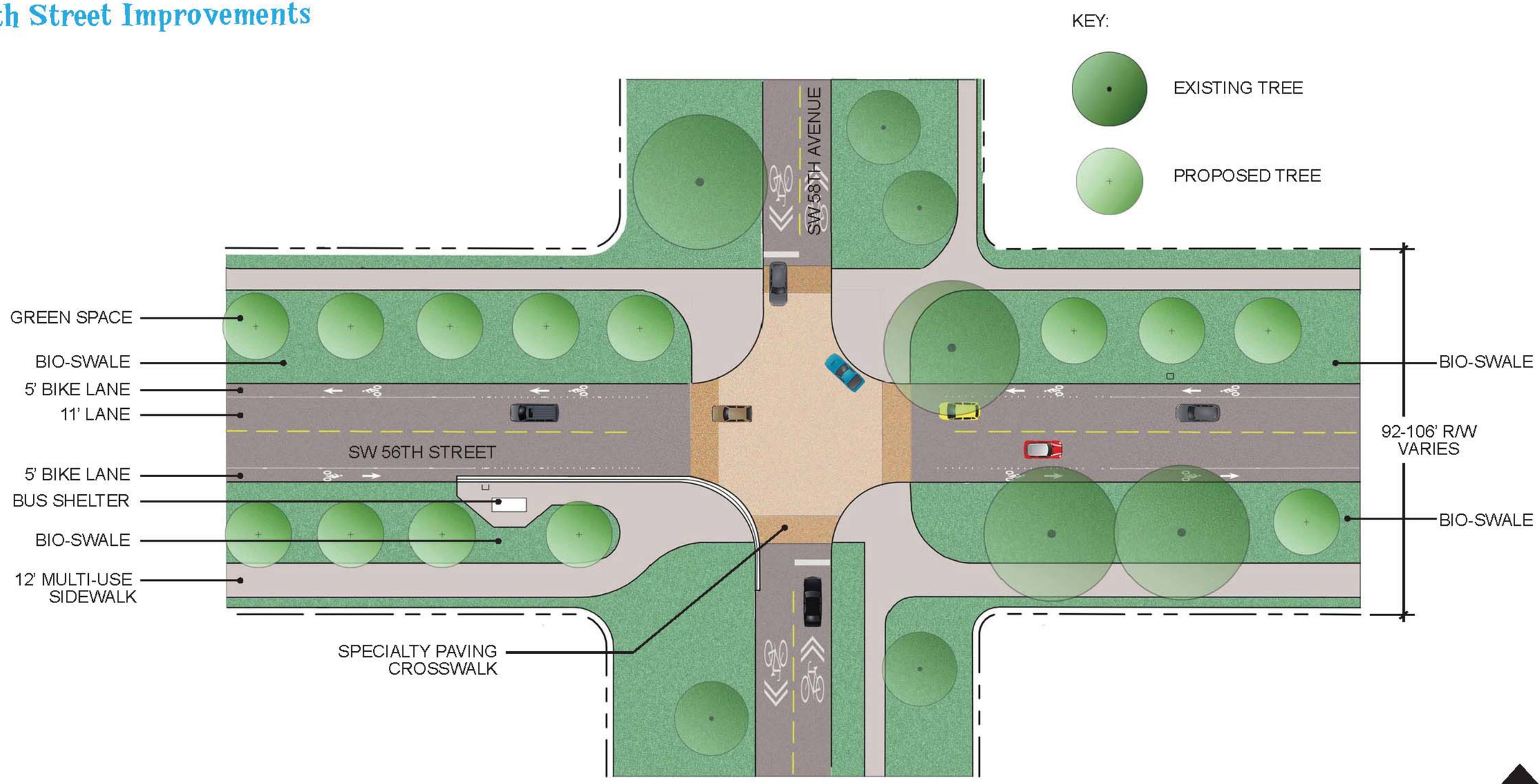


SW 56TH STREET PROPOSED
(LOOKING EAST)

SW 56th Street Section

(Between SW 62 Ave. & SW 57th Ave.)

Figure 18:
SW 56th Street Improvements

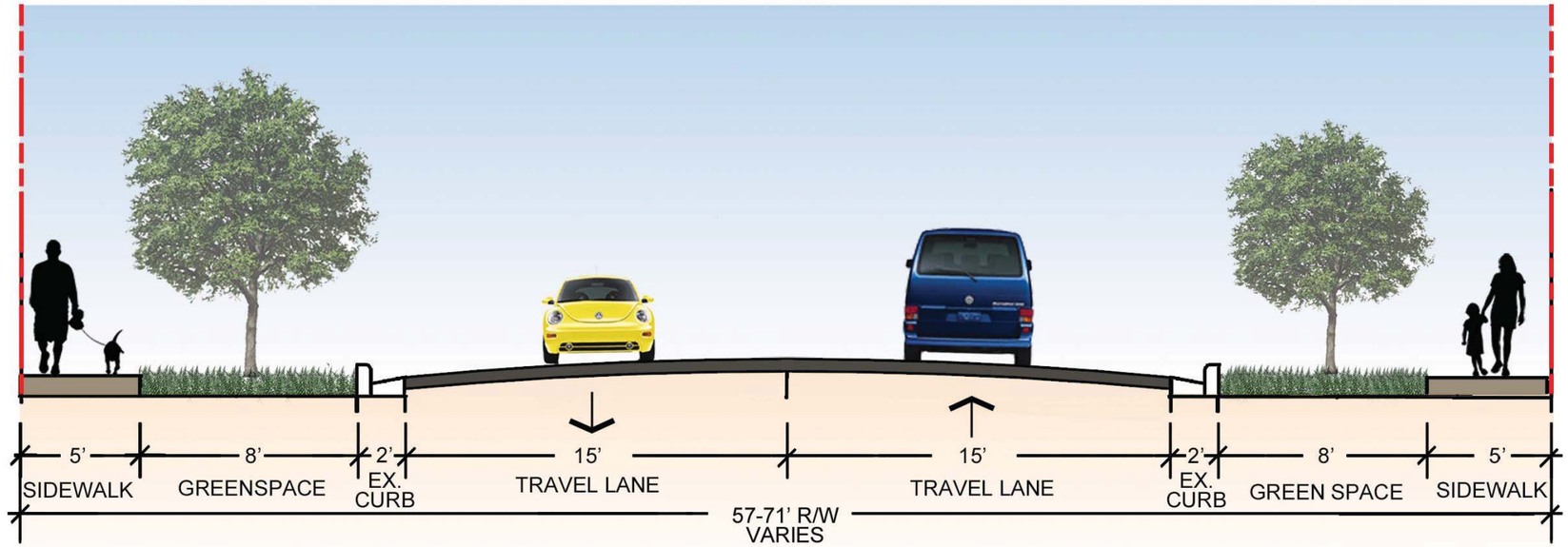


SW 56th Street Plan

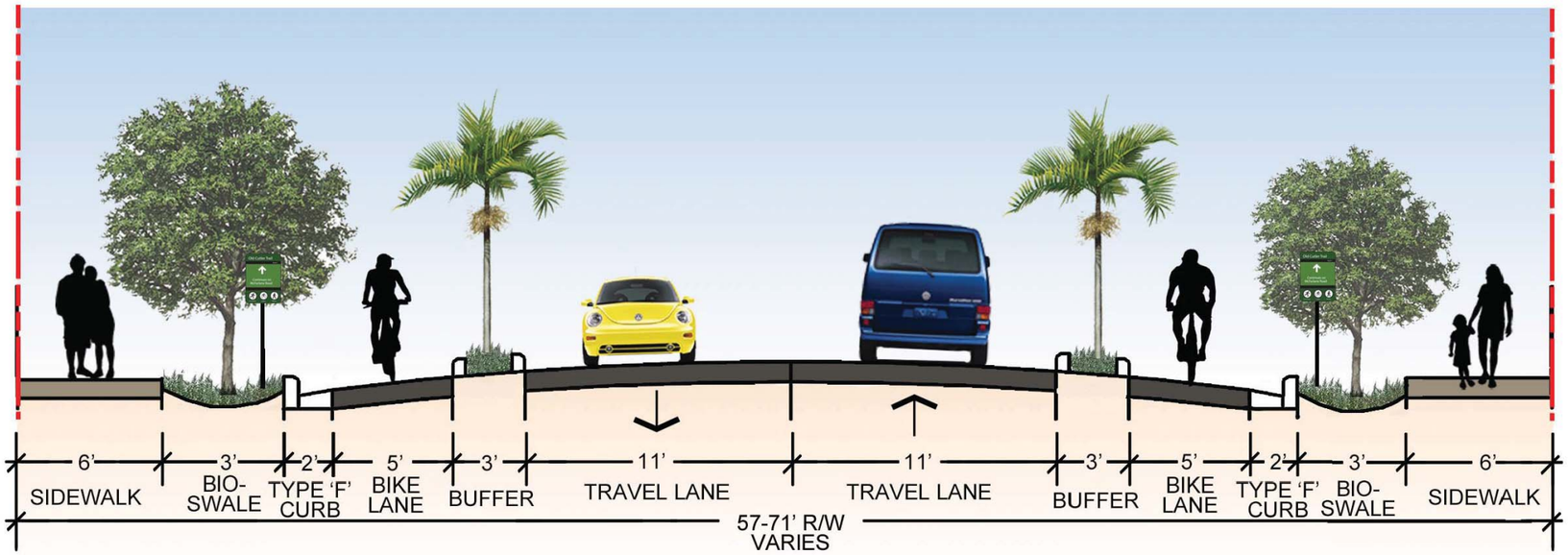
(Between SW 62nd Ave. & SW 57th Ave.)

Figure 19:
SW 64th Street Improvements

- 8' bio-swales along north and south sides of SW 64th
- 5' bike lanes with 3' buffer lanes along north and south sides of SW 64th
- Specialty paving crosswalks
- Converting 5' sidewalks to 6' sidewalks along north and south sides of SW 64th
- Pedestrian wayfinding signage



SW 64TH STREET EXISTING
(LOOKING EAST)



SW 64TH STREET PROPOSED
(LOOKING EAST)

SW 64th Street Section
(Between SW 62nd Ave. & SW 57th Ave.)

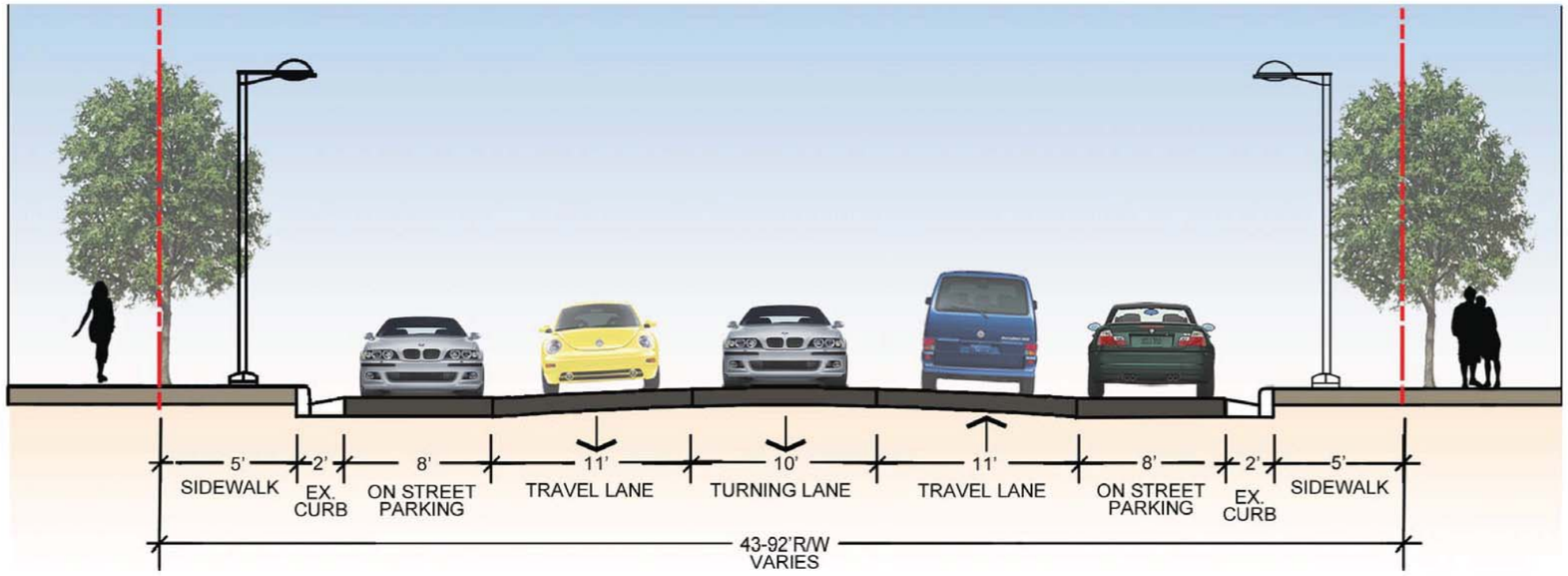
Figure 20:
SW 64th Street Improvements

SW 64th Street Plan
(Between SW 62nd Ave. & SW 57th Ave.)

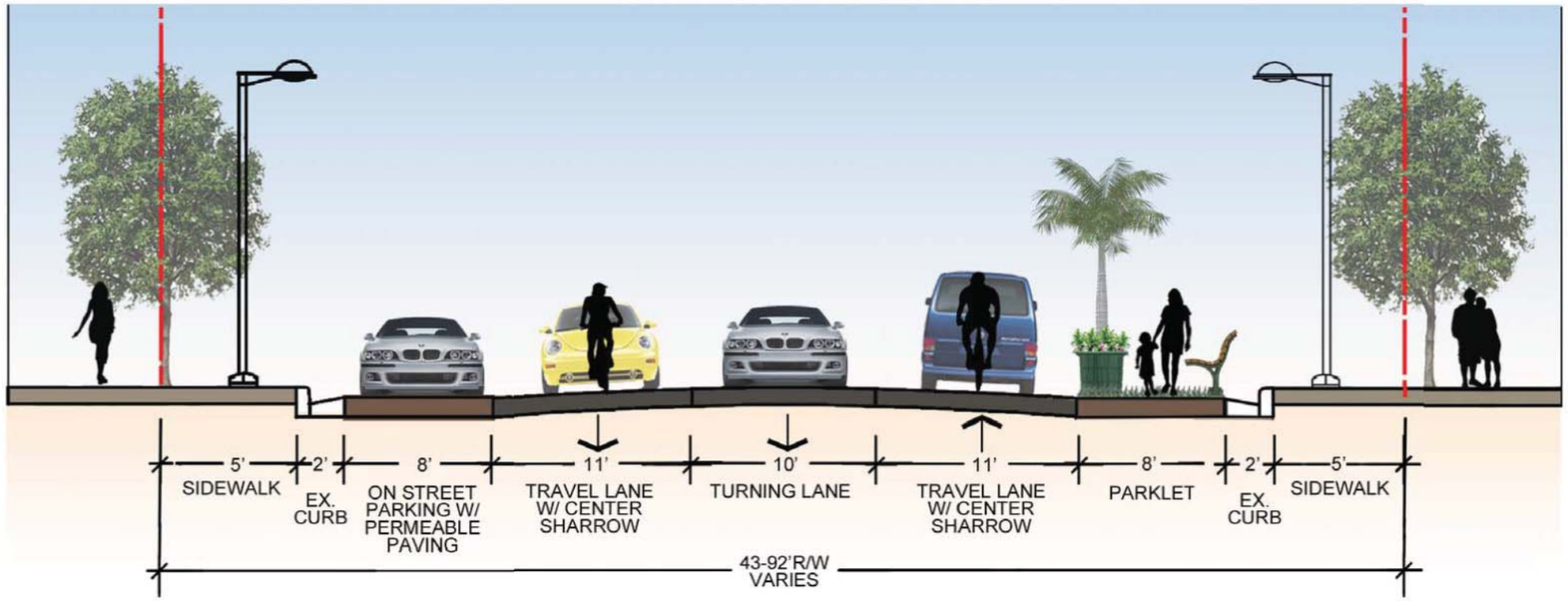
Figure 21:

SW 72nd Street Improvements

- Shared road conditions
- Permeable paving to existing on street parking
- Specialty paving crosswalks
- Parklet within existing on street parking along south side of SW 72nd



SW 72ND STREET EXISTING
(LOOKING EAST)

