Recommendations

OVERVIEW

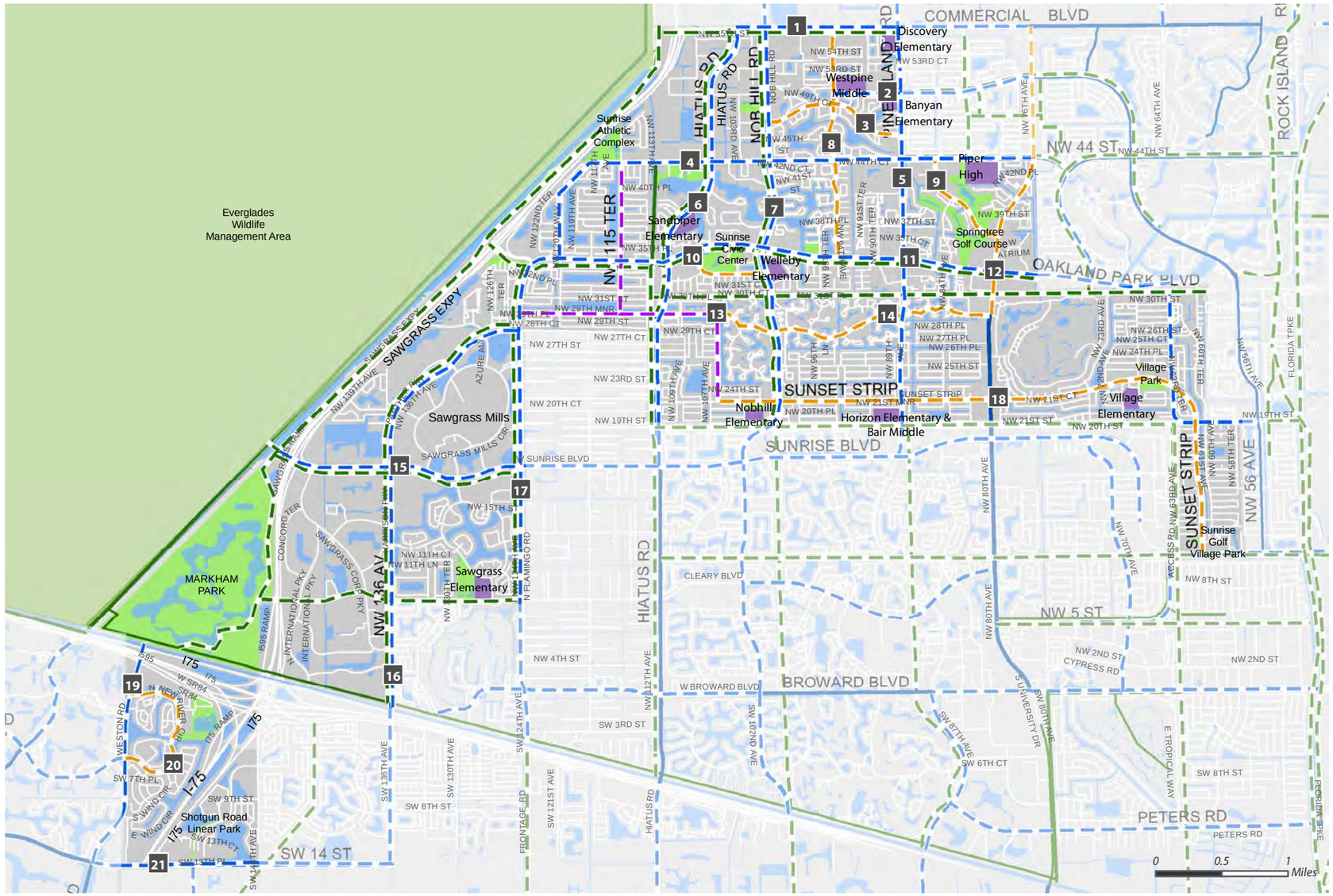
A comprehensive set of infrastructure improvements, policy changes and programs are recommended to increase the safety, convenience and enjoyment of bicycling, walking and riding transit in Sunrise. These recommendations should be implemented in coordination with City departments, neighboring cities, Broward County, Broward County MPO and FDOT District 4 .

Bicycle and pedestrian infrastructure recommendations are presented first, divided into three major sections: Priority Connections, On-Street Bikeways, Trails & Greenways, and Pedestrian & Transit. These sections are followed by a section that focuses on programs and policies that can encourage, enforce and educate those in the community about walking and biking.

- Master Plan Overview
- Priority Connections
- On-Street Bikeways
- Trails & Greenways
- Pedestrian & Transit Recommendations
- Support Facilities
- Programs & Policies

MASTER PLAN OVERVIEW

The Bicycle and Pedestrian Greenways and Trails Master Plan is a set of guidelines that will help the city to focus their attention and resources on projects that will directly benefit and enhance the biking and walking experience within the city and its connections to surrounding areas. The Master Plan is not one overall map, but instead a collection of recommendation maps, sections, plans, programs and initiatives. The overall Existing and Proposed On-Street Bikeways map to the right is one example of the master plan guidelines. Areas of focus such as Pedestrian & Transit Recommendations are outlined in support programs and policies. The combination of visual plans, sections and diagrams paired with the written program directives provide an overall holistic plan for improving the bicycle and pedestrian connectivity.



Existing and Proposed Bikeways and Trails

City of Sunrise Bicycle, Pedestrian, and Trails Master Plan

Data Sources: Broward MPO, Broward County, City of Sunrise

October 2014

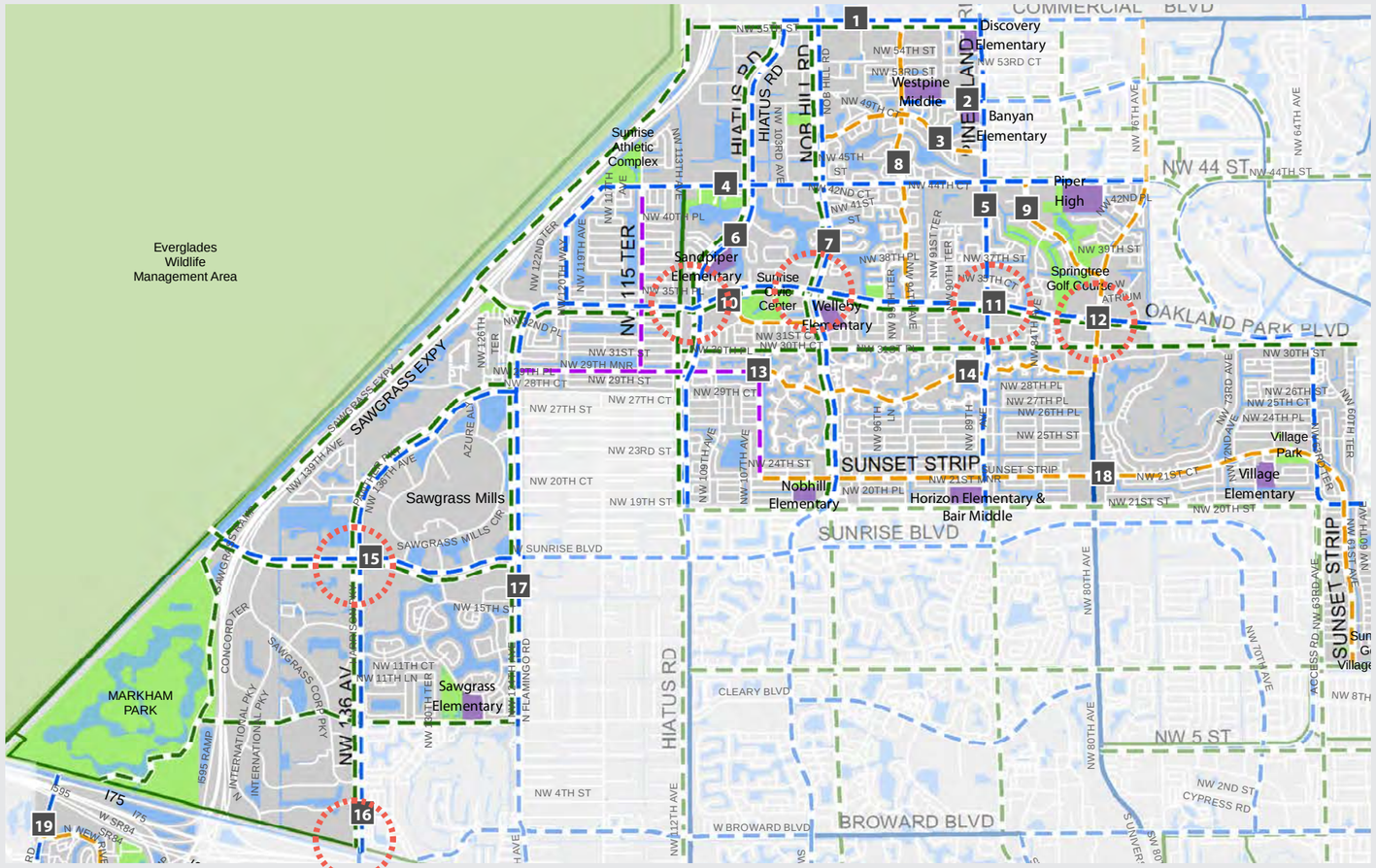
Proposed Bikeways
- *Bike Boulevard*
- *Bike Lane*
- *Buffered Bike Lane*
- *Multi-Purpose Path*

Existing Bikeways
- *Exisiting Bicycle Lane*
- *Exisiting Multi-Purpose Path*

- *Schools*
- *Parks*
- *Water Features*
- *Sunrise City Limits*
- *Broward County Urban Limits*

The Priority Connections Are:

- NW136th Ave. / New River Greenway
- NW 136th Ave. /Sunrise Blvd.
- Oakland Park Blvd. / University Dr.
- Oakland Park Blvd. / Pine Island Rd.
- Oakland Park Blvd. / Nob Hill Rd.
- Oakland Park Blvd. /Hiatus Rd.



PRIORITY CONNECTIONS

Several gaps in the bicycle and pedestrian networks were identified as critical barriers to safety and connectivity during the planning process. Each of these barriers requires a set of bicycle and pedestrian infrastructure improvements along a particular corridor, most of which are a street crossing midblock or at an intersection. Improvements range from on-street bike facilities, multi-use trails and sidewalks to intersection improvements, signals and signage.

Improvements termed "Priority Connections" are recommended to overcome each of these barriers. A summary for each priority connection is provided. The set of recommendations for each priority connection are meant to be implemented at one time to create effective bicycle and pedestrian connectivity along the relevant corridor.

The following priority connection summaries include detailed design solutions, references to best practices and cost estimates. This set of projects will greatly improve connectivity and safety in the study area when implemented.

NW 136TH AVENUE AND SUNRISE BOULEVARD

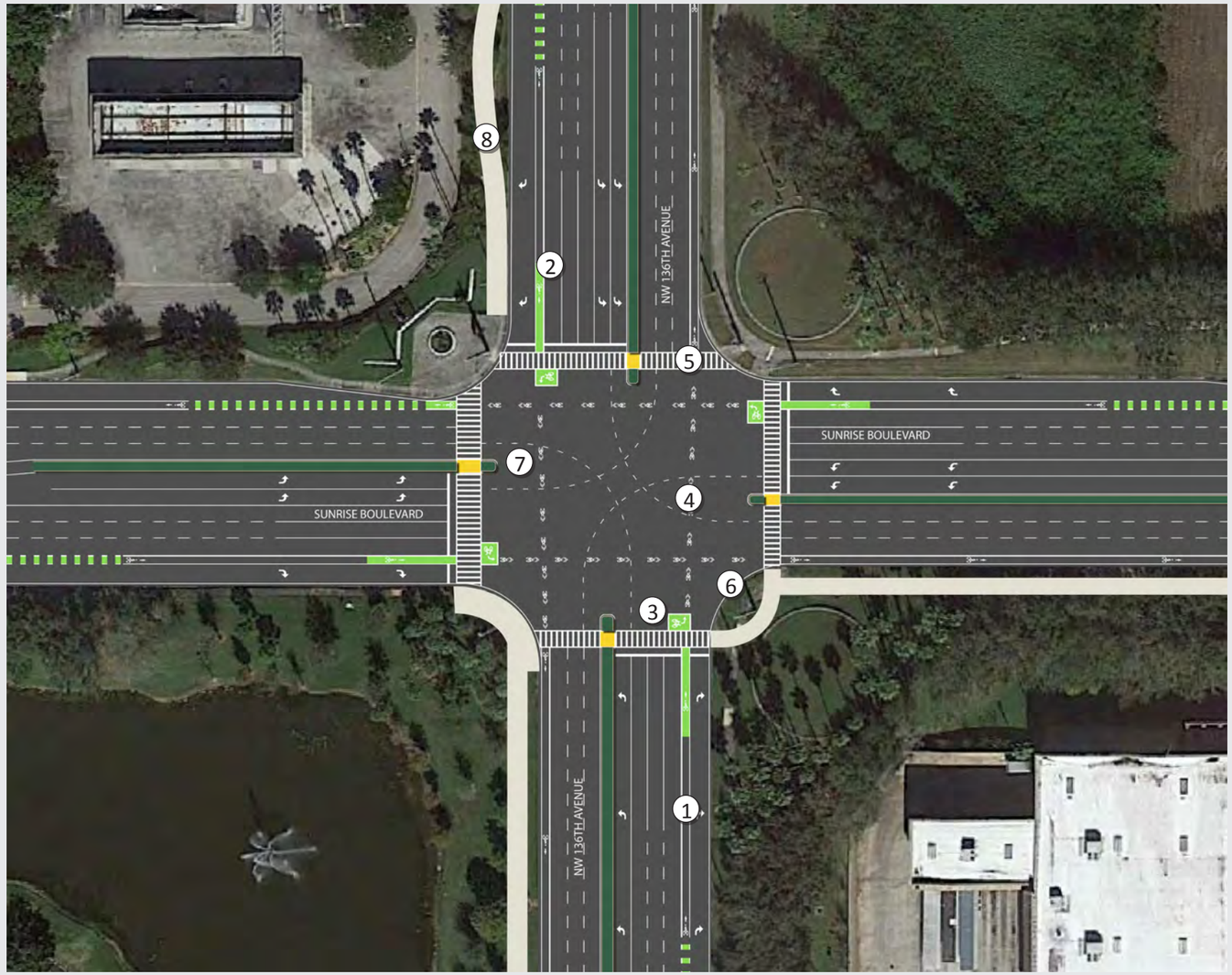
Project Needs

For those biking, there are no dedicated facilities provided at this intersection or along NW 136th Ave. or Sunrise Blvd. Bicyclists must ride in the roadway and share a travel lane with vehicles traveling at speeds of 45 mph or more.

For those walking, cross walks are provided but not as visible as high visibility cross walks. Additionally, the cross walk distances are significant with multiple turning movements and large turning radii.

existing condition

proposed improvements



***Broward County has approved plans for the Metropica DRI that proposes a double right hand turn Westbound on Sunrise Blvd. This revised road configuration will need to be considered when designing bike lanes for this area.

NORTH

Proposed Improvements

On-Street Bikeway Improvements

1. Bike lanes along NW 136th Ave. and Sunrise Blvd. provide dedicated space for bicyclists along the roadways.
2. Green striping is used to increase cyclist visibility at the intersection and conflict points, such as vehicles crossing the bike lane to enter in to a dedicated right turn lane.
3. Two-stage turn que boxes are installed to help cyclists make left turns at the intersection.
4. Bike lane intersection markings increase the visibility of bicyclists through the intersection.

Walkway improvements

5. High visibility cross walks increase the visibility of crosswalks at the intersection.
6. The turning radius is reduced, which decreases the distance pedestrians have to cross the intersection and reduces the speed of vehicles making right turns.
7. Median refuge islands provide a space to wait if one cannot make it across the intersection in one signal phase.