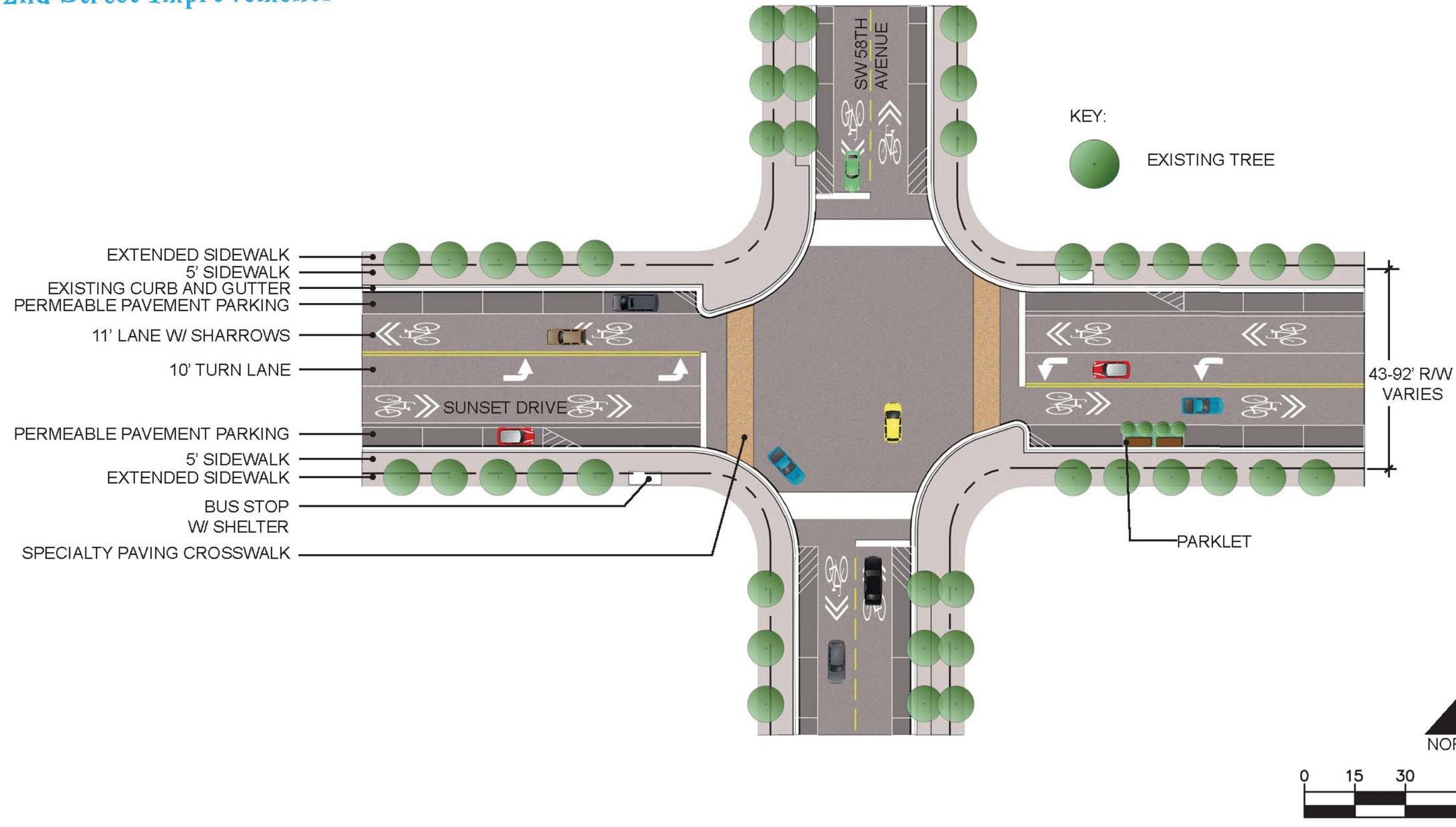


SW 72ND STREET PROPOSED
(LOOKING EAST)

SW 72nd Street Section

(Between U.S. 1 & SW 57th Ave.)

Figure 22:
SW 72nd Street Improvements

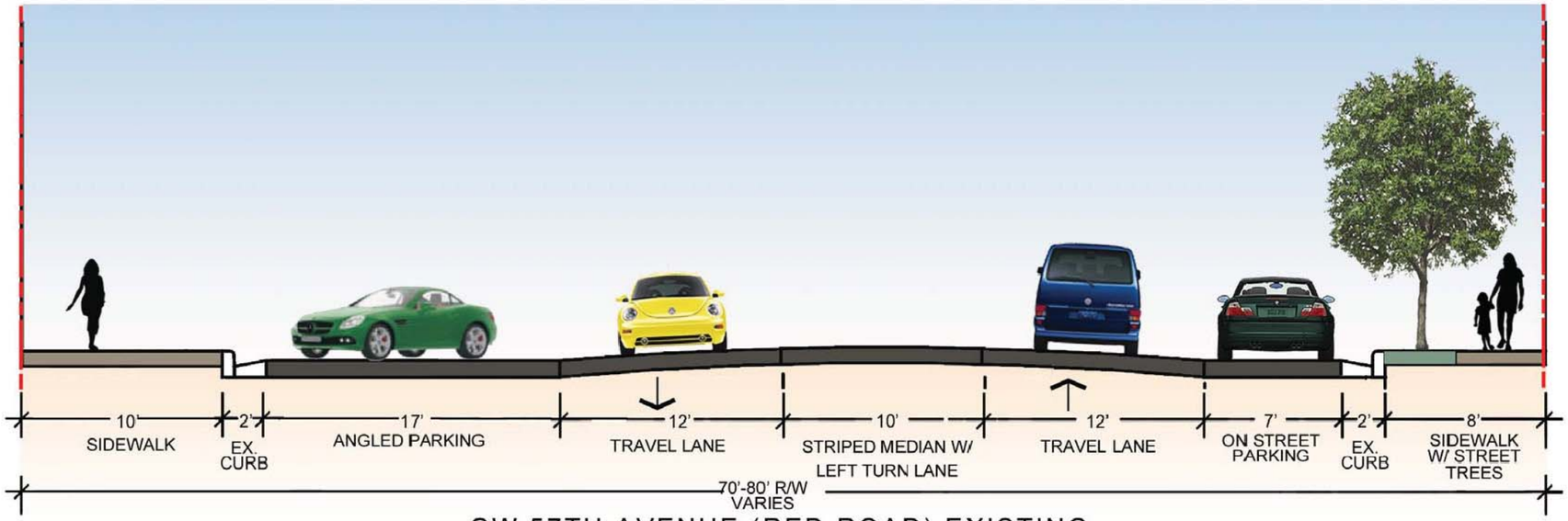


SW 72nd Street Plan
(Between U.S. 1 & SW 57th Ave.)

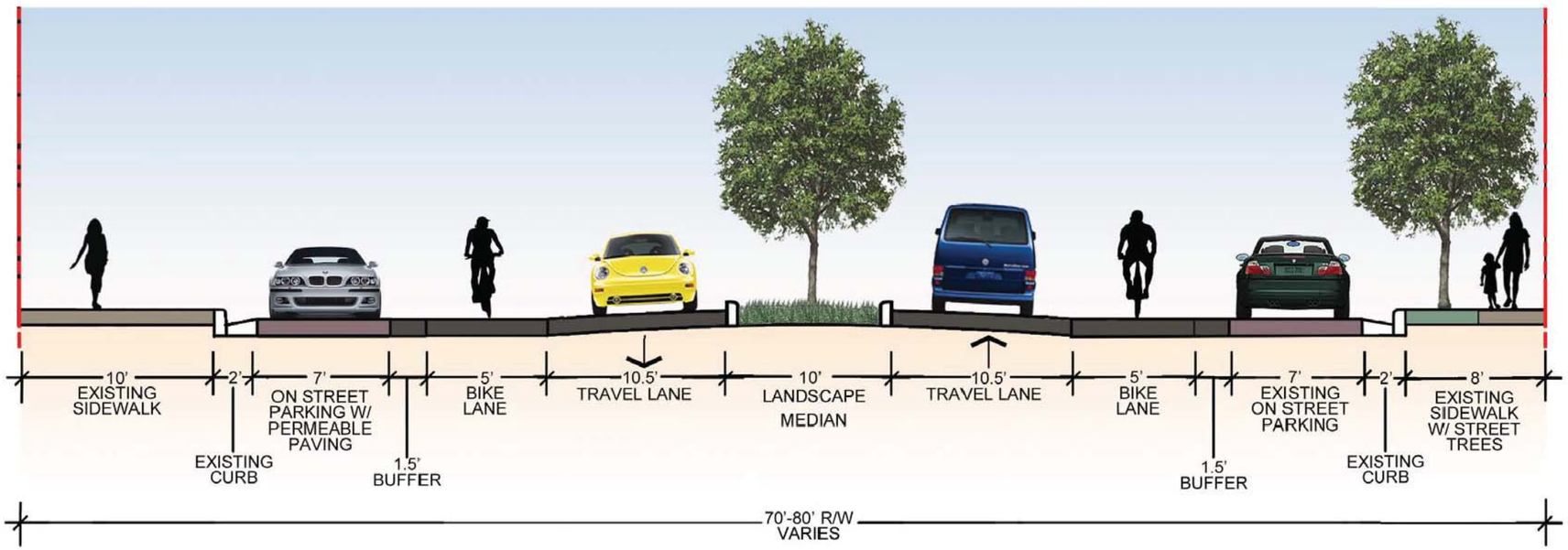
Figure 23:

SW 57th Avenue Improvements

- Converting angle on street parking to parallel parking
- 5' bike lanes along east and west sides of SW 57th
- Permeable paving to existing on street parking
- Converting the striped median to a landscape median
- Specialty paving crosswalks



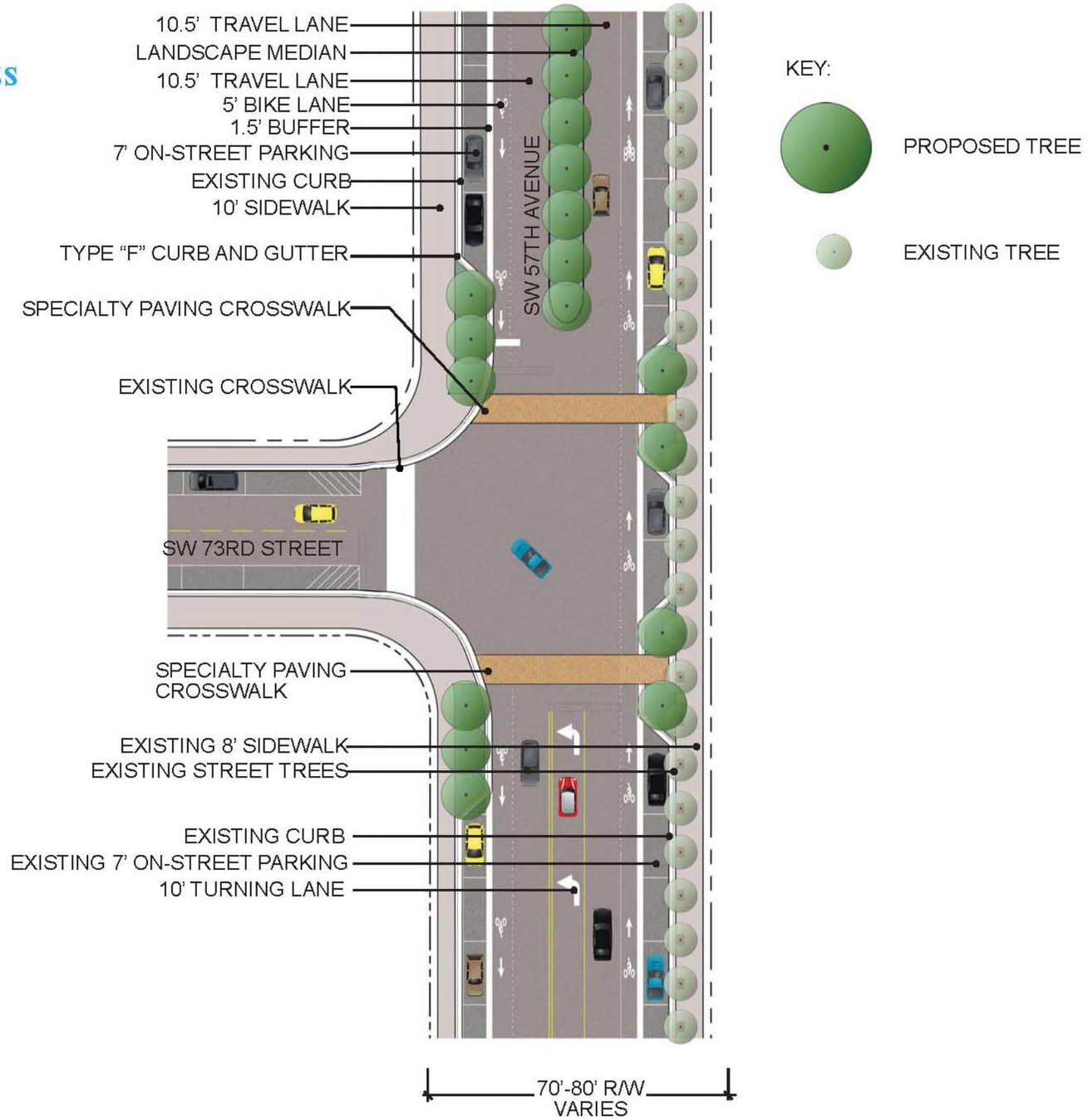
SW 57TH AVENUE (RED ROAD) EXISTING
(LOOKING NORTH)



SW 57TH AVENUE (RED ROAD) PROPOSED
(LOOKING NORTH)

SW 57th Avenue Section
(Between SW 74th Ter. & SW 72nd St.)

Figure 24:
SW 57th Avenue Improvements

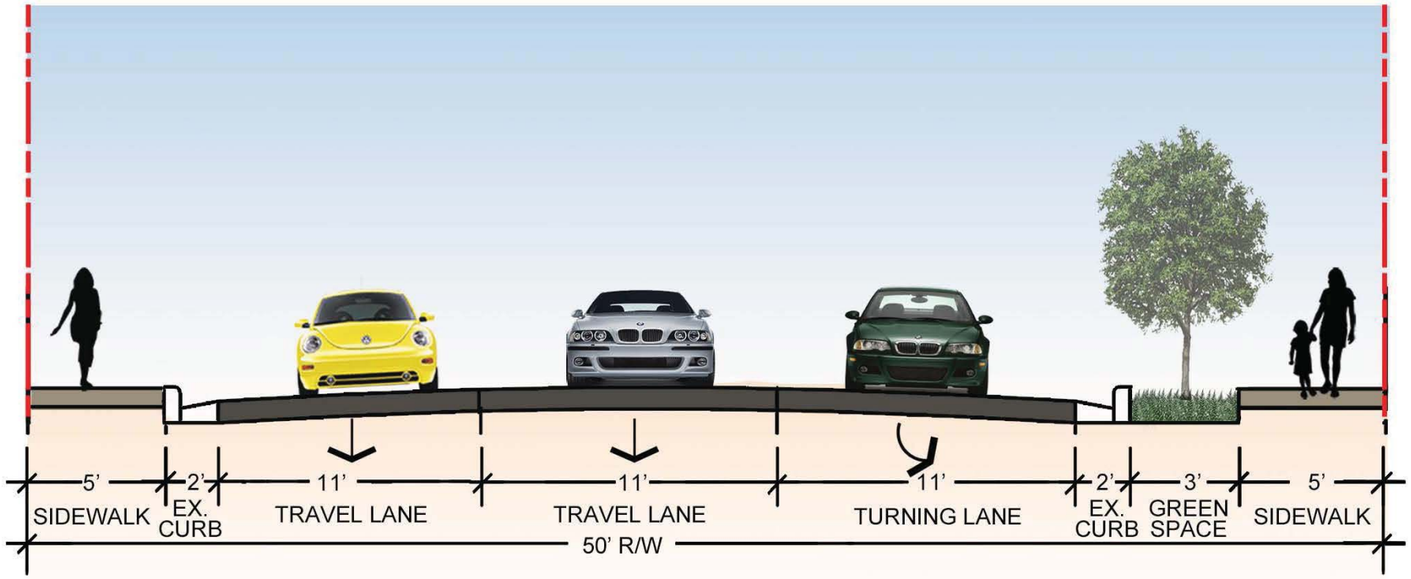


SW 57th Avenue Plan
(Between SW 74th Ter. & SW 72nd St.)