Trail Improvements

8. Multi-use path along the west side of NW 136th Ave. will connect north to Flamingo Road Linear Park, and South to the New River Greenway and Markham Park.

Implementation Strategy

- **Short-Term** – Cross walks can be re-striped to include high visibility cross walk markings; Create median refuge island; Reduce turn radii.
- **Medium-Term** - Bike lane improvements should be coordinated with installation of bike lanes along Sunrise Blvd. and NW 136th Ave.
- **Long-Term** –Construct multi-use trail along NW 136th Ave.

OAKLAND PARK BOULEVARD AND UNIVERSITY DRIVE

Project Needs

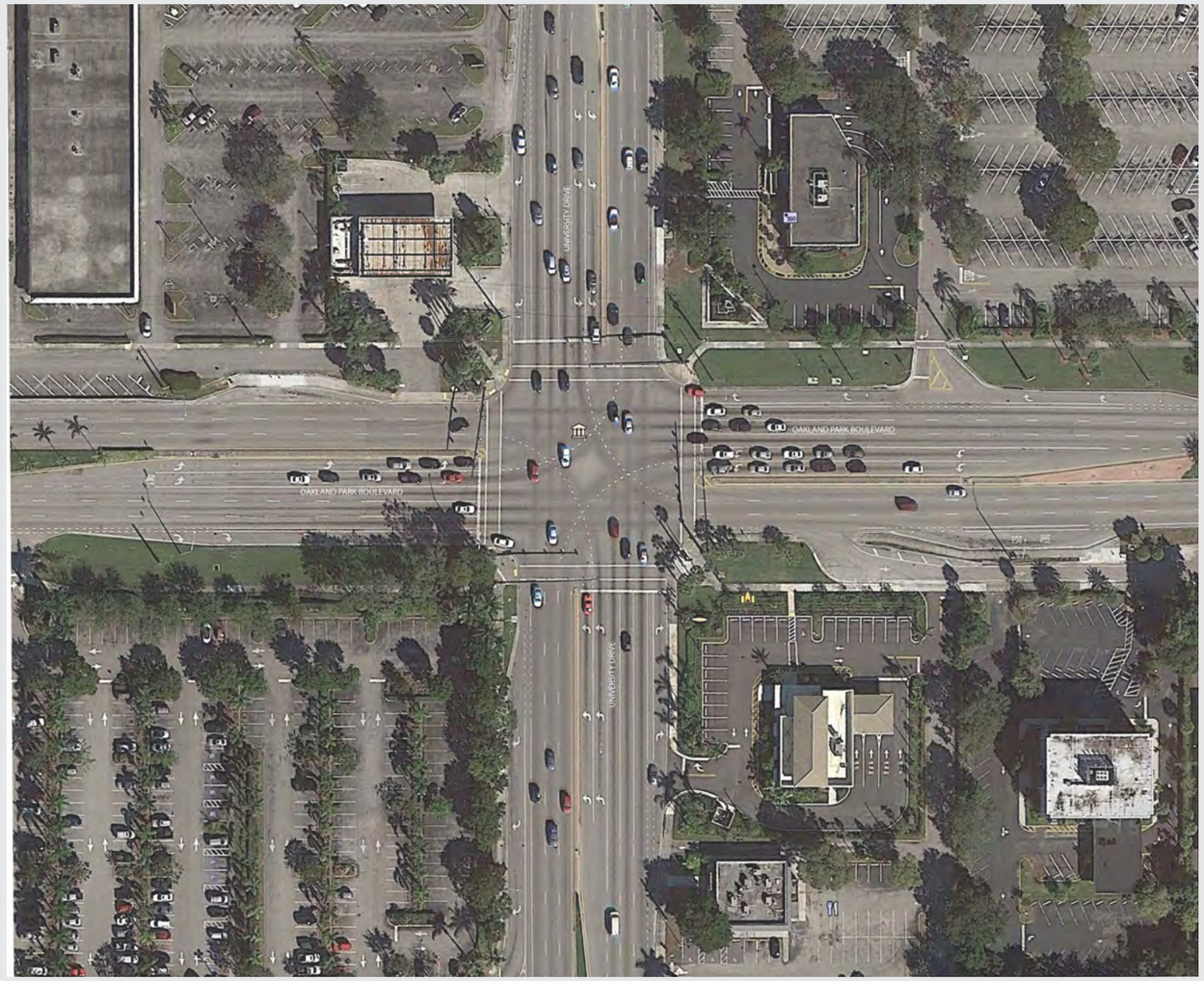
The intersection of University Drive and Oakland Park Blvd. represents the intersection of two regionally significant corridors. University Drive is a significant north-south corridor connecting Broward County and Dade County. Oakland Park Blvd is a significant east-west regional corridor extending from one side of Broward County to the other. Both corridors have significant walking, biking and transit needs.

For those biking, there are no dedicated facilities provided at this intersection or along Oakland Park Blvd. There is a bike lane that stops and starts along sections of University Drive. Where a bike lane is not provided, bicyclists must ride in the roadway and share a travel lane with vehicles traveling at speeds of 45 mph or more.

For those walking, cross walks are provided but are not as visible as high visibility cross walks. Additionally, the cross walk distances are significant with multiple turning movements and large turning radii.

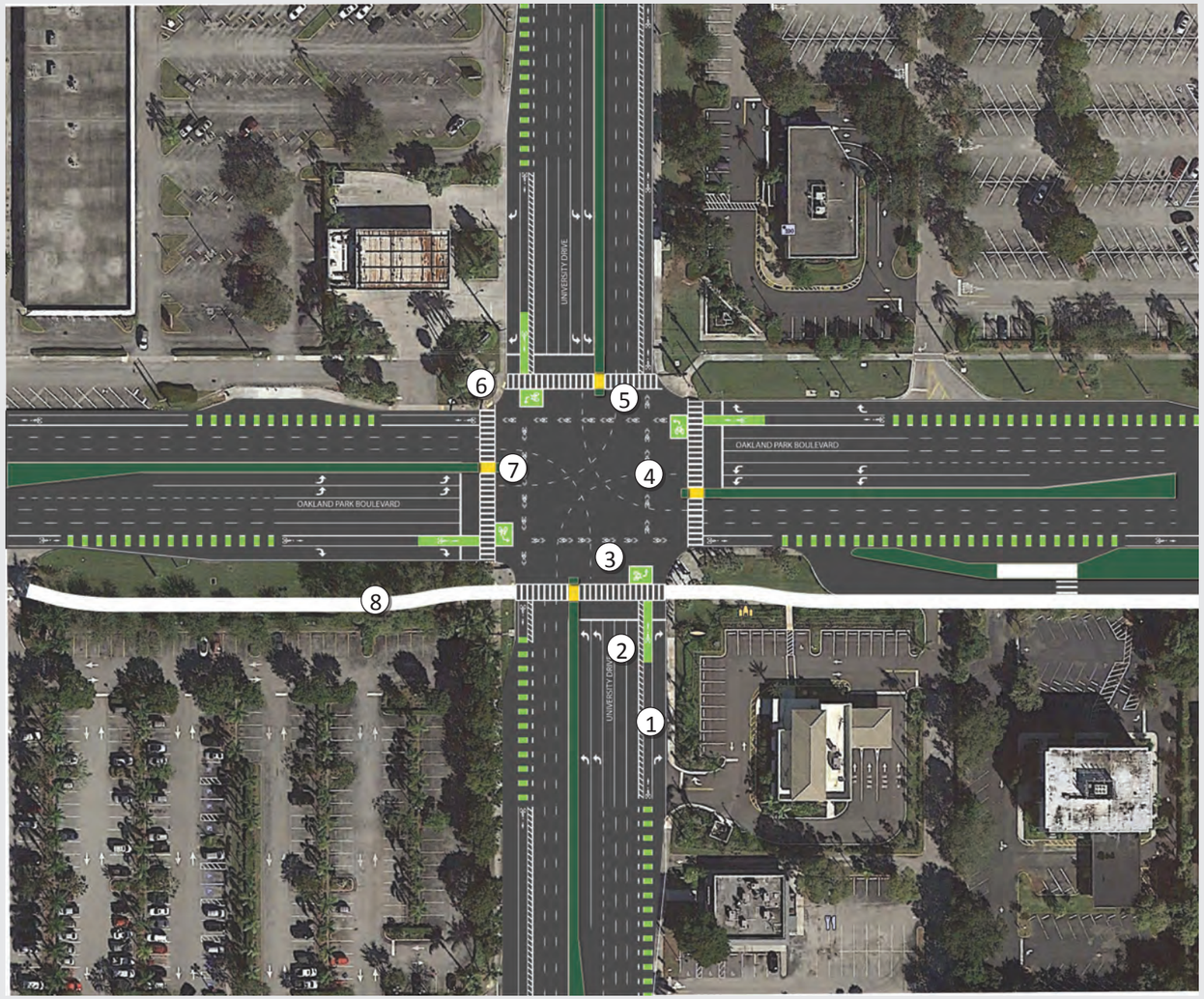
For those taking transit, bus stops are at all four sides of the intersection. Bus stops are placed on the far side of the intersection in the direction of the bus route.

existing condition



NORTH

proposed improvements



***FDOT is currently working on plans for a bus island at the Oakland Park right-of-way at University Drive. This revised road configuration will need to be considered when designing bike lanes for this area.

NORTH

Proposed Improvements

On-Street Bikeway Improvements

1. Bike lanes along Oakland Park Blvd. and University Dr. provide dedicated space for bicyclists along the roadways.
2. Green striping is used to increase cyclist visibility at the intersection and conflict points, such as vehicles crossing the bike lane to enter in to a dedicated right turn lane.
3. Two-stage turn queue boxes are installed to help cyclists make left turns at the intersection.
4. Bike lane intersection markings increase the visibility of bicyclists through the intersection.

Walkway improvements

5. High visibility cross walks increase the visibility of crosswalks at the intersection.
6. The turning radius is reduced, which decreases the distance pedestrians have to cross the intersection and reduces the speed of vehicles making right turns.
7. Median refuge islands provide a space to wait if one cannot make it across the intersection in one signal phase.

Trail improvements

8. Multi-use path along the south side of Oakland Park Blvd. will connect west to proposed trails along the L-36 and L-35A canals and to trails in Lauderdale Lakes along the C-13 canal.

Transit Improvements

- Bus turnouts are preserved at the far side of the intersection in the direction of the bus route.
- Green pavement markings are used at the bus turn outs to highlight the conflict zone where buses cross the bike lane to enter the bus turnout.

Implementation Strategy

- **Short-Term** – Cross walks can be re-striped to include high visibility cross walk markings; Create median refuge island;
- **Medium-Term** - Bike lane improvements should be coordinated with installation of bike lanes along Oakland Park Blvd. and University Dr.
- **Long-Term** –Construct multi-use trail along Oakland Park Blvd.

OAKLAND PARK BOULEVARD AND NOB HILL ROAD

Project Needs

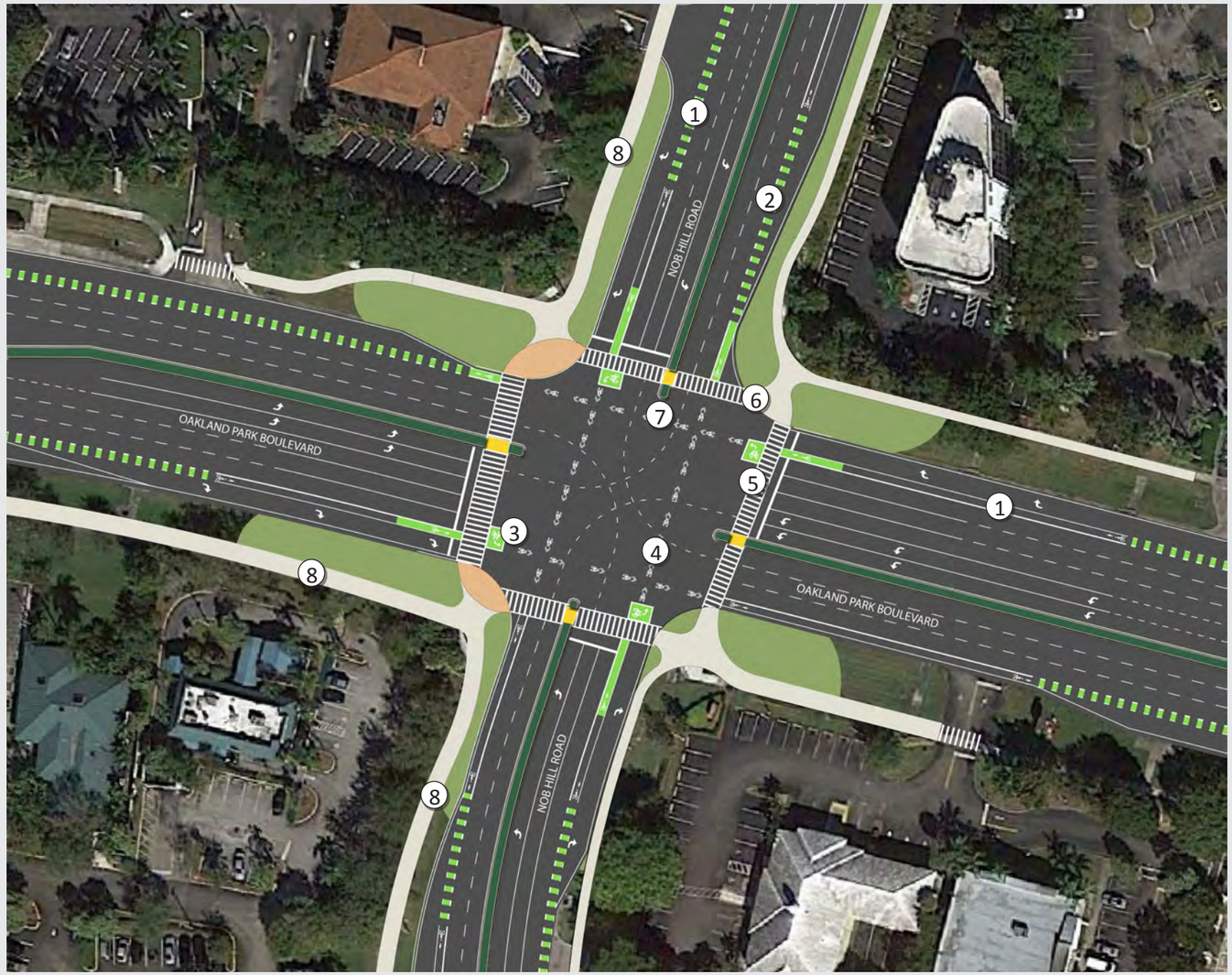
Oakland Park Blvd is a significant regional east-west corridor served by transit and Nob Hill is an important north-south route through Sunrise that is also served by transit. Sidewalks are provided along both sides of the road on Oakland and Nob Hill. However, there is no on-street bike facilities currently.

Bus stops are located on all four sides of the intersection, but they are spaced a significant distance from the intersection, which may lead transit riders trying to cross the street mid-block rather than at the intersection.

existing condition

NORTH

proposed improvements



NORTH

Proposed Improvements

On-Street Bikeway Improvements

1. Bike lanes along Oakland Park Blvd. and Nob Hill Rd. provide dedicated space for bicyclists along the roadways.
2. Green striping is used to increase cyclist visibility at the intersection and conflict points, such as vehicles crossing the bike lane to enter in to a dedicated right turn lane.
3. Two-stage turn queue boxes are installed to help cyclists make left turns at the intersection.
4. Bike lane intersection markings increase the visibility of bicyclists through the intersection.

Walkway improvements

5. High visibility cross walks increase the visibility of crosswalks at the intersection.
6. The turning radius is reduced, which decreases the distance pedestrians have to cross the intersection and reduces the speed of vehicles making right turns.
7. Median refuge islands provide a space to wait if one cannot make it across the intersection in one signal phase.