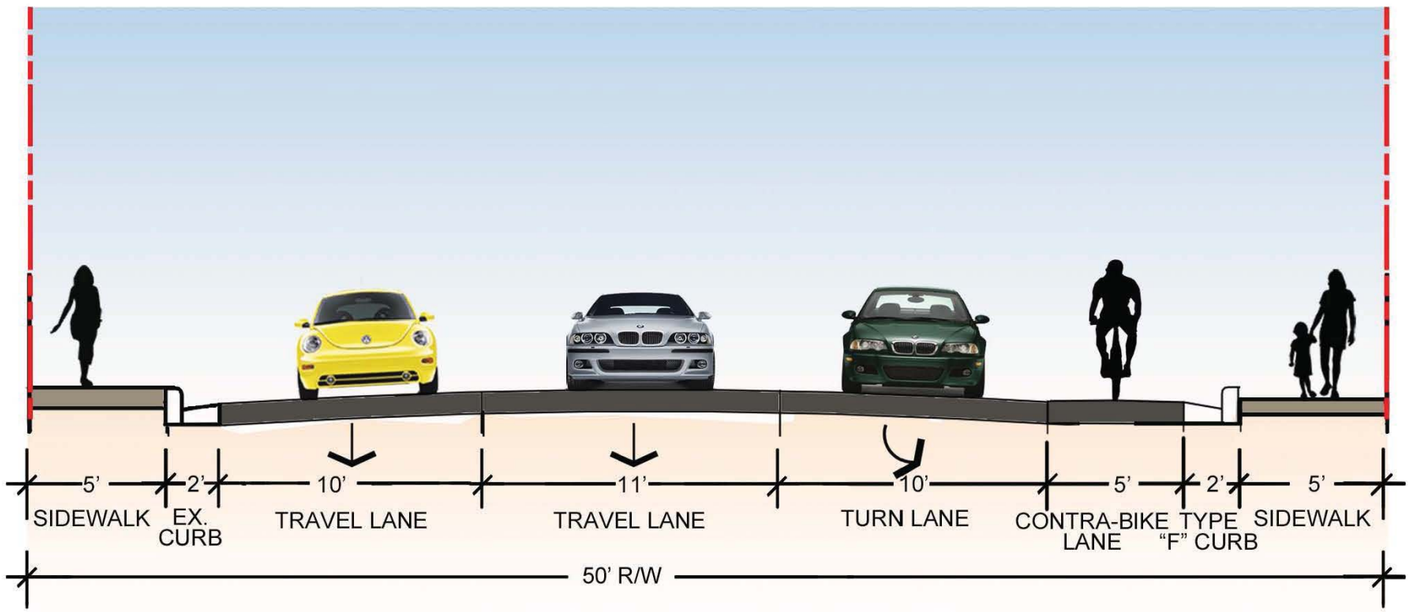
Figure 25:

SW 58th Avenue Improvements

- 5’ conra-flow bike lane along the south side of SW 58th
- Specialty paving crosswalk



SW 58TH AVENUE EXISTING
(LOOKING SOUTH)

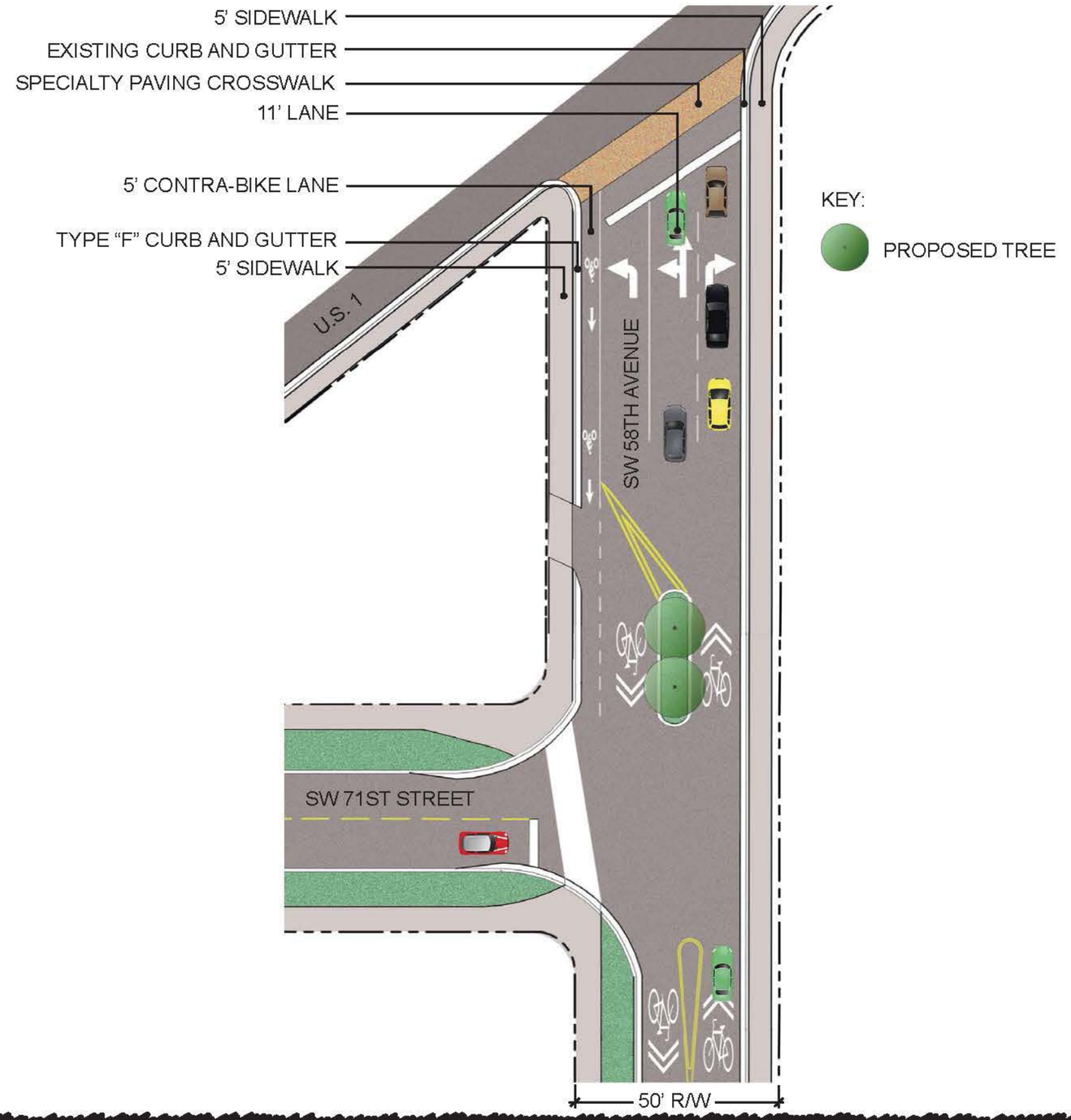


SW 58TH AVENUE PROPOSED
(LOOKING SOUTH)

SW 58th Avenue Section

(Between U.S.1 & SW 71st ST.)

Figure 26:
SW 58th Avenue Improvements

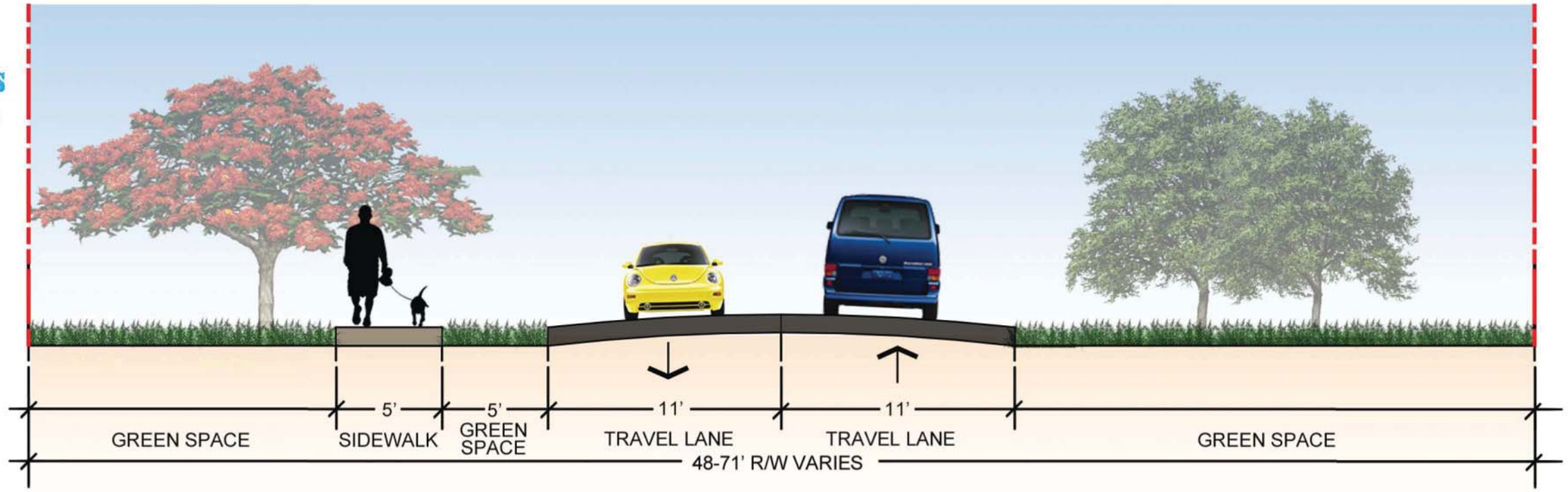


SW 58th Avenue Plan
(Between U.S.1 & SW 71ST St.)

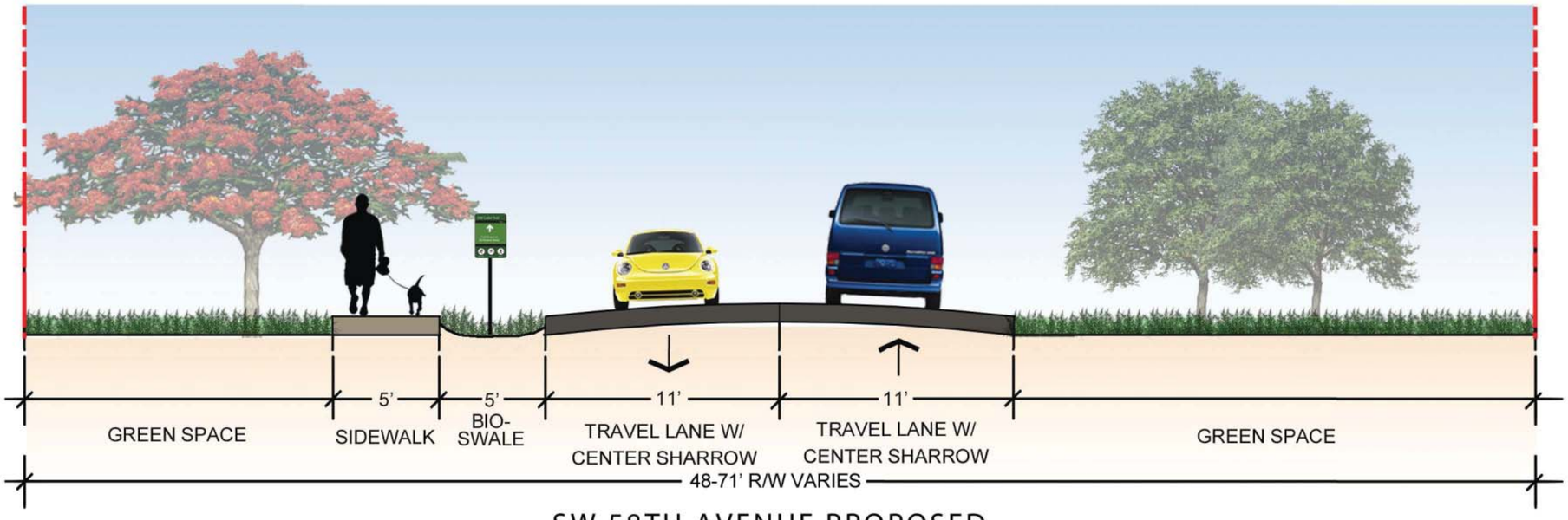
Figure 27:

SW 58th Avenue Improvements

- 5' bio-swale along the west side of SW 58th Avenue
- Shared road conditions
- Specialty paving crosswalks
- Pedestrian wayfinding signage



SW 58TH AVENUE EXISTING
(LOOKING NORTH)

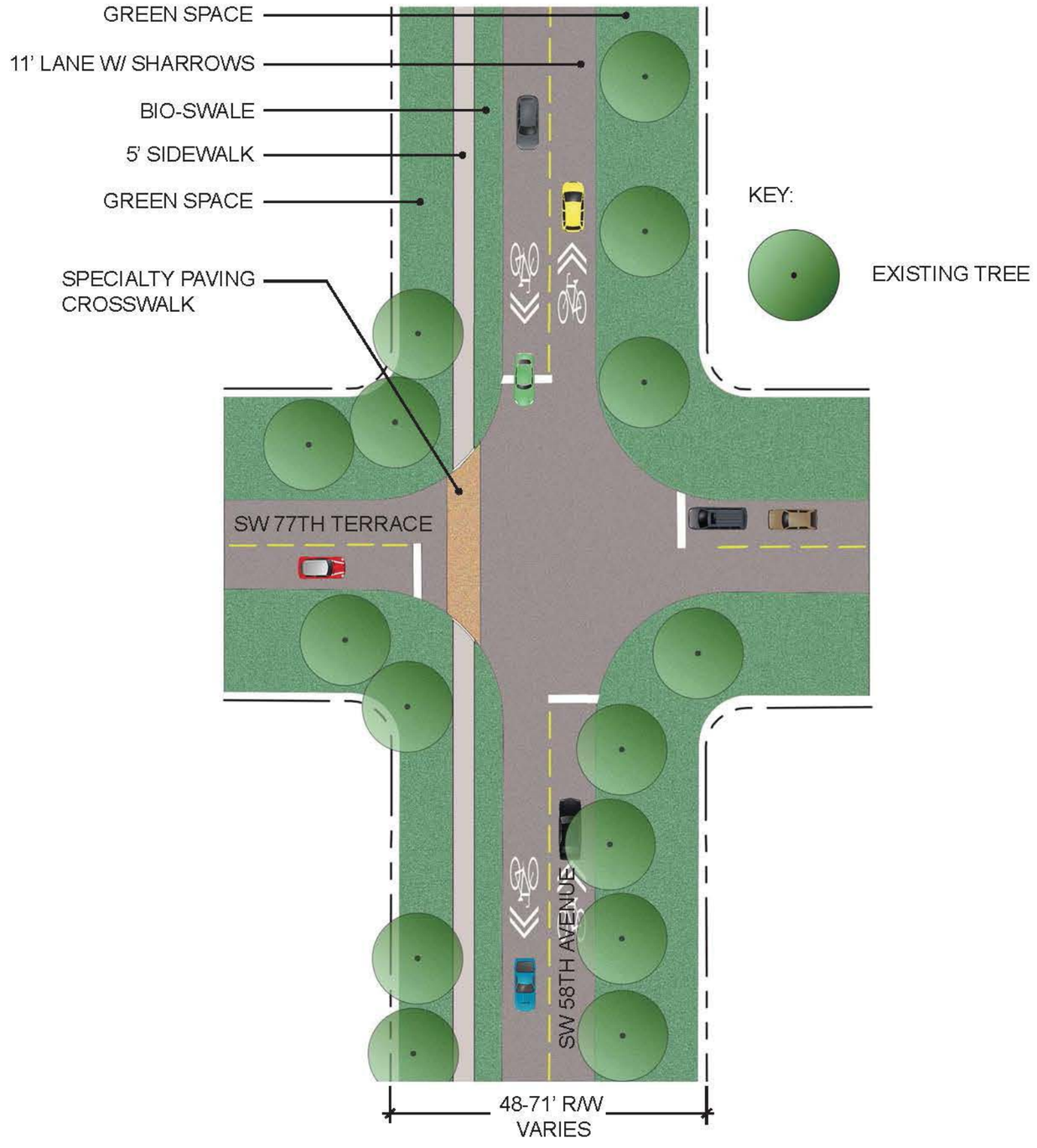


SW 58TH AVENUE PROPOSED
(LOOKING NORTH)

SW 58th Avenue Section

(Between SW 80th St. & SW 72nd St.)

Figure 28:
SW 58th Avenue Improvements



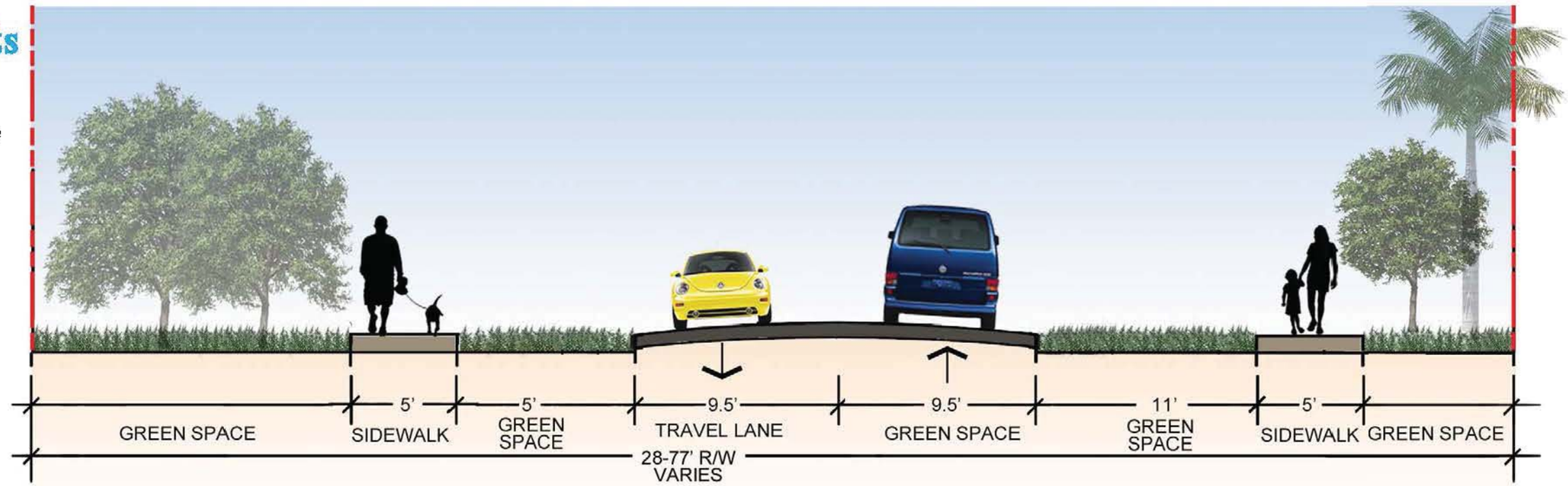
SW 58th Avenue Plan

(Between SW 80th St. & SW 72nd St.)

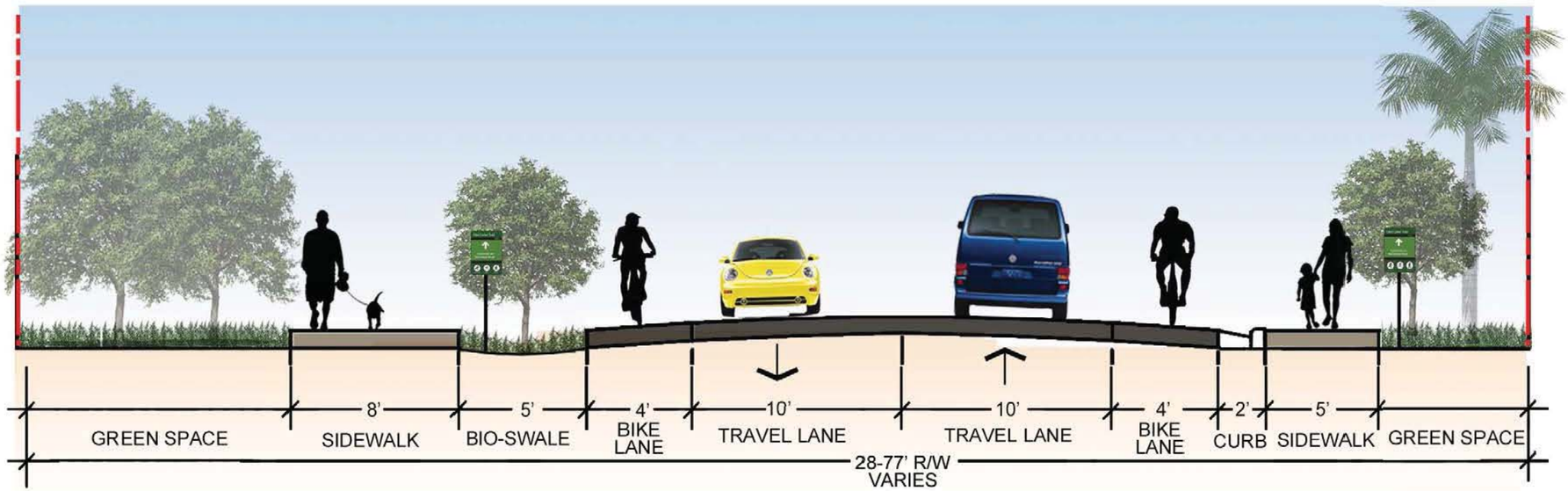
Figure 29:

SW 62nd Avenue Improvements

- 4’ bike lanes along east and west side of SW 62nd Avenue
- 5’ bio-swale along west side of SW 62nd Avenue
- Specialty paving crosswalk
- Converting 5’ sidewalk to an 8’ sidewalk along west side of SW 62nd Avenue
- Pedestrian wayfinding signage



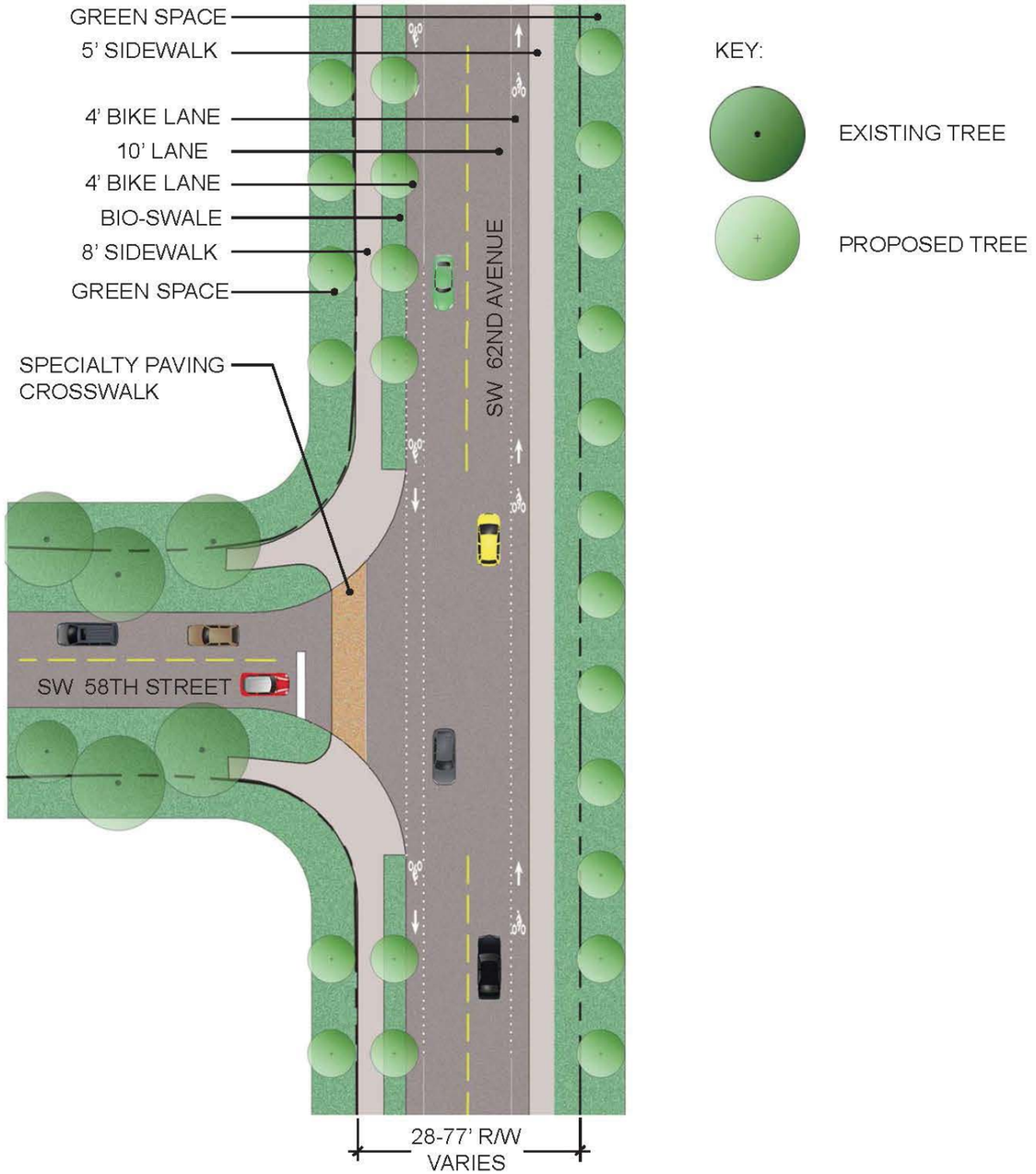
SW 62ND AVENUE EXISTING
(LOOKING NORTH)



SW 62ND AVENUE PROPOSED
(LOOKING NORTH)

SW 62nd Avenue Section
(Between SW 64th St. & SW 56th Street)

Figure 30:
SW 62nd Avenue Improvements



SW 62nd Avenue Plan
(Between SW 64th St. & SW 56th St.)

Design Considerations and Cost

Design Considerations and Cost

We developed a programming level opinion of probable costs for the street type diagrams. The following are individual opinions of probable costs for each street type diagram.

Figure 31: SW 56th STREET

BETWEEN SW 62nd AVENUE AND SW 57th AVENUE

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	6,600	SY	$ 2.43	$ 16,038.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	540	TN	$ 144.40	$ 77,976.00
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	3,300	SY	$ 9.00	$ 29,700.00
ROAD-4	TYPE B STABILIZATION 12"	3,300	SY	$ 2.30	$ 7,590.00
ROAD-5	PERMEABLE PAVEMENT (PARKING)	0	SF	$ 15.00	$ -
ROAD-6	SPECIALTY PAVING	720	SF	$ 12.00	$ 8,640.00
ROAD-7	6" SOLID WHITE	9,910	LF	$ 1.06	$ 10,504.60
ROAD-8	12" SOLID WHITE	600	LF	$ 2.12	$ 1,272.00
ROAD-9	24" SOLID WHITE	195	LF	$ 4.34	$ 846.30
ROAD-10	2/4 SKIP 6" WHITE	850	LF	$ 1.00	$ 850.00
ROAD-11	10/30 SKIP 6" WHITE	50	LF	$ 1.08	$ 54.00
ROAD-12	6" DOUBLE YELLOW	1,110	LF	$ 1.65	$ 1,831.50
ROAD-13	18" SOLID YELLOW	72	LF	$ 3.31	$ 238.32
ROAD-14	10/30 SKIP 6" YELLOW	1,510	LF	$ 1.08	$ 1,630.80
ROAD-15	DIRECTIONAL ARROWS	8	EA	$ 99.70	$ 797.60
ROAD-16	PAVEMENT MESSAGES	14	EA	$ 177.15	$ 2,480.10
ROAD-17	SPEED HUMP STRIPING	0	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	0	SF	$ 32.86	$ -
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	2,100	SY	$ 47.52	$ 99,781.50
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	0	LF	$ 32.86	$ -
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	0	LF	$ 33.74	$ -
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	2	EA	$ 2,000.00	$ 4,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	5,400	LF	$ 50.00	$ 270,000.00
				SUBTOTAL	**$ 537,290.72**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 50,000.00	$ 50,000.00
LAND-2	BUS SHELTER	1	LS	$ 20,000.00	$ 20,000.00
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 85,000.00**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 155,600.00	**$ 155,600.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 155,600.00	**$ 155,600.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 155,600.00	**$ 155,600.00**
				SUBTOTAL	**$ 466,800.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 54,500.00	**$ 54,500.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 54,500.00	**$ 54,500.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 54,500.00	**$ 54,500.00**
				SUBTOTAL	**$ 163,500.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 125,259.07	**$ 125,259.07**
			GRAND TOTAL		**$ 1,377,900.00**

Figure 32: SW 64th STREET

BETWEEN SW 62nd AVENUE AND SW 57th AVENUE

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	6,600	SY	$ 2.43	$ 16,038.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	540	TN	$ 144.40	$ 77,976.00
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	3,600	SY	$ 9.00	$ 32,400.00
ROAD-4	TYPE B STABILIZATION 12"	3,600	SY	$ 2.30	$ 8,280.00
ROAD-5	PERMEABLE PAVEMENT (PARKING)	0	SF	$ 15.00	$ -
ROAD-6	SPECIALTY PAVING	360	SF	$ 12.00	$ 4,320.00
ROAD-7	6" SOLID WHITE	8,720	LF	$ 1.06	$ 9,243.20
ROAD-8	12" SOLID WHITE	110	LF	$ 2.12	$ 233.20
ROAD-9	24" SOLID WHITE	168	LF	$ 4.34	$ 729.12
ROAD-10	2/4 SKIP 6" WHITE	2,100	LF	$ 1.00	$ 2,100.00
ROAD-11	10/30 SKIP 6" WHITE	0	LF	$ 1.08	$ -
ROAD-12	6" DOUBLE YELLOW	615	LF	$ 1.65	$ 1,014.75
ROAD-13	18" SOLID YELLOW	36	LF	$ 3.31	$ 119.16
ROAD-14	10/30 SKIP 6" YELLOW	2,050	LF	$ 1.08	$ 2,214.00
ROAD-15	DIRECTIONAL ARROWS	4	EA	$ 99.70	$ 398.80
ROAD-16	PAVEMENT MESSAGES	24	EA	$ 177.15	$ 4,251.60
ROAD-17	SPEED HUMP STRIPING	0	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	27,000	SF	$ 32.86	$ 887,220.00
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	3,900	SY	$ 47.52	$ 185,308.50
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	5,400	LF	$ 32.86	$ 177,444.00
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	0	LF	$ 33.74	$ -
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	2	EA	$ 2,000.00	$ 4,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	5,400	LF	$ 50.00	$ 270,000.00
				SUBTOTAL	**$ 1,686,350.33**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 50,000.00	$ 50,000.00
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 65,000.00**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 437,800.00	**$ 437,800.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 437,800.00	**$ 437,800.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 437,800.00	**$ 437,800.00**
				SUBTOTAL	**$ 1,313,400.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 153,200.00	**$ 153,200.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 153,200.00	**$ 153,200.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 153,200.00	**$ 153,200.00**
				SUBTOTAL	**$ 459,600.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 352,435.03	**$ 352,435.03**
			GRAND TOTAL		**$ 3,876,800.00**

Figure 33: SW 72nd STREET

BETWEEN US-1 AND SW 57th AVENUE

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	6,933	SY	$ 2.43	$ 16,848.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	390	TN	$ 144.40	$ 56,316.00
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	0	SY	$ 9.00	$ -
ROAD-4	TYPE B STABILIZATION 12"	0	SY	$ 2.30	$ -
ROAD-5	PERMEABLE PAVEMENT (PARKING)	9,800	SF	$ 15.00	$ 147,000.00
ROAD-6	SPECIALTY PAVING	720	SF	$ 12.00	$ 8,640.00
ROAD-7	6" SOLID WHITE	3,193	LF	$ 1.06	$ 3,384.58
ROAD-8	12" SOLID WHITE	36	LF	$ 2.12	$ 76.32
ROAD-9	24" SOLID WHITE	155	LF	$ 4.34	$ 672.70
ROAD-10	2/4 SKIP 6" WHITE	0	LF	$ 1.00	$ -
ROAD-11	10/30 SKIP 6" WHITE	320	LF	$ 1.08	$ 345.60
ROAD-12	6" DOUBLE YELLOW	1,280	LF	$ 1.65	$ 2,112.00
ROAD-13	18" SOLID YELLOW	203	LF	$ 3.31	$ 671.93
ROAD-14	10/30 SKIP 6" YELLOW	0	LF	$ 1.08	$ -
ROAD-15	DIRECTIONAL ARROWS	11	EA	$ 99.70	$ 1,096.70
ROAD-16	PAVEMENT MESSAGES	22	EA	$ 177.15	$ 3,897.30
ROAD-17	SPEED HUMP STRIPING	0	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	0	SF	$ 32.86	$ -
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	0	SY	$ 47.52	$ -
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	0	LF	$ 32.86	$ -
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	0	LF	$ 33.74	$ -
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	6	EA	$ 2,000.00	$ 12,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	0	LF	$ 50.00	$ -
				SUBTOTAL	**$ 256,121.13**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 10,000.00	$ 10,000.00
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 5,000.00	$ 5,000.00
LAND-4	PARKLET	1	LS	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 30,000.00**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 71,500.00	**$ 71,500.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 71,500.00	**$ 71,500.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 71,500.00	**$ 71,500.00**
				SUBTOTAL	**$ 214,500.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 25,000.00	**$ 25,000.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 25,000.00	**$ 25,000.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 25,000.00	**$ 25,000.00**
				SUBTOTAL	**$ 75,000.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 57,562.11	**$ 57,562.11**
			GRAND TOTAL		**$ 633,200.00**

Figure 34: SW 57th AVENUE

BETWEEN SW 74th TERRACE AND SW 72nd STREET

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL EXIST. ASPHALT PAVEMENT	2,977	SY	$ 2.00	$ 5,954.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	39,846	SY	$ 13.00	$ 517,998.00
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	0	SY	$ 9.00	$ -
ROAD-4	TYPE B STABILIZATION 12"	0	SY	$ 2.30	$ -
ROAD-5	PERMEABLE PAVEMENT (PARKING)	8,100	SF	$ 15.00	$ 121,500.00
ROAD-6	SPECIALTY PAVING	720	SF	$ 12.00	$ 8,640.00
ROAD-7	6" SOLID WHITE	4,374.00	LF	$ 0.90	$ 3,936.60
ROAD-8	12" SOLID WHITE	470.00	LF	$ 2.00	$ 940.00
ROAD-9	24" SOLID WHITE	92.00	LF	$ 3.60	$ 331.20
ROAD-10	2/4 SKIP 6" WHITE	450.00	LF	$ 1.00	$ 450.00
ROAD-11	10/30 SKIP 6" WHITE	2,150.00	LF	$ 1.50	$ 3,225.00
ROAD-12	6" DOUBLE YELLOW	810.00	LF	$ 2.20	$ 1,782.00
ROAD-13	18" SOLID YELLOW	70.00	LF	$ 2.70	$ 189.00
ROAD-14	10/30 SKIP 6" YELLOW	0.00	EA	$ 3.00	$ -
ROAD-15	DIRECTIONAL ARROWS	8.00	EA	$ 300.00	$ 2,400.00
ROAD-16	PAVEMENT MESSAGES	8.00	EA	$ 300.00	$ 2,400.00
ROAD-17	SPEED HUMP STRIPING	0.00	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	42.00	SY	$ 3.50	$ 147.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	0	SY	$ 15.00	$ -
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	0	SY	$ 15.00	$ -
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	0	LF	$ 18.00	$ -
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	0	EA	$ 18.00	$ -
ROAD-23	TRAFFIC LOOP ASSEMBLY, TYPE A	2	EA	$ 2,000.00	$ 4,000.00
ROAD-24	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-25	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-26	TYPE "D" CURB	1,400	LF	$ 18.00	$ 25,200.00
				SUBTOTAL	**$ 699,092.80**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 50,000.00	$ 50,000.00
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 5,000.00	$ 5,000.00
				SUBTOTAL	**$ 55,000.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5.00%	$ 37,700.00	**$ 37,700.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5.00%	$ 37,700.00	**$ 37,700.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	2.00%	$ 15,100.00	**$ 15,100.00**
				SUBTOTAL	**$ 90,500.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 84,459.28	**$ 84,459.28**
			GRAND TOTAL		**$ 929,100.00**