Trail improvements

8. Multi-use path along the south side of Oakland Park Blvd. will connect west to proposed trails along the L-36 and L-35A canals and to trails in Lauderdale Lakes along the C-13 canal.

Transit Improvements

- Bus stops should be moved closer to the intersection to encourage bus riders to use the intersection rather than crossing mid-block.
- Green pavement markings are used at the bus turn outs to highlight the conflict zone where buses cross the bike lane to enter the bus turnout.

Implementation Strategy

- **Short-Term** – Cross walks can be re-striped to include high visibility cross walk markings; Create median refuge island;
- **Medium-Term** - Bike lane improvements should be coordinated with installation of bike lanes along Oakland Park Blvd. and University Dr.
- **Long-Term** –Construct multi-use trail along Oakland Park Blvd. Construct bike lanes along Nob Hill Rd.

NW 136TH AVENUE AND NEW RIVER GREENWAY

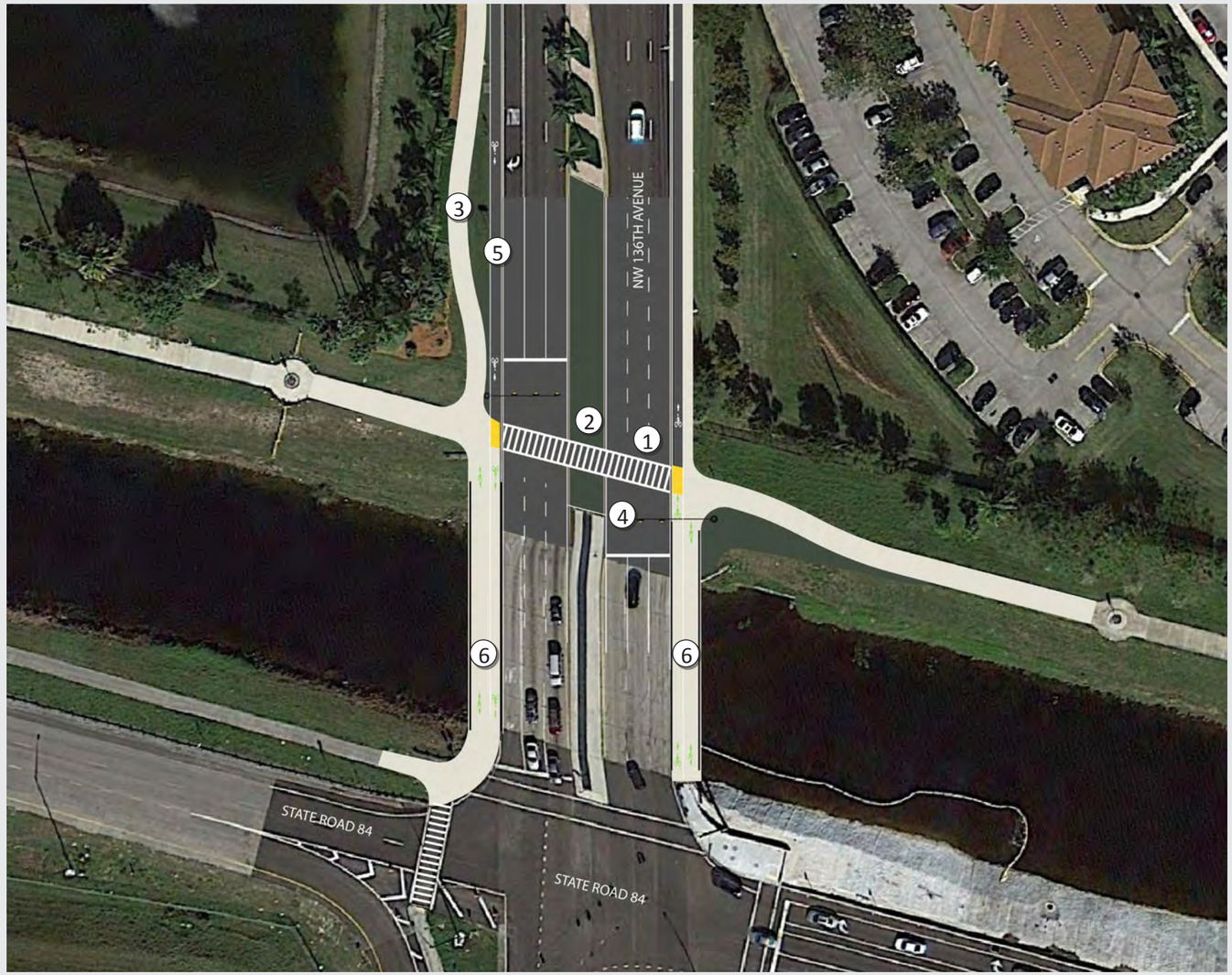
Project Needs

NW 136th Ave is a significant north-south corridor with sidewalks on both sides of the road, transit service but no dedicated on-street bikeway facility. The New River Greenway is the longest east-west greenway in the Sunrise area.

Currently, the major street crossings for the New River Greenway are inconvenient for pedestrians and bicyclists. Rather than continue straight to the other side of the roadway, those walking and biking must use the signalized intersection at NW 136th Ave and SR 84. Sidewalk access across the canal is constrained and does not allow enough space for bicyclists and pedestrians to pass safely. The crosswalk at the intersection of NW 136th Ave and SR 84 is not highly visible and trail users must actuate the pedestrian signal in order for the pedestrian signal to signal to cross.

existing condition

proposed improvements



NORTH

Proposed Improvements

Walkway improvements

1. High visibility cross walks increase the visibility of crosswalks at the intersection.
2. Median refuge islands provide a space to wait if one cannot make it across the intersection in one signal phase.

Trail improvements

3. Multi-use path along the west side of NW 136th Ave . will connect Sunrise Blvd with the New River Greenway.

Implementation Strategy

4. **Short-Term** – Install signalized trail crossing at intersection of NW 136th Ave and New River Greenway.
5. **Long-Term** –Construct bike lanes along NW 136th Ave.
6. **Long-Term** –Construct widened multi-use paths along east/west sides of NW 136th Ave at canal cross over.

- Example of potential greenway crossing at roadway

- Example of pedestrian signalized crossing

NW 44TH STREET BIKE LANE PROJECT

The City of Sunrise, in partnership with Broward County and the Florida Department of Transportation, is proposing to construct bicycle lanes on NW 44th Street from 115th Street to Pine Island Road.

The goal of the project is to create a safer street and improve access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

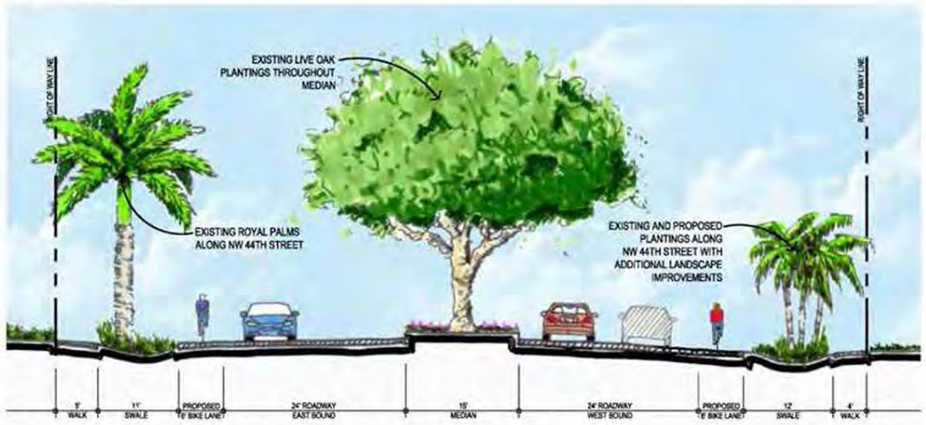
The project includes lane width narrowing and repurposing of the shoulder to introduce east and west bound bike lanes.