Figure 35: SW 58th AVENUE

BETWEEN US-1 AND SW 71st STREET

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	1,008	SY	$ 2.43	$ 2,450.25
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	67	TN	$ 144.40	$ 9,674.80
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	183	SY	$ 9.00	$ 1,650.00
ROAD-4	TYPE B STABILIZATION 12"	183	SY	$ 2.30	$ 421.67
ROAD-5	PERMEABLE PAVEMENT (PARKING)	0	SF	$ 15.00	$ -
ROAD-6	SPECIALTY PAVING	720	SF	$ 12.00	$ 8,640.00
ROAD-7	6" SOLID WHITE	50	LF	$ 1.06	$ 53.00
ROAD-8	12" SOLID WHITE	130	LF	$ 2.12	$ 275.60
ROAD-9	24" SOLID WHITE	76	LF	$ 4.34	$ 329.84
ROAD-10	2/4 SKIP 6" WHITE	50	LF	$ 1.00	$ 50.00
ROAD-11	10/30 SKIP 6" WHITE	60	LF	$ 1.08	$ 64.80
ROAD-12	6" DOUBLE YELLOW	165	LF	$ 1.65	$ 272.25
ROAD-13	18" SOLID YELLOW	12	LF	$ 3.31	$ 39.72
ROAD-14	10/30 SKIP 6" YELLOW	0	LF	$ 1.08	$ -
ROAD-15	DIRECTIONAL ARROWS	3	EA	$ 99.70	$ 299.10
ROAD-16	PAVEMENT MESSAGES	4	EA	$ 177.15	$ 708.60
ROAD-17	SPEED HUMP STRIPING	0	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	0	SF	$ 32.86	$ -
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	0	SF	$ 47.52	$ -
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	275	LF	$ 32.86	$ 9,036.50
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	275	LF	$ 33.74	$ 9,278.50
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	1	EA	$ 2,000.00	$ 2,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	0	LF	$ 50.00	$ -
				SUBTOTAL	**$ 48,304.63**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	0	LS	$ 10,000.00	$ -
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	0	LS	$ 15,000.00	$ -
				SUBTOTAL	**$ -**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 12,100.00	**$ 12,100.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 12,100.00	**$ 12,100.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 12,100.00	**$ 12,100.00**
				SUBTOTAL	**$ 36,300.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 4,200.00	**$ 4,200.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 4,200.00	**$ 4,200.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 4,200.00	**$ 4,200.00**
				SUBTOTAL	**$ 12,600.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 9,720.46	**$ 9,720.46**
			GRAND TOTAL		**$ 107,000.00**

Figure 36: SW 58th AVENUE

BETWEEN SW 80th STREET AND SW 72nd STREET

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	6,722	SY	$ 2.43	$ 16,335.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	378	TN	$ 144.40	$ 54,583.20
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	0	SY	$ 9.00	$ -
ROAD-4	TYPE B STABILIZATION 12"	0	SY	$ 2.30	$ -
ROAD-5	PERMEABLE PAVEMENT (PARKING)	0	SF	$ 15.00	$ -
ROAD-6	SPECIALTY PAVING	360	SF	$ 12.00	$ 4,320.00
ROAD-7	6" SOLID WHITE	2,236	LF	$ 1.06	$ 2,370.16
ROAD-8	12" SOLID WHITE	0	LF	$ 2.12	$ -
ROAD-9	24" SOLID WHITE	110	LF	$ 4.34	$ 477.40
ROAD-10	2/4 SKIP 6" WHITE	0	LF	$ 1.00	$ -
ROAD-11	10/30 SKIP 6" WHITE	0	LF	$ 1.08	$ -
ROAD-12	6" DOUBLE YELLOW	1,000	LF	$ 1.65	$ 1,650.00
ROAD-13	18" SOLID YELLOW	0	LF	$ 3.31	$ -
ROAD-14	10/30 SKIP 6" YELLOW	1,870	LF	$ 1.08	$ 2,019.60
ROAD-15	DIRECTIONAL ARROWS	0	EA	$ 99.70	$ -
ROAD-16	PAVEMENT MESSAGES	22	EA	$ 177.15	$ 3,897.30
ROAD-17	SPEED HUMP STRIPING	4	EA	$ 45.00	$ 180.00
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	0	SF	$ 32.86	$ -
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	0	SY	$ 47.52	$ -
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	0	LF	$ 32.86	$ -
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	0	LF	$ 33.74	$ -
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	2	EA	$ 2,000.00	$ 4,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	0	LF	$ 50.00	$ -
				SUBTOTAL	**$ 92,892.66**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 10,000.00	$ 10,000.00
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 25,000.00**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 29,500.00	**$ 29,500.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 29,500.00	**$ 29,500.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 29,500.00	**$ 29,500.00**
				SUBTOTAL	**$ 88,500.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 10,300.00	**$ 10,300.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 10,300.00	**$ 10,300.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 10,300.00	**$ 10,300.00**
				SUBTOTAL	**$ 30,900.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 23,729.27	**$ 23,729.27**
			GRAND TOTAL		**$ 261,100.00**

Figure 37:SW 62nd AVENUE

BETWEEN SW 64th STREET AND SW 56th STREET

PAY ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
	ROADWAY				
ROAD-1	MILL 1" EXIST. ASPHALT PAVEMENT	6,600	SY	$ 2.43	$ 16,038.00
ROAD-2	ASPHALT FOR FINAL PAVEMENT RESTORATION	641	TN	$ 144.40	$ 92,560.40
ROAD-3	8" LIMEROCK BASE (PRIMED/SINGLE COURSE)	4,800	SY	$ 9.00	$ 43,200.00
ROAD-4	TYPE B STABILIZATION 12"	4,800	SY	$ 2.30	$ 11,040.00
ROAD-5	PERMEABLE PAVEMENT (PARKING)	0	SF	$ 15.00	$ -
ROAD-6	SPECIALTY PAVING	360	SF	$ 12.00	$ 4,320.00
ROAD-7	6" SOLID WHITE	8,720	LF	$ 1.06	$ 9,243.20
ROAD-8	12" SOLID WHITE	110	LF	$ 2.12	$ 233.20
ROAD-9	24" SOLID WHITE	168	LF	$ 4.34	$ 729.12
ROAD-10	2/4 SKIP 6" WHITE	2,100	LF	$ 1.00	$ 2,100.00
ROAD-11	10/30 SKIP 6" WHITE	0	LF	$ 1.08	$ -
ROAD-12	6" DOUBLE YELLOW	615	LF	$ 1.65	$ 1,014.75
ROAD-13	18" SOLID YELLOW	36	LF	$ 3.31	$ 119.16
ROAD-14	10/30 SKIP 6" YELLOW	2,050	LF	$ 1.08	$ 2,214.00
ROAD-15	DIRECTIONAL ARROWS	4	EA	$ 99.70	$ 398.80
ROAD-16	PAVEMENT MESSAGES	24	EA	$ 177.15	$ 4,251.60
ROAD-17	SPEED HUMP STRIPING	0	EA	$ 45.00	$ -
ROAD-18	RETROREFLECTIVE PAVEMENT MARKERS	1	LS	$ 3,060.00	$ 3,060.00
ROAD-19	CONC. SIDEWALK TO BE REMOVED	27,000	SF	$ 32.86	$ 887,220.00
ROAD-20	NEW CONC. SIDEWALK (4"-6" THICK) (INCL. LIMEROCK BASE)	3,600	SY	$ 47.52	$ 171,054.00
ROAD-21	REMOVE EXISTING VALLEY GUTTER/CURB AND GUTTER	5,400	LF	$ 32.86	$ 177,444.00
ROAD-22	2' CONC. CURB AND GUTTER TYPE "F" AND "V" (INCL. LIMEROCK BASE)	5,400	LF	$ 33.74	$ 182,196.00
ROAD-23	TYPE D CURB	0	LF	$ 18.00	$ -
ROAD-24	TRAFFIC LOOP ASSEMBLY, TYPE A	2	EA	$ 2,000.00	$ 4,000.00
ROAD-25	EXISTING TRAFFIC SIGN PANELS TO BE REPLACED	0	EA	$ 200.00	$ -
ROAD-26	EXISTING TRAFFIC SIGN POSTS TO BE RESET	0	EA	$ 150.00	$ -
ROAD-27	SWALE GRADING (BIO-SWALE)	0	LF	$ 50.00	$ -
				SUBTOTAL	**$ 1,612,436.23**
	LANDSCAPING				
LAND-1	SODDING (INCL. WATERING)	1	LS	$ 50,000.00	$ 50,000.00
LAND-2	BUS SHELTER	0	LS	$ 20,000.00	$ -
LAND-3	BACK OF SIDEWALK RESTORATION	1	LS	$ 15,000.00	$ 15,000.00
				SUBTOTAL	**$ 65,000.00**
	UTILITY AND DRAINAGE MODIFICATIONS				
UD-1	ADJUST RIMS/GRATES/VAULT BOXES	1	25%	$ 419,400.00	**$ 419,400.00**
UD-2	PROPOSED STORM DRAINAGE SYSTEM	1	25%	$ 419,400.00	**$ 419,400.00**
UD-3	UTILITY POLE RELOCATION/INSTALLATION	1	25%	$ 419,400.00	**$ 419,400.00**
				SUBTOTAL	**$ 1,258,200.00**
	MISCELLANEOUS				
MISC-1	MOBILIZATION	1	5%	$ 146,800.00	**$ 146,800.00**
MISC-2	MAINTENANCE OF TRAFFIC	1	5%	$ 146,800.00	**$ 146,800.00**
MISC-4	PERFORMANCE AND PAYMENT BOND	1	5%	$ 146,800.00	**$ 146,800.00**
				SUBTOTAL	**$ 440,400.00**
	CONTINGENT ITEMS				
CONT-1	CONTINGENCY (For City Approval / Discretion ONLY)	1	10.00%	$ 337,603.62	**$ 337,603.62**
			GRAND TOTAL		**$ 3,713,700.00**

Implementation Plan

Implementation Plan

Implementation of this Plan will likely occur over time through a variety of different projects, funded through a broad range of sources, and built by several different agencies including the City and its transportation partners at FDOT and Miami-Dade County. The implementation plan respects the limits of affordability and provides a strategy that the City could potentially follow to maximize the user benefit while keeping costs within reason of available funding sources.

It should be noted that many of the recommendations may be implemented through resurfacing, maintenance, or other transportation projects that would occur anyway and, therefore, would incur only an incremental cost associated with the additional intermodal transportation infrastructure. In addition, the City along with public and private sector stakeholders should seek grant funding to implement key components of the SMITP. The future availability of grant funding could impact the timing and priority order of the projects listed herein.T

he priority list assumes the City has approximately $100,000 to implement "early-win" projects within the first fiscal year in advance of receiving any outside grant funding or assistance from transportation partner agencies.

Priority One Scenario

SW 58th Avenue traverses the City from north to south and provides a people-friendly alternative to busier streets, such as SW 57th Avenue and SW 62nd Avenue. Neighborhood greenways are streets with low motor vehicle speeds that are designed with a variety of elements, including shared lane markings, traffic calming, bike route signage, and wayfinding signs, to allow bicyclists to travel comfortably in a low-stress environment. Neighborhood greenways often give priority to bicycle use and discourage through-traffic by motor vehicles.

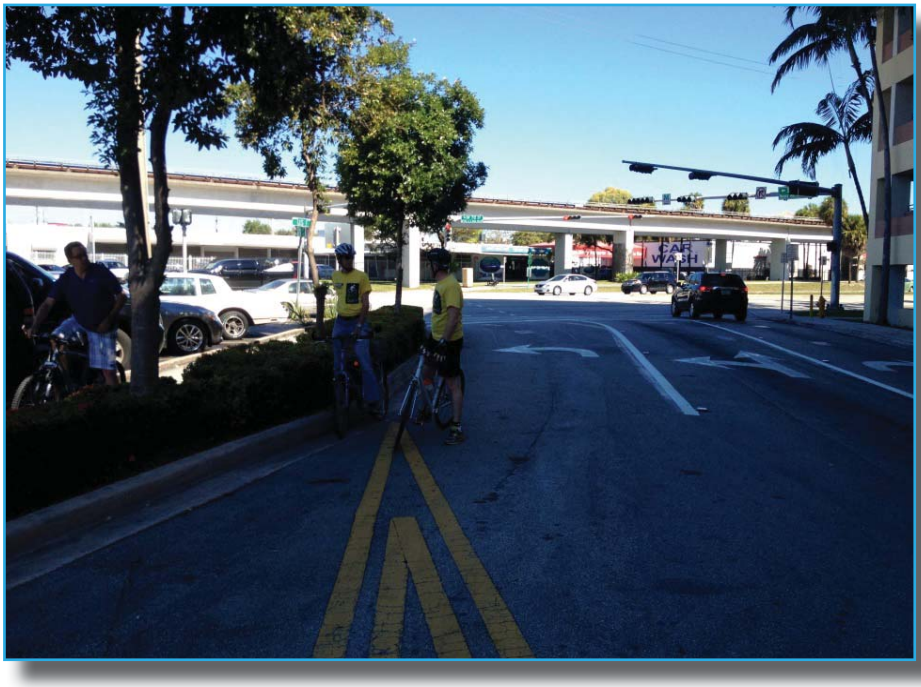
SW 58th Avenue neighborhood greenway

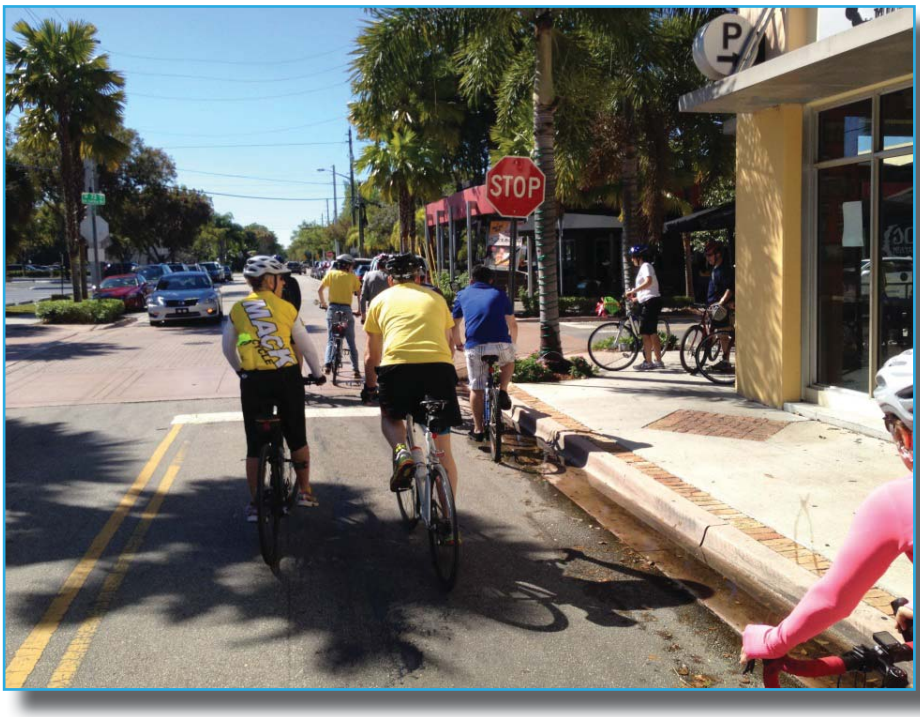
NEIGHBORHOOD GREENWAYS

Project:

- Implement an "early-win" neighborhood greenway on SW 58th Avenue

The SW 58th Avenue neighborhood greenway passes through Downtown South Miami and includes the proposed contra-flow bike lane to provide southbound bicycle continuity on SW 58th Avenue immediately south of US 1/South Dixie Highway. Note that some portions of the SW 58th Avenue neighborhood greenway north of SW 64th Street are in unincorporated Miami-Dade County. The City should coordinate with the County to ensure a consistent design treatment throughout the County's portion of the neighborhood greenway.





Participants of the SMITP Bike Path Inspection riding through the streets of South Miami

Priority Two Scenario

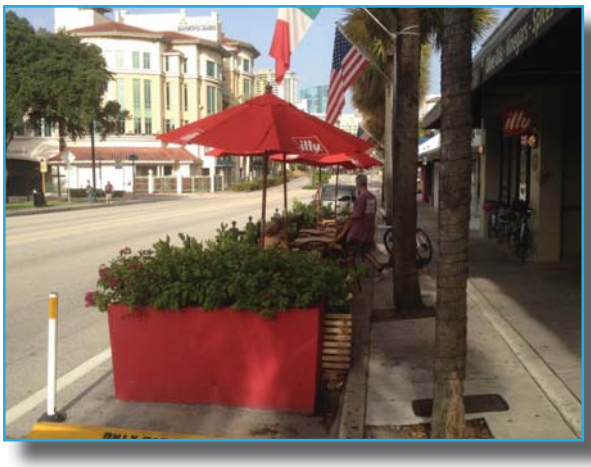
Sunset Drive is one of the paramount streets in Miami-Dade County to enjoy local businesses, restaurants, and street life. However, many areas of Sunset Drive are characterized by narrow, crowded sidewalks, especially near café seating. A parklet converts the space of several (typically one to three) on-street parking spaces into an extension of the sidewalk to provide space for seating, landscaping, public art, and other activities. It is recommended that the City install two parklets initially, one on the north side of the street and one on the south side of the street.

Sample "sharrow" pavement markings

SUNSET DRIVE

Project:

- Placemaking improvements through the installation of two parklets and associated landscaping
- Specialty paving improvements at cross walks
- Green-backed sharrow bicycle markings between SW 64th Court and SW 57th Avenue
- Permeable pavers improvements at existing on-street parking



Sample "parklets" within existing on-street parking

Special paving treatments can be used on roadway surfaces to reduce speeds, increase durability or to demarcate a special zone or district. A change of color or material can produce a traffic calming effect. Examples of special roadway materials include, colored asphalt and concrete, textured asphalt or concrete, and pervious pavement and pavers. It is recommended that the City install special paving treatments to the crosswalks and on-street parking on Sunset Drive in order to help signify Sunset Drive as the iconic street of Downtown South Miami.

Shared lane markings, or sharrows, are pavement markings that are placed within the vehicular travel lane of the roadway to indicate a shared lane. The pavement marking symbols alert motorists to the expected lateral placement of bicyclists within the shared lane and encourage safer passing behaviors. Sharrows can be installed in corridors where providing space for designated bicycle lanes may impact other street elements such as landscaping, pedestrian bulb-outs at intersections, or on-street parking. Sharrows are particularly effective on corridors with on-street parking because they encourage bicyclists to ride outside of the "door zone" adjacent to parked cars.

Sample "parklets" within existing on-street parking

It is recommended that sharrows be installed on Sunset Drive between SW 64th Court and SW 57th Avenue. In or

der to help signify Sunset Drive as the iconic street of Downtown South Miami, and to improve the visibility of the sharrow markings, it is recommended that the sharrows on Sunset Drive be combined with the innovative use of green colored pavement backing. Bicycle detector markings, along with R10-22 signs, should be installed to indicate to bicyclists the optimum location to queue at traffic signals for detection purposes.

SW 62nd Avenue

Priority Three Scenario

Priority three scenario lists three projects that are recommended in this Plan based on the strategies identified above to promote safe, healthy, and sustainable bicycle and pedestrian mobility with the City of South Miami.

SW 62ND AVENUE

Project:

- Fill in missing **sidewalk** gaps between SW 56th Street and SW 50th Street
- Extend existing **bike lanes** from SW 64th Street to SW 40th Street
- Note that SW 62nd Avenue is a Miami-Dade County roadway

SW 57TH AVENUE

Project:

- Implement **complete street** improvements between SW 74th Terrace and SW 72nd Street
  - **Buffered bike lanes**
  - **New crosswalk** at SW 73rd Street
  - Median **pedestrian refuge**
  - Convert angled parking to **conventional parallel parking**
- Install on-road **bike lanes** by building paved shoulders and marking them as bike lanes between SW 88th Street and SW 74th Terrace
- Install sharrow pavement markings in the constrained portion between SW 72nd Street and SW 64th Street
- Install new crosswalk with safety features across Red Road at SW 76th Street

SW 57th Avenue

NEW CROSSWALKS

Project:

Work with FDOT to install new crosswalks and safety features at priority locations identified in this Plan

- Signalized intersections missing crosswalks
  - US 1 @ SW 73rd Street
  - US 1 @ SW 70th Street (northeast leg)
- Uncontrolled intersections
  - Red Road @ SW 60th Street
  - Red Road @ SW 53rd Terrace
  - Red Road @ SW 50th Street
- Mid-block locations
  - US 1 north of the South Miami Hospital exit driveway
  - SW 40th Street east of SW 64th Avenue
  - SW 40th Street east of SW 60th Avenue

Remaining Projects

The remaining projects not listed in Priorities One through Three identified in the Network Plan map and table provided in the Recommendations section of this Plan are important to the mobility of the City and should be implemented by the City or its transportation partner agencies as funding becomes available in future years or through grant funding.

Appendix A – Bicycle Parking Inventory

Appendix A – Bicycle Parking Inventory

South Miami Intermodal Transportation Plan - Bicycle Parking Inventory

Date: 7/1/2014

Site #	Location	Type of Parking	Capacity	Usage
(For mapping purposes)	*(Street or nearest intersection)*	*(Bike rack or undesignated, e.g. tree or sign post)*	*(Number of bike parking spaces)*	*(Number of bikes parked)*
001	SW 72nd St and SW 61st Ct	Bike Hitch	2	0
002	In front of Executive National Bank	Bike Hitch	2	0
003	SW 61st Ct "6141"	Undesignated (fence for building)	-	1
004	SW 61st Ct and SW 72nd St	Bike Hitch	2	0
005	SW 61st Ctcr and SW 72nd St	Bike Hitch	2	0
006	City of South Miami City Hall	Bike Hitch	2	1
007	City of South Miami City Hall	Bike Hitch	2	0
008	South Miami Branch Library "6000"	Bike Hitch	2	0
009	South Miami Branch Library "6000"	Serpentine	4	0
010	Outside Bank United	Bike Hitch	2	0
011	Outside Mack Cycle	School Yard	8	0
012	SW 72nd St "5975"	Bike Hitch	2	0
013	Across from "5975" SW 72nd St	Bike Hitch	2	0
014	SW 71st St	Undesignated on fence	-	1
015	SW 72nd St and SW 59th Av	(2) Bike Hitches	4	0
016	Outside Sunset Tavern	(4) Bike Hitches	8	3
017	Outside Harris Travel Service	(2) Bike Hitches	4	0
018	Outside Chocolate Fashion	Bike Hitch	2	0
019	SW 58th Ave and SW 72nd St	(2) Bike Hitches	4	1
020	SW 58th Ave and SW 72nd St	Bike Hitch	2	0
021	Outside Blush "5784"	Bike Hitch	2	0
022	Outside Respice "5770"	(2) Bike Hitches	4	0
023	SW 72nd St and SW 57th Ct	Undesignated (on a street sign)	-	1
024	SW 72nd St and SW 57th Ave	Inverted U	2	0
025	Outside CVS, SW 72nd St and SW 57th Ave	Serpentine	2	0

South Miami Intermodal Transportation Plan - Bicycle Parking Inventory

Date: 7/1/2014

Site #	Location	Type of Parking	Capacity	Usage
(For mapping purposes)	*(Street or nearest intersection)*	*(Bike rack or undesignated, e.g. tree or sign post)*	*(Number of bike parking spaces)*	*(Number of bikes parked)*
026	Outside CVS, SW 72nd St and SW 57th Ave	Serpentine	4	0
027	Red Road and San Remo	Serpentine	4	2
028	In front of Panera on 72nd St	(2) Bike Hitches	4	0
029	In front of CVS, on SW 72nd St	Bike Hitch	2	0
030	In front of Sunset Business Plaze "5825"	(2) Bike Hitches	4	0
031	In front of American Apparel "5855"	(2) Bike Hitches	4	0
032	SW 73rd St and SW 58th Ct	(2) Bike Hitches	4	2
033	SW 73rd St and SW 58th Av	(2) Bike Hitches	4	0
034	5714 SW 23rd St, Public Parking Lot	Serpentine	4	0
035	SW 73rd St and SW 57th Ct	(2) Bike Hitches	4	0
036	5850 Winn Dixie	Serpentine	4	0
037	5850 Winn Dixie	Undesignated (fence for building)	-	2
038	METRORail Station	Inverted U's	20	3
039	METRORail Station	Inverted U's	12	0

Appendix B – Survey Results

Appendix B – Survey Results

The following are highlights of the survey questions:

1. South Miami is where I … (check all that apply)
   - ❑ Live
   - ❑ Work
   - ❑ Shop/Dinning
   - ❑ Play

2. When you and your family are working, shopping, or playing in South Miami, how do you get around?

	Often	Occasionally	Seldom	Never
Car				
Public Transit				
Walk				
Bicycle				

3. What are the GOOD things about WALKING AND BIKING in South Miami?

4. What specific streets currently present challenges and could be improved related to WALKING AND BIKING in South Miami? (ie, light pole in middle of sidewalk, no bike lane, no street lighting, need traffic calming, etc.)

5. Please describe the routes and destinations that you and your family WALK AND BIKE to in South Miami.

6. How many times per week do you or your family take a five (or more) minute WALK in South Miami?
   - ❑ Less than 3 times a week
   - ❑ 3 to 5 times a week
   - ❑ More than 5 times a week+

7. When you or your family WALK in South Miami, primarily where do you go?
   - ❑ Work
   - ❑ Schools
   - ❑ Shops/Restaurants
   - ❑ Sports/Entertainment
   - ❑ Parks
   - ❑ Bus Stops
   - ❑ Metrorail Station
   - ❑ City Hall/Library
   - ❑ Downtown
   - ❑ University of Miami
   - ❑ General Recreation
   - ❑ Other

8. How many times per week do you or your family BIKE in South Miami?
   - ❑ Less than 3 times a week
   - ❑ 3 to 5 times a week
   - ❑ More than 5 times a week

9. When you or your family BIKE in or near to South Miami, primarily where do you go? (check all that apply)
   - ❑ Work
   - ❑ Schools
   - ❑ Shops/Restaurants
   - ❑ Sports/Entertainment
   - ❑ Parks
   - ❑ Bus Stops
   - ❑ Metrorail Station
   - ❑ City Hall/Library
   - ❑ Downtown
   - ❑ University of Miami
   - ❑ General Recreation
   - ❑ Other _____

10. Please rank the following bicycle-pedestrian infrastructure in order of importance to you.

	1	2	3	4	5	6	7	8	9	10
Benches/Bus Shelters										
Bicycle Lanes										
Bicycle Parking										
Bike/Vehicle Lane Share										
Crosswalks										
Canopy Trees/ Shade										
Traffic Calming										
Traffic Signals										
Wayfinding & Signage										
Street Lighting										
Wide Sidewalks in Downtown										

11. What is your gender?

- ❑ Male
- ❑ Female
- ❑ Prefer not to answer

12. Which category describes your age?

- ❑ Younger than 20
- ❑ 20-29
- ❑ 30-39
- ❑ 40-49
- ❑ 50-59
- ❑ 60-69
- ❑ 70 or older
- ❑ Prefer not to answer

Constant Contact Survey Results

Survey Name: Bicycle/Pedestrian Survey for the South Miami Intermodal Transportation Plan
Response Status: Partial & Completed
Filter: None
Aug 20, 2014 4:57:10 PM

1. South Miami is where I... (check all that apply)

	Number of Response(s)	Response Ratio
Live	96	84.9%
Work	37	32.7%
Shop/Dine	81	71.6%
Play	65	57.5%
Total	113	100%

2. When you and your family are working, shopping, or playing in South Miami, how do you get around?

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Often	Occasionally	Seldom	Never
Car	84	9	6	3
	82%	9%	6%	3%
Public Transit	12	15	23	37
	14%	17%	26%	43%
Walk	47	44	10	5
	44%	42%	9%	5%
Bicycle	23	41	11	25
	23%	41%	11%	25%

3. What are the GOOD things about WALKING AND BIKING in South Miami?

97 Response(s)

4. What specific streets currently present challenges and could be improved related to WALKING AND BIKING in South Miami? (ie, light pole in middle of sidewalk, no bike lane, no street lighting, need traffic calming, etc.)

99 Response(s)

5. Please describe the routes and destinations that you and your family WALK AND BIKE to in South Miami.

98 Response(s)

6. How many times per week do you take a five (or more) minute WALK or BIKE in South Miami?

	Number of Response(s)	Response Ratio
Less than 3 times a week	40	35.3%
3 to 5 times a week	37	32.7%
More than 5 times a week	35	30.9%
No Responses	1	<1%
Total	113	100%

7. When you or your family WALK or BIKE in South Miami, primarily where do you go? (check all that apply)

	Number of Response(s)	Response Ratio
Work	18	16.0%
Schools	15	13.3%
Shops/Restaurants	83	74.1%
Sports/Entertainment	23	20.5%
Parks	55	49.1%
Bus Stops	7	6.2%
Metrorail Station	46	41.0%
City Hall/Library	33	29.4%
Downtown	48	42.8%
University of Miami	24	21.4%
General Recreation	35	31.2%
Other	16	14.2%
Total	112	100%

8. Please rank the following bicycle-pedestrian infrastructure in order of importance to you (1=MOST Important, 6=LEAST Important; use the "Comment" box for additional infrastructure):

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	MOST 1	2	3	4	5	6
Bicycle Lanes/Vehicle Lane Share	25 23%	24 22%	15 14%	14 13%	14 13%	17 16%
Crosswalks	25 23%	28 26%	21 19%	24 22%	9 8%	2 2%
Canopy Trees/Shade	21 19%	15 14%	27 25%	15 14%	17 16%	14 13%
Traffic Calming	25 23%	20 18%	21 19%	22 20%	10 9%	11 10%
Wayfinding & Signage	0 0%	10 9%	9 8%	13 12%	31 28%	46 42%
Street Lighting	13 12%	12 11%	16 15%	21 19%	28 26%	19 17%
43 Comment(s)						

9. What is your gender?

	Number of Response(s)	Response Ratio
Male	46	40.7%
Female	56	49.5%
Prefer not to answer	11	9.7%
No Responses	0	0.0%
Total	113	100%

10. Which category describes your age?

	Number of Response(s)	Response Ratio
Younger than 20	0	0.0%
20-29	6	5.3%
30-39	19	16.8%
40-49	31	27.4%
50-59	26	23.0%
60-69	14	12.3%
70 or older	8	7.0%
Prefer not to answer	9	7.9%
No Responses	0	0.0%
Total	113	100%

Constant Contact Survey Results

Survey Name: Bicycle/Pedestrian Survey for the South Miami Intermodal Transportation Plan
Response Status: Partial & Completed
Filter: None
Aug 20, 2014 4:57:10 PM

2. When you and your family are working, shopping, or playing in South Miami, how do you get around? - Comments

Answer
[No Responses]

3. What are the GOOD things about WALKING AND BIKING in South Miami? - Responses

Answer
Downtown shops and restaurants are very walkable, with the exception of Sunset Place. Metrorail station located in the heart of South Miami makes it convenient to
Improves health, allows neighbors to meet, one less car on the road is a good thing.
exercise for me, MD orders
Saves on gas...too expensive to drive and public transit not convenient
The side streets are OK for biking.
Walking is great exercise, and doesn't require expensive infrastructure to accommodate. Bicycling is dangerous in dense urban areas such as South Miami - even with bike paths.
Get to appreciate the morning scents in the air; I don't get caught up in bottle-neck traffic; I can park my bike near where I'm shopping/dining; I save time/gas++; it's
Nice wide shady sidewalks downtown. I enjoy bicycling on the neighborhood streets and I have found routes to go anywhere I want. the M-Path is terrific, particularly with new bridge over Snapper Creek x-way entry. New crosswalks on US 1 at Ludlam and 80th street work well.
Once you cross the US1 and get to Downtown, walking becomes a very relaxing experience, enhanced by the increasing charm of the area due to the increasingly sophisticated gastronomic and commercial offering.
before walking there needs to be sidewalk repair and holes in the street repair espically in the cra area
That I get excercise
There are a lot of great restaurants and venues within walking distance of City Hall. The Metro-Trail is a wonderful resource.
There are few bike lanes on major streets. Sidewalks are oftentimes blocked, obstructed, too narrow and hard to maneuver for biking. All major streets should have sidewalks, although more emphasis should be placed on having walkable destinations. Slow streets if mapped and promoted, could be a parallel network for biking and
The exercise. However, it is unsafe to walk in neighborhoods with no sidewalks. I won't ride a bike (even though I would like to) because of the bad driving habits of so many. Crossing US1 is always an adventure.
I generally never have a problem finding a place to park and lock my bike. Things are also generally pretty pedestrian accessible.
everything is close: you don't have to worry about traffic ebbing and flowing: and you don't have to worry about a parking space.
Walking in my area is pleasant because of the sidewalks. I do not go to other areas of South Miami on a regular basis.
There are few good things if any. The problem is the car culture; no one will yield for other users which makes for a dangerous situation.
I live very close and so it is very convenient.
Safe, easy to move around.
none
Sidewalks are plentiful.
Low vehicular traffic in the South portion of South Miami.
Places where there are wide, protected sidewalks make South Miami a paradise to walk through. Bike lanes also make bicycling possible in an aggressive traffic
Nice neighborhoods, some official bike routes, slightly higher than average Miami pedestrian/cyclist awareness.
Walking - meet your neighbors.
Biking - nothing good. Kids like it though.
there are none, no infrastructure to walk and bike in the city of south miami. please see 2000 city of south miami northside charette
Great weather. Down town feel.
Walking is healthy, clean, and it slows things down a bit. Always good these days. Biking works too.
pleasant but unsafe streets; tree canopy
the tree canopy. Many areas need more shade.
Usually shade. Great vegetation to look at. No hills. Interesting landscaping of people's houses.
The proximity of the South Miami Town Center (downtown)is walking and/or biking distance to many of the residential neighborhoods in the city. Many tree-lined streets provide a shady retreat from the beaming sun, however, the urban canopy has much room for improvement.
Our house is close to downtown so we can get places quickly (often faster than with a car since traffic and parking are so horrible).
Good exercise - being out in the community