This project is in line with the policies of this master plan. On-going coordination should be supported by agencies, stakeholders and community members involved with implementation of this project.

PROPOSED BIKE LANE CONNECTIVITY

NW 44TH STREET

CITY OF SUNRISE, FL



PROPOSED STREET SECTION WITH BIKE LANE

TYPICAL

OPTION A:
EXAMPLE OF GREEN COLORED CONCRETE AND TYPICAL STRIPING FOR BIKE LANES

OPTION B:
EXAMPLE OF COLORED ASPHALT AND TYPICAL STRIPING FOR BIKE LANES.

USING APPROPRIATE STRIPING AND A SURFACE COLOR VARIATION IT WILL DELINEATE THE BIKE LANE VISUALLY TO MOTORIST ALLOWING HIGHER LEVELS OF SAFETY FOR THE CYCLIST.

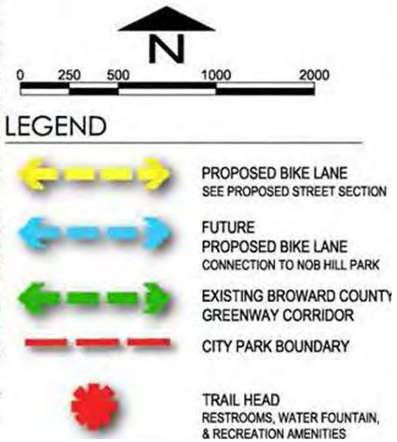
BIKE LANE DELINEATION

CONCEPT IMAGES

PROPOSED BIKE LANES

LOCATION MAP

1"=1000'



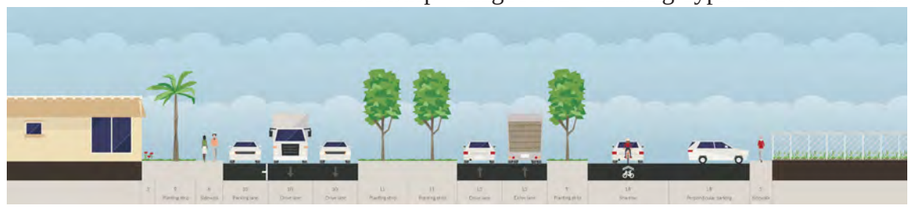
SUNSET STRIP BICYCLE LANE AND COMPLETE STREET PILOT PROJECT

Sunset Strip Cross Sections

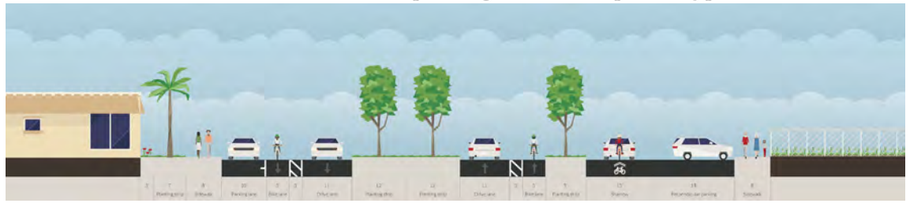
Sunset Strip - Existing Typical Cross Section

Sunset Strip - Proposed Typical Cross Section

Sunset Strip Village Area - Existing Typical Cross Section



Sunset Strip Village Area - Proposed Typical Cross Section



The City of Sunrise, in partnership with the Broward County Metropolitan Planning Organization (MPO) and the Florida Department of Transportation, is proposing to construct bicycle lanes on Sunset Strip from Sunrise Boulevard to Nob Hill Road. Additionally, the project will include a Complete Street Pilot Project in the Village area of Sunset Strip from NW 19th Street to NW 72nd Avenue.

The goal of the project is to create a safer street and improve access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. The Complete Street Pilot Project will include the construction of wider sidewalks, two roundabouts (one at NW 19th Street and one at NW 64th Avenue), and bike lanes with striped buffers. To accommodate the addition of bike lanes and buffer strips, Sunset Strip will be modified to provide a single vehicular traffic lane in each direction with expanded capacity at signalized intersections.

This project is in line with the policies of this master plan. On-going coordination should be supported by the agencies, stakeholders and community members involved with implementation of this project.

Sunset Strip Bicycle Lane and Complete Street Pilot Project

LEGEND

- Bicycle Lane Area
- Transition Area
- Complete Street Pilot Area
- Traffic Circle

NORTH

ON-STREET BIKEWAY RECOMMENDATIONS

Overview

The overall goal with the on-street bikeway recommendations is to create a complete and connected network of bikeways in Sunrise. Additionally the goal is to connect all of the schools and parks by an on-street bikeway or a trail. The network recommendations, when implemented, will accomplish this goal.

Bikeway Types

Several different kinds of bikeways are recommended throughout this chapter. Brief descriptions are provided here. Consistent with bicycle facility classifications throughout the nation, these Bicycle Facility Design Guidelines identify the following classes of facilities by degree of separation from motor vehicle traffic.

- **Bike Boulevard** - Low-volume and low-speed street that has been optimized for bicycle travel.
- **Bike Lane** - A portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists.
- **Buffered Bike Lane** - Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.
- **Greenway** - A greenway is a multi-use trail separated from the roadway. A sidepath is a multi-use trail adjacent to a roadway.