Access to a variety of destinations.
Interconnected street network
The sidewalks are okay
The M-Path
The Metrorail station
The connectivity of the street and sidewalk network is great and other than Route 1, many of the roads have relatively low speed limits.
there is a lot to see and do
Convenience and variety of the restaurants, shops and exercise studios.
Biking and walking are healthier and a lot more fun than driving. I would bike all the time if I weren't terrified about crossing US 1 or Sunset Drive.
I love my neighborhood and have purchased a very nice bicycle.
I am 75 years old and can't just fly across an intersection nor do I have any faith in motorists to look for a cyclist.
Bike parking is the best.. jumping from restaurant to shop on bike is definitely easier than if in a car and no worries about parking tickets.
Walking around Sunset and Red is great.
Walking: friendly environment, streetscape (although sidewalks need cleaning and trees are uprooting sidewalks).
Biking: convenience, although definitely a cycling skill-set is needed to negotiate the traffic.
shopping, dining and metro are within walking distance of our home
Nothing... it is extremely dangerous, especially crossing US 1 and SW 57th Ave.
great parks
Plesant, safe, clean, trendy environment
narrow streets in downtown keep traffic slow, buildings with stores that face the street, accessibility from the metrorail station
Less Stressful and convenient.
It is possible. Just US1 causes a bit of a distraction. Very busy street and don't always feel comfortable crossing it on bike on foot for that matter.
I can do them
It's damn healthy.
Minimal cross traffic. Lots of four way stops. Beautiful old growth trees, quiet.
I love that South Miami is about family.
We have a four month old daughter and like taking her to the park, brewer park specifically as we live across the street.
downtown area is close
bike path under metrorail
Proximity to places we want to go. A great selection of businesses and a pretty good selection of parks.
Good path under metro-rail and decent sidewalks and crossings.
Everything is close so you don't have to worry about going too far when getting around.
South Miami is too expensive
serenity - somewhat sufficient street lights
Not many other than that it is a beautiful neighborhood. Best time to walk is during the day. Bad lighting at night and now sidewalks or bike lanes on many areas.
Pleasant neighbors, neighborhood, safety and police presence during day.
social contact
beauty of nature
health benefits
Sunset and Red Road shopping areas are easy to navigate on foot.
good to have the business area so compact for easy shopping to various places with one visit.
exercise and donot have to worry about tickets
Pleasant surroundings, relatively light traffic.
There is a major mall, restaurants and drug stores close by. For biking, the path along 57th ave is convenient and safer than riding on the road.
The good thing about walking is seeing the trees that reside in our city. We have Sunset Place and a lot of choices for activities during weekend. The neighborhood feels
Some WIDE sidewalks and Lighting
It's relatively safe in the downtown area. There is a good network of streets and good connectivity.
safe, friendly, fun
South Miami is one of the cities in Miami that has a town feel...however with all the car traffic that is quickly going away. I have owned my home in South Miami for over 15 years and have watched this city grow. The car traffic is a growing problem. The lack of bike paths is not good to encourage a different sort of transportation.
Convenience of not Parking and traffic.
Sidewalks...
Everything is so close in proximity to our homes. If we lost our cars because of some event, we are not worried at all because we can bike or walk to anything sustaining our lives. Everything we do is in South Miami or within walking distance of neighboring cities. we feel very fortunate to live here.
From where I live the city is in total walking distance. The schools, city hall, the libary and the downtown district and medical facilities are assessible by foot. It is a great

	none
	That I feel safe.
	I don't have a bike. I walk for excerise or see # 7. There is little traffic where I walk, except for Miller Road, but there is a sidewalk and a wide swale.
	Crosswalks at Across US1
	Good sidewalks in downtown - pleasant landscape
	great exercise, wonderful residential streets to bike in, once you get to the bikepath at US1 it's safe and easy.
	The walking/biking path that follows the metro is nice.
	There are side walks and crosswalks in many parts of SM which provide for safety in walking and bicycling. Many areas (north of Miller Road) do not have street lights or
	Feels like a small, tight knit community
	it's easy, small enough to make it enjoyable. The number of pedestrians and cyclists appears to be growing
	don't have to pay for parking
	sidewalks
	It's a pleasant walk from my neighborhood to shops and restaurants such as Deli Lane for breakfast. I live east of US 1.
	things are generally close by
	All of the interesting things to do and see. Slow Traffic!
	Being able to walk to shopping, dining, movies, and not have to get in a car to drive to these places. The less I have to drive, the happier I am.
	Downtown area/Sunset Place
	You don't have to deal with the horrible parking
	The nature, trees, and safety provided by the police.
	Good sidewalks in most of the city.
4. What specific streets currently present challenges and could be improved related to WALKING AND BIKING in South Miami? (ie, light pole in middle of sidewalk, no bike lane, no street lighting, need	**Answer**
	US1 - crossing US1 is scary.
	The crosswalks in front of City Hall could be a more prominent color or there could be better signage.
	US1 crossing, downtown Sunset Dr, 62 Ave between Miller Rd ad Bird Rd, Bird Rd, 80th St, 62 VAve South of US1.
	84th st...and definitely 80 th street
	sunset drive,...I have to ride on sidewalk.
	s.w. 64th street I have to ride on sidewalk
	Utility poles in sidewalks of major streets. Not all big intersections are fully signalized. People blow red lights on US 1 (we need red-light cameras). Sidewalks are not as shady as they should be. No sharrow symbols to remind drivers to think about bikes. Sidewalk edges are sometimes sharp with a drop-off.
	SW 80th Street Manor Lane Sunset Drive
	62 Avenue off Sunset with power poles - can't be handicapped accessible at all!
	Sunset Drive & US1 - that's a very dangerous intersection!
	These are suggestions: We need shaded, safe, well-populated sidewalks linking the neighborhoods to downtown. We need well-marked zebra crossings downtown with signage. Perhaps close Sunset Drive on Sundays. Red-light cameras on US 1 to make the intersections safer. Move utility poles off sidewalk. Develop neighborhood
	longer light system and a sensor to tell when someone is already crossed to the other side of the street.
	63rd Ave desperately needs traffic calming solutions. The sidewalk right next to the Hospital's parking lot is extremely narrow an presents several obstacles (mostly poles) that makes biking difficult. Biking lanes wold be greatly appreciated throughout South Miami. Also, US1 crossings could be improved (pedestrian bridges, longer crossing
	all in the cra area
	Lack of canopy makes walking/ biking hot. Careless drivers. Lack of bike and pedestrian crossings .
	Night riding is un safe
	Sunset Drive near 59th Place is a scary place to be a pedestrian. Drivers often ignore pedestrians in the cross walk at this intersection and also at the other cross walks near the library/city hall. It would be GREAT if there were a light up crosswalk signs, similar to the ones on 70th street near Larkin Community Hospital.
	Streets like Bird, Miller, 80th St, Ludlam, Hardee, 62nd Ave (to Sunset and Bird), 67th Ave, Sunset Drive should have clear definable bike infrastructure. There should be trees on all major roads (ie Red Road) as part of the bike infrastructure improvements. The M Path should be more welcoming, beautiful, and reasonably lit.
	The street I live on SW78 Terrace and most surrounding streets have no sidewalks. US1 is a nightmare, especially at 80th street and at Ludlam.
	South Miami could really use a bike lane along Ludlam Road. I commute on my bike on this road everyday and it is very dangerous without a bike lane. I also think that the Ludlam Trail would be an amazing way to connect South Miami to some awesome green areas like Tropical Park or A.D. Barnes. Also, sidewalks on Miller Dr. need
	This would be a good question to come back to or have kind of a pot hole hotline since I have dealt with the obstacles for so long, I don't even think or remember them
	Don't know
	Most of the streets in the area are problematic.
	The corner of 76th Street and 59th Avenue is very dark at night. There should be a light installed there. It is even very hard to see when driving since there are curbs at that intersection, and if not careful, it is easy to drive up onto the curb.
	Crossing the street from and to Sunset Place, the specific location is where the Z Gallerie is located.

none
No bike lanes or sidewalk down 62AVE area close to bird road area of South miami connecting to the sunset area. Must ride and walk in the street. Cars travel at high rate of speed between the traffic circle and Miller dr.
Would like to be able to bike to downtown S. Miami. Currently there is no safe way to do so from this part of the city.
Sidewalks along 59th Ave, south of SW 73 St. have trees that are overgrown into the sidewalk. In some locations abandoned utiltiy poles have been cut short but left in place adjacent to new utlility poles thus reducing the effective/usefull width of the sidewalk. Is is particulary bad as it is very near the shopping district.
62nd Ave.
Miller Drive
Train track land path
Around Ludlam Elementary school there is a bus stop sign and a garbage can in the same area of the sidewalk narrowing flow to one person, staggering these could allow
Need traffic calming on 62 court and 63 ave close to SW 40 Street. Cars speed through there like crazy. A median on 63rd Ave would be nice, and it would make that street look less like a speedway that invites people to speed there. Bike lanes, that would be nice, all over the place. Biking to school with my daughter is do-able, but
all avenues and streets see above
Dont know
More places to lock bikes would be good. A few more sidewalks in certain areas East of US1. Some sidewalks are barely passable. Close to the city there is more trash.
All streets as they traverse through downtown: Sunset Drive between US1 and 57 Ave.; 57 Ave between US1 and 74 St.; 73 Street between US1 and 57 Ave.
In areas without bike lanes, the sidewalks are narrow with obstacles like light poles, bus benches, etc. that make
Crossing at the intersection of Sunset and 62 Avenue. I think the signal is broken.
A BIKE LANE is needed on SW 62 AVE, between MILLER DR and SW 64 ST. Of metro-Miami's many areas, South Miami seems to have among the highest levels of cycling activity and is above the average in walking. However, the bike lane and sidewalk infrastructure is inadequate for providing safe passage for the city's volume of
Crossing US 1 is (literally) life threatening. We need an over/under pass or a safer way to cross!! This should be located at US1 / Sunset intersection. It's tough to bike down Sunset between Red and US1 because of the restaurants on the sidewalks and terrible traffic. Would be great if this were a pedestrian mall!
US 1 and 57th Avenue; US1 and 62nd Avenue; US1 and 67th Avenue are large and the lights are too short to go across US1. Trees and hedges block sidewalks on both sides and bikers or walkers have no line of vision or must walk/ride on the swale. Dangerous sidewalks because of foliage!
The location of the bus shelters at the SM Metrorail station creates pinch points and conflicts between people waiting and those moving through to/from the station.
Need a crosswalk at US-1 and SW 73 St to cross US-1.
The M-Path needs lighting at night.
Route 1 - drivers block the box and pedestrian crosswalks frequently. In order to cross the street, one often has to walk in front of cars stopped (or moving) in the crosswalk even when pedestrians have the right of way. Sunset Drive at Route 1: many drivers traveling north on 1 and making a right onto Sunset ignore the crosswalk.
crossing us1 is tricky
Sunset; 76th Street; Red Road are the major challenges as they are the major roads. The access roads are also challenging, but easier to dodge the traffic.
2. we desperately need traffic calming in the High Pines neighborhoodÃ¢Â¦. crazy children from Lourdes get their morning coffee and race through the neighborhood to be on time for school
Crossing US1 is definitely the most pressing issue.
Develop the abandoned Florida East Coast railway right-of-way. The trail will provide a safe dedicated and direct route for cyclists and pedestrians to schools, parks, work and shopping.
US1 & Sunset Drive. Cars are turning off US1 at 40mph and need to then observe a 20mph posted speed limit.
Light pole at 62 & Sunset (SE corner): impassable.
I could go on and on....
No established walking paths like 57th Ave South of 88th st. With rare exception, there are no bike paths. traffic calming seems to be a buzz word around here. But this goes against managing demand. Where else will the traffic go? I'd rather have smooth traffic flow than cars running red lights or blocking intersections as a result of
The problem crossing US 1 at SW 57th Ave is that the light turns green for the cars at the same time the pedestrian "walk" sign goes on. There's only 22 to cross & cars are zipping in front & back of pedestrians. It says "NO Turn on RED when pedestrian in crosswalk" What about "on green?" There needs to be a red turn arrow when
improvements to other parks like dante fascell track
US1 is a barrier, many streets in the city do not have sidewalks, high speed travel on the main streets makes biking scary. wider sidewalks for biking would be great.
making sure that crosswalks are aligned across the street
Sunset Drive has no bike lane as well as Red Road.
US1
We walk all the time on 62nd Ave. from 80th Street to US1. The sidewalks need to be better paved on both sides of the street. Also, it is very stressful to cross US1 on
59th avenue needs traffic calming: a circle or all way stop sign at 79th street
Sunset Dr., Miller Rd. Red Rd, Ludlam Rd.

I think 62 ave needs more stop signs (like 59th Ave) and also 84 needs speed bumps or something as there is a lot of cross traffic to get to/from Red Road from there (it is an alternate to 80th).
Miller Drive is becoming a nightmare. We live on Miller and 63rd and my wife has almost been hit two times coming out of the drive way. Just last week there was a 3 car accident right infront of our house. It is becoming too dangerous.
Crossing 62nd Ave by McDonalds to get across US 1 in the morning and to walk to train in the morning is extremely dangerous and the cars take the red lights due to
We'd like to see a SAFER way to cross U.S. 1 somewhere near Sunset Drive. Realistic Project - a more defined and enforced cross walk system of some kind. Dream project - a bridge from the SM Metro Station area to Sunset Shops.
None that I can think of.
It is a challenge to drive down Sunset Dr. and SW 58 Ave. where the side entrance is to Sunset Plaza. Pedestrians walk across the street holding up traffic as if they
Bike lanes
My age
59th avenue (from 85th street to 73rd street): not provided with enough street lighting. Probaby the same on 58th avenue.
No street lighting on 59th Avenue, on 79th Avenue, 78th Avenue and this is very dangerous. We have to walk with flashlight and night gear. The park on 59th avenue and 78th is also dark and dangerous. 90% of the time you have to walk on the street and there are no speed bumps to cars continuously speed and come too close to
59th Avenue, 62 Avenue
LITTER everywhere from fast food,smoothie,gyms services,etc on roads,sidewalks,lawns.
Fines not enforced for littering!!!
Still no street sign on the actual residential block of 61st ave!!!
Need police monitoring,etc. of car crossing and ensuing illegal lane crossing at 62nd and US 1 (south Miami Hospital)afternoons 3-6 pm week days.
The amount of cars on Sunset Drive is daunting. Very difficult to cross streets on foot with drivers blocking intersections. The number of "reserved" spots for restaurants
red road from US 1 to the Exxon service station... that streetscape can be made more safe and freindly to both pedestrians, bikers and vehicles with safe street design
no bike lane,speeding,need more sidewalks
don't walk or bike
times even drive on it.
US1!!!!!!!!!!!!!!!!!! The city should build a bridge over US1 (on 72nd) for walkers, runners and bike riders. It is so annoying crossing and hearing all the cars because US1 is so conjested. A nice little bridge for those of us that are to the other side of US1.
SW 80th Street and Ludlam rd
Southwest 59th at SW 73rd is a dangerous intersection because the streets are not aligned properly. Cars often blow the stop sign and ignore pedestrians. Northbound drivers on route 1 turning right at Sunset Drive also tend to ignore pedestrians in the crossswalk. Northbound traffic on Route 1 backs up in the morning and cars block
58th and 59th Avenue
59th Avenue needs a sidewalk between 76th street and Davis!
Davis needs a sidewalk. Although I gather that is in the works, it cannot come too soon.
South Miami is small and compact enough to be the ideal walking and biking community. Quiet neighborhoods and shaded streets are a plus, but on many of these, the city lacks infrastructure needed to do so comfortably and safely - namely all the things you mention: sidewalks, bike lanes (protected or otherwise), sufficient street
no bike lane...no lights telling drivers to slow down and stop at pedestrian crossings. we should improve the street lighting in the neighborhood...the lights go out and it takes months sometimes years to replace. it's a hazard for the walking pedestrians.
US 1 is a dangerous road to cross especially for kids.
SW 62nd Avenue from Bird Rd. south needs sidewalks badly (whether owned by the City or the County.
SW 80th St. from US1 south needs sidewalks for everyone.
All city sidewalk areas need foliage cutting. There is too much over growth and it's dangerous for everyone.
Brick sidewalk by Deli Lane (SW 59th Ave) Not ADA approved at all.
South Miami is a cut through for all traffic. Drivers do not go the speed limit and stop in crosswalks. US 1 by both SW 72nd St and SW 70th St is very diffcult to cross.
Cars do not stop at stop signs i.e. SW 74th ST and SW 62n Place. Also SW 64th Street is very dangerous for the school children who cross at 65th Ave to go school.
Sidewalk is inadequate.
There should be more street lighting and bike lanes in the SMRCA area
davis has no side walk or bike lane. manor lane has horrible traffic and as no sidewalks.
The only "challenge" is not enough shade.
More Bike Lanes
Not much in the way of bike lanes. traffic calming needed in our area although we do walk around in the evening for exercise
no bike lane.

	The crosswalk by the Tire Kingdom at 70th St and Dixie Hwy has tons of trash in the grass. Also, the South Miami Metro station parking garage is the ugliest structure. It also appears rundown. Metal bars are bent, gates are open all the time, and it is way overpriced. $4+ for parking plus the metro fee makes it difficult for many people to
	We need sidewalks and street lights in the SM blocks north of Miller road and between 58 ave and 57 ave.
	Lower speed limits in residential areas (25 mph) would be a welcome change along with enforcement. Many SM public servants do not even know the SM north of Miller
	No bike lanes in main thoroughfares (Red/Sunset). The Red/Sunset Intersection dangerous and unpredictable. Need traffic calming measures.
	Bicycle lanes, bicycle racks, pedestrian zones with no vehicular access would be very nice - so extending beyond the Sunset Blvd. Mall.
	Vehicles drive very fast within residential areas
	A pedestrian/cyclist bridge over US 1 and 72nd would be extremely useful
	Sunset no bike lane
	the highschool and middle school is to far for kids to walk
	Bike lanes
	US 1 is dangerous and obnoxious. How am I supposed to feel ok crossing that?
	There are too any streets without bike lanes to list here.
	too wide a question
	Sidewalks in residential area. Many areas do not have sidewalks. More bike lanes.
	the walk from the west on sunset to the metro station conflicts with the traffic turning left from sunset to go north towards the post office especially in the morning.
	currently, the sidewalk on the east side of 62nd ave just south of sunset are partially blocked by utility poles. only skinny people can pass.
5. Please describe the routes and destinations that you and your family WALK AND BIKE to in South Miami. - Responses	
	Answer
	I do not bike in the area, however I do walk: - From City Hall to and from Metro Station to go to downtown meetings during office hours. - From City Hall to downtown to eat lunch and/or shop.
	Any route, especially North of US1.
	59th street
	the post office, winn-dixie, the movies
	Hometown & Metrorail station via 70th St. City Hall via 70th St & 61st Ct. Tropical Park via Miller sidewalk. Dante Fascell Park via numerous sidestreets.
	see above
	As a commuter cyclist, I have several routes I use during my usual work schedule - too many to innumerate. Who designed your survey?!
	I bike down 70th St. to Downtown. Behind Metro station is dangerous at night. 59th Ave to link with Red Road bike path. Also 59th ave north to South Miami Park. 64th Street to Univ. of Miami. I bike through Mango Terrace to Dadeland. 64th Court to Manor Lane, then cross US 1 at Ludlam to go to Joanna's Market. 65th Ave,
	We mostly use 63rd Ave and surroundings and, when running or biking, we usually cross Sunset Dr. and head towards Brewer's Park. Then we often walk to Downtown using Sunset Dr. In addition to that, I walk from Metrorail to my house almost every day (Sunset Dr. and make a left at 63rd Ave)
	cra area
	Walking varies mostly our own streets and parks. Walking and Biking to metro rail.
	Sunset Tavern, MetroRail Station, Library, City Hall (/Farmer's Market on Sunday), Winn Dixie, UM Campus, Sunset Place,
	Biking: Metrorail, office, restaurants, post office, downtown. Walking: When kids were younger, we walked to school. Now, there is a lack of destinations for dining and shopping within walking distance. This is a major problem for most of our neighborhoods. Walking to Walgreens is 15 minutes; the grocery store is 30 minutes.
	Walk downtown. Down Manor Lane to Sunset, go across US 1 and go to restaurants and shops in downtown Sunset.
	I bike to University of Miami, Miracle Mile, Sunset, Dadeland Mall, Tropical Park, A.D. Barnes Park, and my local grocery store.
	70th street to Sunset Place, South on 62nd ave to City Hall.
	If you are talking about downtown South Miami, as stated before I do not go there. I walk in the neighborhood of Miller Drive and Brewer Park Betwen SW 61 Ave and SW 63 Ave north to SW 58 ST
	I don't bike in south Miami and I only walk in and around downtown and the hospital districts
	76th Street to 59th Avenue towards Winn Dixie.
	59Place, 74Street, Sunset Drive.
	none

Fairchild Elementary. Unfortunately there is no park in our area accessible by bike or walking.
WE WANT A PARK. This is a general consensus of all the neighbors in the area. Especially since the YMCA has been gone for years.
Brewster park is not only far but cannot be ridden to by bike due to lack of sidewalks or bike path.
Entire south section of South Miami (Sunset and south and over into the Gables to the east).
Sunset Place
University of Miami
Bird Road Design District
We often bike ride to the South Miami Library, and Ludlam Elementary School. We occasionally walk and frequently bike ride to the sunset place area.
Fairchild Elementary,old ymca soccer fields.WOULD bike to Brewer Park but there is no sidewalk on SW62Ave,no bike lane either.And crossing Miller with kids?True you could go thru the back street (SW 64 Ave?)but it's a one-way street,no sidewalk,kind of isolated, and you still have to cross Miller.Also it's a bit of a long bike ride for
Avenue 57, 58, 62, 64, 67
Street 40, 42, 48, 49, 50, 56, 62, 64, 66, us1, 72, 74, 76, 80, 88
Down town
up 59th ave from Dante Fascell neighborhood toward Deli Lane. Up 58th Ave. 62nd Ave would be good for a sidewalk from 80th street north. And we need a Sunset and US1 pedestrian overpass.
[illegible] biking environment.
Usually, SW 62 Ave N-S, then SW 84 ST to Dante Fascel Park and beyond. Occasionally, SW 56 st E-W.
Mostly along Sunset from 64th Court to City Hall and the Library.
With our children, we mostly weave through different routes of residential streets to and from Brewer Park.
From our house (6840 SW 64 CT) to Ludlam Elementary, to the Library/ City Hall, to the Sunset Drive area between US1 and Red, to parks such as Brewer Park and
up and down SW 62nd Avenue and primarily in the north end of SM
From the UM to Mack Cycle on the M-Path.
On Red Road south of US-1 to Ace Hardware.
Sunset Dr to Sunset Place or Deli Lane
Across Route 1 at Sunset Drive
entire Downtown area around Sunset Drive
62 ave south into the downtown area
From Highpines walking: walk 74th Street west to Red Road; walk part way up Red Road to cross the street - usually avoiding the light at Red; walk through 73rd Street to destination. Returning home: we usually walk down Sunset; cross Red Road at the light on Sunset, then walk east on Sunset to Highpines.
Biking: Bike west on 76th Stree
1. Sunset to Red Road
2. 76th Street to Red Road
3. 80th Street to Red Road
4. Need to cross US 1 to U. of MÃ¢ÂÂ¦. Bank United Center

Destinations include: The Towne, Starbucks, Shops, Whole Foods,
Publix on Monza, U of M Wellness Center and Bank United Center
From our house on Sunset & 69 Ave in to the shops along sunset.

We also make use of the Defunct railroad for quiet riding / walking
Miami Senior High to South Miami Middle to South Miami K-8 to Datran could all be served if the rail way is converted to a trail!!
Sunset Drive to 59 Place to USPO; USPO to 70 Street to Sunset Drive - hitch bike and walk.

Sunset Drive to 59 Ave - hitch and walk.
Mostly home to Downtown/Sunset Place
To Sunset Shopping or Whole Foods or Wendys
too many to list
Red Road
Sunset Drive
from my house to downtown south miami, or south miami station. making sure it is easy to ride bike to these locations is key.
Sunset Drive and Red Road.
Live on the west side of US 1, so crossing US 1 is always an issue.
We walk all the time on 62nd Ave. from 80th Street to US1 to go to the mall. We also walk along US 1 on the east side. US 1 (South Dixie Hwy) should be more "walker friendly." I would like to walk from 80th Street and 62nd Ave. to 80th Street & S. Dixie, but 80th Street is totally not "walker friendly."
downtown from area of 80th street on 59th avenue

Ace Hardware, Phil Stoddard's house, Mac Cycle.
Mostly around Dante Facell, up to Sunset place and across 87th street and other streets that border the canal.
Miller Drive.
Across 62 to US to SM Metrorail and back 5 days a week
From our home near Ludlam Elementary to: - downtown South Miami - Wall's Ice Cream/Big Cheese - Fuch's Park - Across 67th Ave to friends'
Bike down Miller to Tropical Park. Bike to and around Shops at sunset and Barnes park. Walk mainly around sunset area, or Barnes Park area.
We walk down Sunset Dr. and also SW 73rd St. to the different eating places along the way.
Sunset dr and red road
None
See 4., above. Also, 59th avenue to 72nd st and, then, westward to S, Miami Library. then, westward to S. Miami Hospital main entrance (all, by bicycle). Another route: 85th st, 58th ave, 83rd or 82nd st westward through Catholic church complex to 80th st, then, through C. Gables to Publix market and return. Also, to Chevron gas
Up and down 58th Avenue all the way to Deli Lane and Shops at Sunset. Bike down 57th Avenue to 112th. Walk down 62 Avenue to Petco.
Walk to Winn Dixie, Petco, throughout neighboring streets, take trail by Danti Fasel park in front of the old Parrot Jungle and bike through Pinecrest where it is much safer than South Miami
-61st ave to 80th to Matheson Hammock -76thstreet to 57th ave -78th street to 57th /red road/winn dixie/south -miami bank/Petco on 62nd ave
mostly red road and sunset
74th terr to downtown and red road
don't walk or bike
We walk on 57th and 58th avenue from 74th street to Sunset Place as well as down 72nd to Sunset Elementary. We also bike down red road.
We cross US1 to get to Sunset place and the other shops.
Fuchs park
We often walk across Route 1 at Sunset Drive to the metrorail station.
58th and 59th avenue to Sunset Place
Our most common trek is up and down 59th Ave to get to Sunset, and from there we go in various directions. Sometimes we take 58th Ave because it has a sidewalk, but we cannot get there without walking on roads w/out sidewalks.
Downtown South Miami to Ludlam via Sunset (and the reverse).
62nd Pl to 64th St, to 72nd Ave down to Sunset and back, and other routes around my neighborhood for exercise and recreation. Also Red Road to Dante Fascell Park and south into Pinecres. This is for walking (don't own a bike right now). I would love to walk from my house to the Metrorail Station but it is not a comfortable walk.
through out town center and just south , west and east of red road a bike path along red road would be helpful...I don't know if it could take place on sunset because of the room but that would be amazing as well.
Crossing over from West of South Miami to East.
Biking though back city streets because 62nd avenue does not have a sidewalk from the north side to the south side. Walk to Winn Dixie on 67 Ave. Bike to YMCK park
Use SW 62nd to go to South Miami Hospital. Use Sunset to go to the library and City Hall. SW 64th Street between SW 67th Avenue and SW 62nd Avenue needs to be slowed down. We can not even cross the street in the morning hours or evening hours. Cross US 1 to go into the city.
64th Street, Sunset Drive
sunset drive or davis
Mostly residential streets.
Sunset Place, Festivals
Walk around downtown for shopping/dining after parking car. Walk around our area (Mango Terrace) for exercise.
up and down Sunset Drive, to downtown South Miami and to the Metrorail (which I often take to work) or down Ludlam to 64th Street (and towards UM). then in and around my neighborhood - I'm very satisfied with these routes, much safer and quieter than the more transited roadways.
I walk from the South Miami Metro Station to Sunset Place and to UM.
University of Miami Brewer Park Tropical Park Walking my dog around my neighborhood (no destination)
From and to SW 53 Terrace via 57 Ave to SW 72 Avenue and E or W
Red/Sunset and adjacent streets

	SW 69th st - 72nd St to Cocoplum
	69th St, 62nd Ave to 57th to Publix and Whole Foods
	Sunset to Whole foods
	From house on 81st and 59 ave to Deli Lane for breakfast
	I also bike down Old Cutler to the Deering estate
	Mostly around the central business district.
	I walk on Sunset Monday through Friday to the Metrorail station to go to work.
	walk downtown, and in neighborhood....bike nowhere...drivers unreliable and unsafe
	From Downtown to 80 Street
	from 64th court to the metro every morning and back in the evening.
	from 64th court to down S Miami to restaurants or movies or even Winn Dixie shopping - also round trip.
7. When you or your family WALK or BIKE in South Miami, primarily where do you go? (check all that apply) - Other responses	
	Answer
	south miami hospital
	Around the neighborhood for fitness
	Doctor's office
	In my own neighborhood Do not to go to the above places
	nowhere
	Excercise; Art Shows.
	around the neighborhood
	church
	bank
	Exercise around Twin Lake
	Exercise in the morning.
	to the mailbox
	dog walks/neighborhood functions/visits
	don't walk or bike
	Post Office, drug stores, doctors
	neighborhood
8. Please rank the following bicycle-pedestrian infrastructure in order of importance to you (1=MOST Important, 6=LEAST Important; use the "Comment" box for additional infrastructure): - Comments	
	Answer
	some of these items do not apply
	Shade is especially important for walking.
	Thank you for the survey
	I know my way around so I don't need signage. Other people do. I appreciate shade, respectful traffic, and pleasant surroundings. Crosswalks are less nerve-wracking than trying to cross US 1 surrounded by cars. I like a dark sky. Biking at night is beautiful.
	It would be really great if you could have a trolley system in south Miami. I can't get to South Miami hospital unless someone brings me or I use a cab/special transportation. I am sure if you had a system the hospital workers would be using it all the time.
	The corner of 63rd Ave and Sunset Dr. needs to be reviewed for possible traffic improvements. The vehicles that are allowed to park on Sunset Dr. make it impossible for a driver on 63rd Ave. to see the vehicles that are coming full speed. One needs to move forward too much to catch a glimpse of the road and this presents a risk of
	While walk and bike infrastructure and tree lined streets are very important, the most important message to convey is that no speeding or reckless motoring will be tolerated in South Miami. Enforcement and driver education must be stressed, as well as pedestrian and bike safety at our schools. The culture of walking and biking could be reinforced when our local kids and families can safely bike and walk to school.
	Bike lanes are so important in this city because drivers are often careless and do not look for pedestrians or bikers! They text, eat, talk on the phone, etc. but the last thing they do is focus on driving! That is why it is so important to give pedestrians and bikers their own space in the form of sidewalks and bike lanes.
	Pedestrian crosswalks need signage; signals/flashers and enforcement.
	Sidewalks at least in our area.
	We are part of South Miami too. It seems we only are visited when elections are near, promises are made and then nothing until the next election cycle.
	Traffic calming is good if properly designed. Circles at SW 84 St and 58 Ave. & 59 Ave. are so small that traffic barely slows down as it goes thru. A rolling stop is more effective. At SW 58 Ave. and 84 St., no utiltity lines above and no tall shade tree. At SW 59th Ave. and 84 St. constructed at same time, utitlity lines above and trees below. Makes no sense. AT SW 59th Ave. between SW 82 St. and 83rd St., median is constructed but poorly maintained. If we can not maintain do not build.
	Excessive street lighting is detrimental to plant life and sleep patterns of residents.
	I only use existing bicycle lanes when I am riding alone. With my family i use side streets and (regrettably) sidewalks. More lanes would only marginally improve bike safety. Separate lanes are much better! No one in Miami seems to understand that they are supposed to stop at a crosswalk....

They could make our neighborhood prettier with a nice median all along sw 63 ave,with trees and landscaping.And if they could find a place for a park,maybe at the old ymca,where they were SUPPOSED to make something nice,or on that vacant land by Coral Lake on sw 44th street and 64 ave,it would make walking & biking more pleasant.Of course all of this involves going outside,which sucks in our neighborhood because of the mosquitoes in the storm drains year-(#*ing round.

I never ride at night, so street lighting is moot.

See note above about ways to safely cross US 1 for children/ old people.

Shade trees are good but not in the sidewalk. Take away on-street parking for canopy.

it would be great to have a trolly system like the grove and gables

Thank you for asking! I love South Miami, but it is becoming increasingly difficult to navigate in car, bike and on foot. Parking is an issue. I love to bike and walk, but crossing Sunset Drive, Red Road and especially US 1 are extremely challenging and are significant deterrents. I would love to bike to the library, which I regularly use, but I won't risk crossing US 1. South Miami has basically no bike racks!!!!!!!!!!

Convert the abandoned Florida East Coast Railway corridor that runs from Dadeland Station north to the Miami International Airport into bike paths, parks & community gardens.

The green belt of land is between 25 and 100 yards wide with only 13 road crossings along the entire 6.2 mile length. The trail runs next to 4 public schools and through

Thank you.

park

please dont waste our money on "vehicle lane share"... we want protected, off road paths, and continuous sidewalks. keep us away from high moving traffic.

I wish South Miami would become more walker friendly. Everyone focuses on bikes, but the bikers usually ride on the sidewalks and interfere with the walkers.

Sidewalks are a waste of money and require constant maintenance to avoid trip hazards

We need to do something on Miller.
Can we place round abouts that are often found in Coral Gables?

PLEASE, DO SOMETHING!

Coconut Grove has started cross walk awareness with the little yellow signs that caution drivers to stop for pedestrians. Something like that would be nice in S.M..

Generally, facilities are good and already very underutilized. No need to spend significant sums and increase taxes to pay for it.

7. Places to park to go into businesses.Never enough places unless you go out of your way.
8. Business places should give special discounts to the retired elderly and disabled people that have contributed to society for so many years.

Need better cemented sidewalks so one is not forced to go on the street

Need much better lighting throughout the city at night. Parks need lighting. Especially that nature preserve that they have on 59 Avenue. Very dark at night and have seen individuals lurking around there at night. A lot of our neighbors avoid that area since it is not safe.

Traffic calming is essential to ensure the quality of life somi professes. My street is a speed cut thru for frustrated commuters on 62nd ave!!! pets and people face their demise daly just stepping out the door!

This city has BEAUTIFUL trees and nature. Please preserve them. That is the charm of our city.

Traffic is horrible on SW 80th street and crossing US1 at the SW 80th street intersection is dangerous because the light changes to quickly

I notice that sidewalks don't appear at all on this list!

Street lighting is an issue in some areas, but I think that generally the city should look into lighting that reduces light pollution and casts light where it is needed, at the

My children and I ride our bikes on the sidewalk because I am afraid to share the rode with cars.

Sidewalks and traffic calming! I see kids walking down the middle of my street coming home from school all the time... it scares me that the ocassional speed nut (of which I also see many) will plow into them...

it's difficult to select for this are all very important

If traffic were any calmer, I wouldn't be able to drive anywhere. There is too much congestion downtown. The worst is getting home from Publix/Whole Foods (to 63 Ave

Bicycles and vehicles, because of their disparity in speeds, do not share facilities well. FDOT recommends not employing shared facilities for bikes and cars, particularly on arterial roadways Bad design - poor safety.

Too car centric, whatever solutions encourage people to park and walk within Somi

I really don't bike or walk much b/c too hot most of the year & my primary shopping here is for groceries. don't even walk to Metro for getting to work b/c sweating too much by time get there. freq. shuttle bus around central area along Sunset to Metro & mall would be best option for me. then I might use Metro to go to work.

I would list all of the above a 1, but the system does not allow. All of these items are a "1" to me, because they all can pose safety problems.