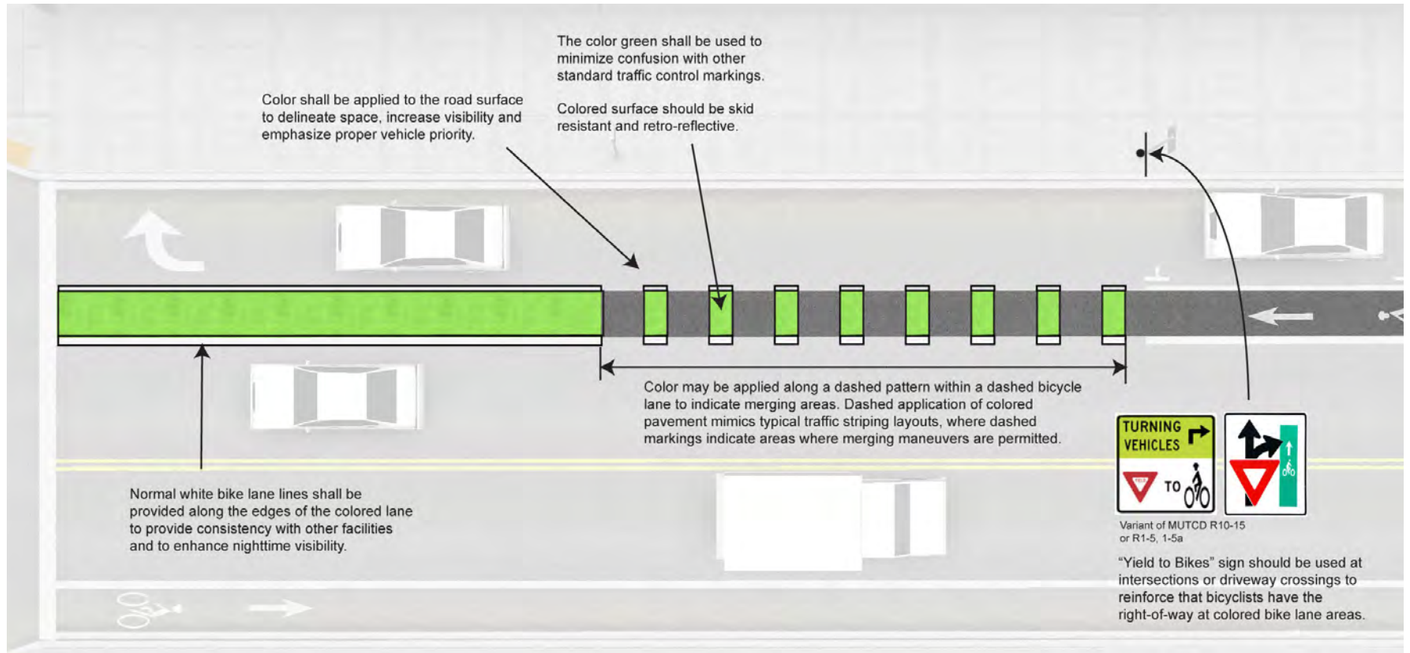
Bike Boulevard

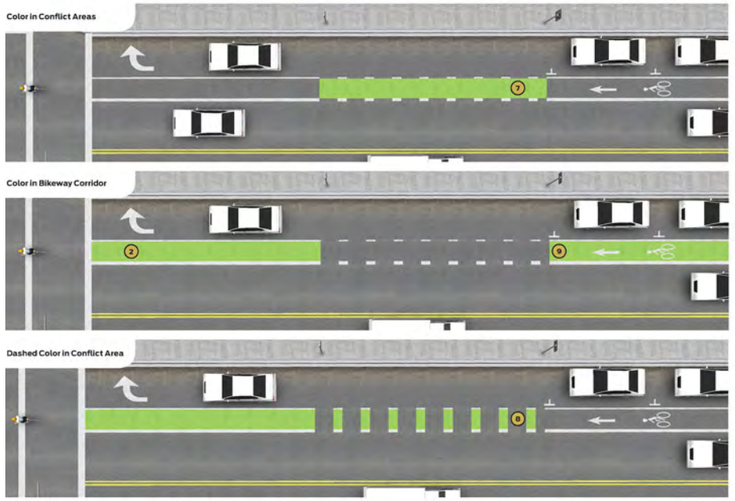
Bike Lane

Buffered Bike Lane

Greenway

Bikeway Markings and Signage





TUSCON, AZ


SAN FRANCISCO, CA (PHOTO: SFSTREETSBLOG)


CHICAGO, IL

Best estimates for safety effects of one blue cycle crossing in a junction are a reduction of 10% in accidents and 19% in injuries.

Jensen, S. U. (2008). Safety effects of blue cycle crossings: A before-after study. Accident Analysis & Prevention, 40(2), 742-750.

Bike Lane Markings at Conflict Zones and Intersections

"Bike lane" signs (MUTCD R3-17) may be located prior to the beginning of a marked bike lane to designate that portion of the street for preferential use by bicyclists. The 2009 MUTCD lists bike lane signs as optional; however, some states still require their use.

> *If the word, symbol, and/or arrow pavement markings shown in Figure 9C-3 are used, Bike Lane signs (see Section 9B.04) may also be used, but to avoid overuse of the signs not necessarily adjacent to every set of pavement markings.*
>
> Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices.

A "Yield to Bikes" sign should be used at intersections or driveway crossings to reinforce that bicyclists have the right-of-way at colored bike lane areas.

Variant of MUTCD R10-15 to include helmeted bicycle rider symbol (MUTCD figure 9C-3 B).

Alternate sign in common use, similar to MUTCD R1-5, 1-5a.

Color may be used to enhance visibility of a bike lane.

The colored surface should be skid resistant and retro-reflective.

ON-STREET BIKEWAY RECOMMENDATIONS

Network Recommendations

The bikeway recommendations for this Plan include over 46.2 miles of new on-street bikeways (including bike lanes, buffered bike lanes and bicycle boulevards) to increase Sunrise's bicycle network connectivity. The network recommendations were also developed to create comprehensive, safe and logical network. The mileage is in addition to the over 33.2 miles of proposed off-street greenway trails and multi use paths. At full build out of the proposed bikeways, Sunrise will have nearly 47.1 on-street bikeway miles, improving connections from residential neighborhoods to destinations such as schools, parks, shopping, jobs and transit.

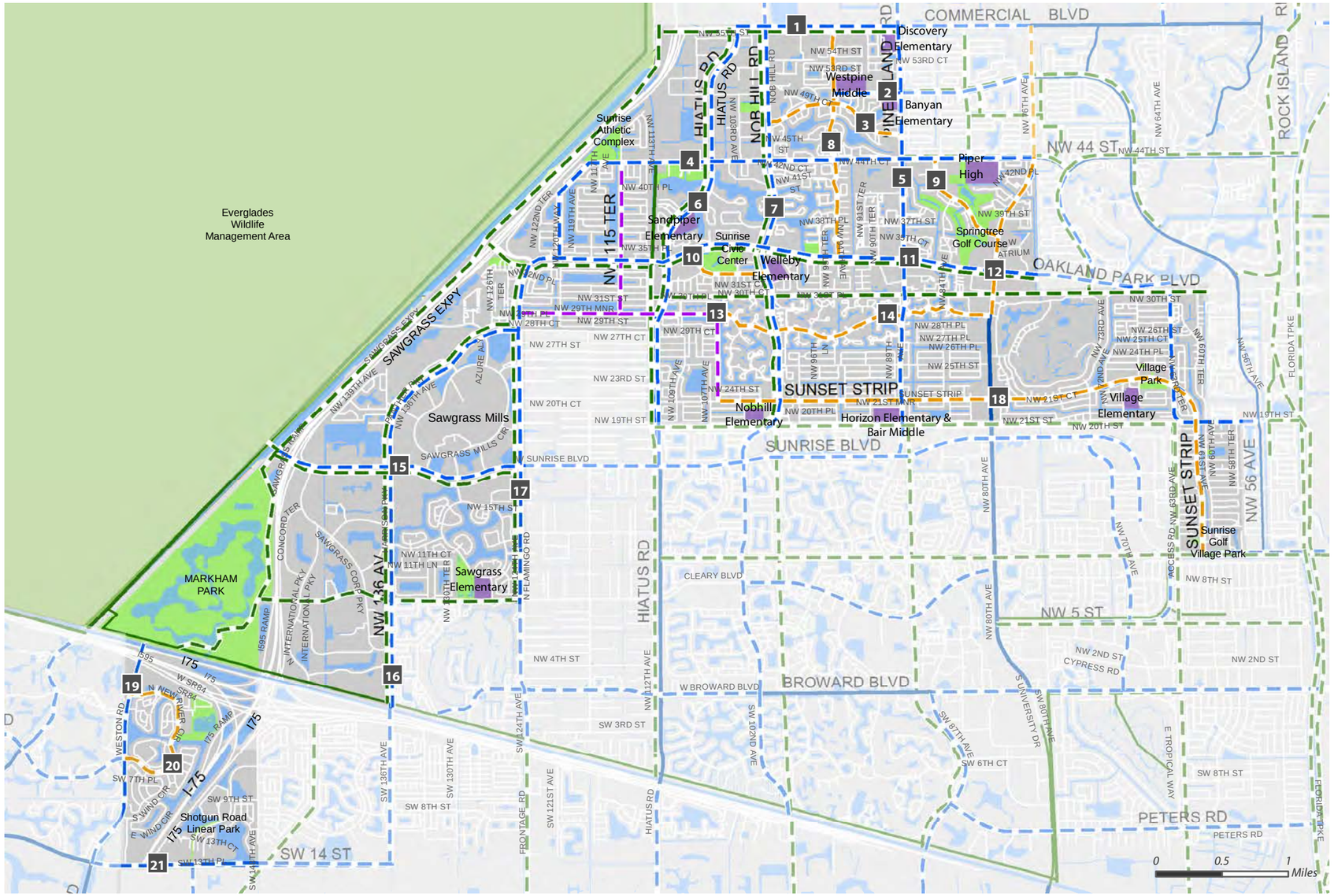
The recommendations for each roadway were carefully selected based on current roadway characteristics, future planned characteristics as well as design considerations such as volumes and speeds.

On-street bikeway segment details are presented in Table 3.1.

Project Number	Project Name	Facility Type	From	To	Length (Miles)	Implementation Strategy	Implementation Notes
1	Commercial Blvd Bike Lane	Bike Lane	Hiatus Rd	Pine Island Rd	1.2	Lane Narrowing	See Commercial Blvd cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway; Coordinate with the City of Tamarac
2	NW 50th St	Bike Lane	NW 94th Ave	University Dr	0.5	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
3	Springtree Lakes Dr / NW 49th St	Buffered Bike Lane	Nob Hill Rd	Pine Island Rd	1.1	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Restripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
4	120th Way / NW 44th St	Bike Lane	Oakland Park Blvd	University Dr	4.1	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
5	Pine Island Rd	Bike Lane	Commercial Blvd	Proposed 19th Street Canal Trail (Plantation)	3.0	Lane Narrowing	See Pine Island Rd cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway
6	Hiatus Rd Bike Lane	Bike Lane	Commercial Blvd	Proposed 19th St Canal Trail (Plantation)	3.2	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
7	Nob Hill Rd Bike Lane	Bike Lane	Commercial Blvd	Proposed 19th St Canal Trail (Plantation)	3.1	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
8	NW 94th Ave	Buffered Bike Lane	Oakland Park Blvd	Commercial Blvd	1.7	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
9	Springtree Ln	Buffered Bike Lane	NW 44th St	Univerity Dr	0.8	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
10	NW 33rd St / Joshlee Blvd	Buffered Bike Lane	Oakland Park Blvd	Nob Hill Rd.	0.7	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
11	Oakland Park Blvd Bike Lane	Bike Lane	Flamingo Rd	Sunrise city limits	3.9	Lane Narrowing	See Oakland Park Blvd cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway
12	University Dr	Buffered Bike Lane	NW 44th St	Sunrise Lakes Blvd	1.2	Lane Narrowing	See University Dr cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway
13	115th Terr / NW 29th Mnr / NW105th Ln	Bike Boulevard	Sunrise Athletic Complex (NW 115th Terr) / N Flamingo Rd (NW 29th Mnr)	Sunrise Strip via 105th	3.3	Bike Boulevard	Install volume and speed control features, shared lane markings and wayfinding
14	Sunrise Lakes Blvd	Buffered Bike Lane	NW 105th LN	University Dr	2.2	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
15	Sunrise Blvd	Bike Lane	Sawgrass Expressway Trail	Flamingo Rd	1.9	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
16	NW 136th Ave Bike Lane	Bike Lane	Flamingo Rd	New River Greenway	3.4	Lane Narrowing/ Roadway Widening	See NW 136th Ave cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway from Flamingo Rd to NW 8th St; Construct raised cycle track from NW 8th St to New River Greenway - Include combined bike lane/turn lane where dedicated right turn lanes exist
17	Flamingo Rd Bike Lane	Bike Lane	Oakland Park Blvd	NW 8th St	2.5	Lane Narrowing	See Flamingo Rd cross section; Narrow travel lanes to accommodate 5 ft bike lane on both sides of the roadway
18	Sunset Strip	Buffered Bike Lane	NW 105th Ln	Sunrise Blvd	4.8	Lane Reconfiguration	Implement Broward County MPO and City of Sunrise Complete Streets project for roadway. Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane
19	Weston Rd	Bike Lane	New River Greenway	S Wind Cir	1.3	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
20	New River Circle	Buffered Bike Lane	Weston Rd	Weston Rd	1.3	Lane Reconfiguration	Preserve inside travel lane and center median left turn lane; Re-stripe outside travel lane to be a buffered bike lane with 6 ft bike lane and 3 ft buffer
21	NW 14th St	Bike Lane	Weston Rd	NW 136th Ave (Davie)	1.0	Roadway Widening	Widen roadway to include 5 ft bike lane on both sides of the roadway
Total Recommended					46.2		
Total Existing					0.9		
Total Existing + Recommended					47.1		

Table 3.1 - on-street recommendation

exhibit 3.1



Existing and Proposed Bikeways and Trails

City of Sunrise Bicycle, Pedestrian, and Trails Master Plan

Data Sources: Broward MPO, Broward County, City of Sunrise

October 2014

Proposed Bikeways
- *Bike Boulevard*
- *Bike Lane*
- *Buffered Bike Lane*
- *Multi-Purpose Path*

Existing Bikeways
- *Exisiting Bicycle Lane*
- *Exisiting Multi-Purpose Path*

- *Schools*
- *Parks*
- *Water Features*
- *Sunrise City Limits*
- *Broward County Urban Limits*

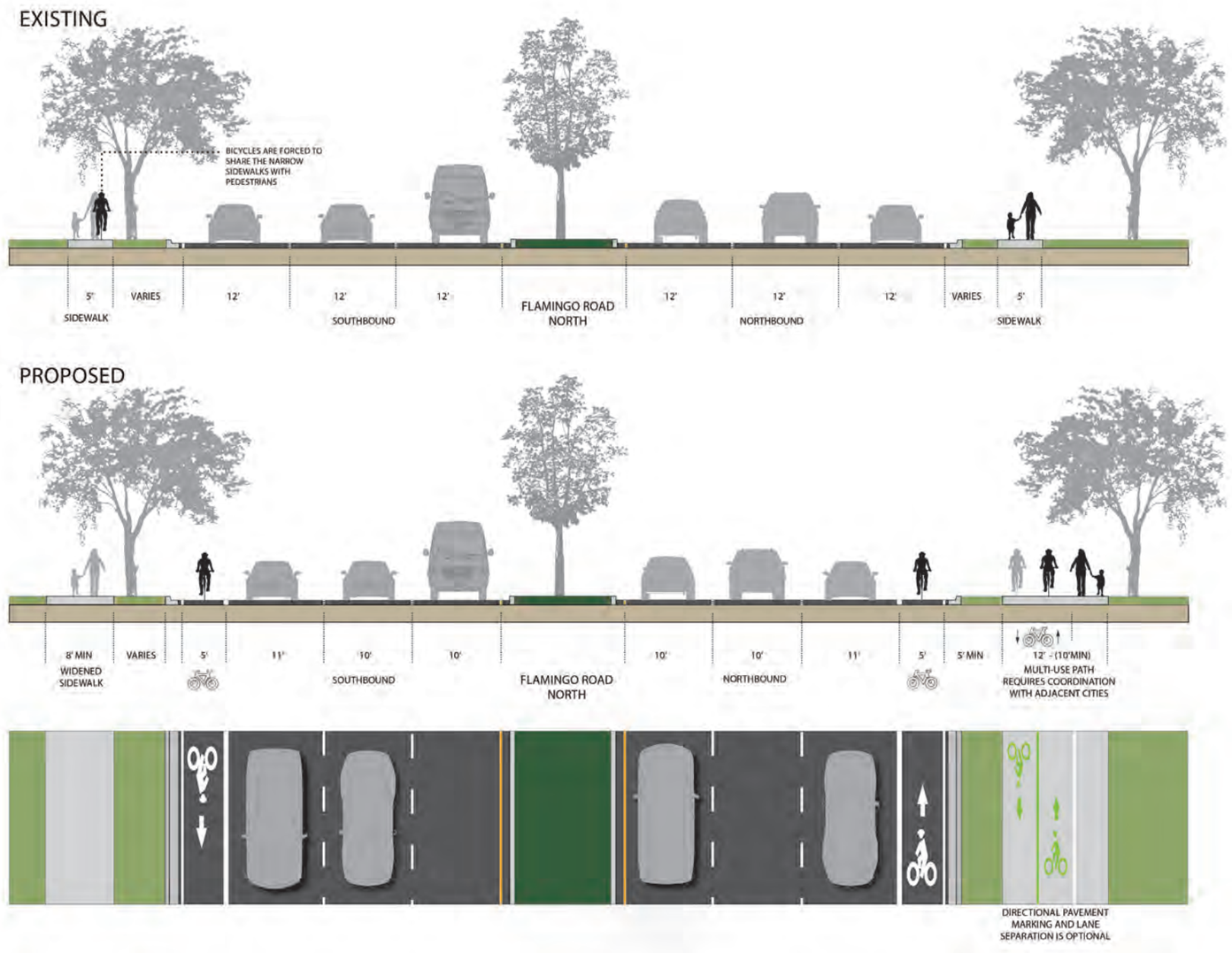
ON-STREET BIKEWAY RECOMMENDATIONS

Key Street Cross Sections

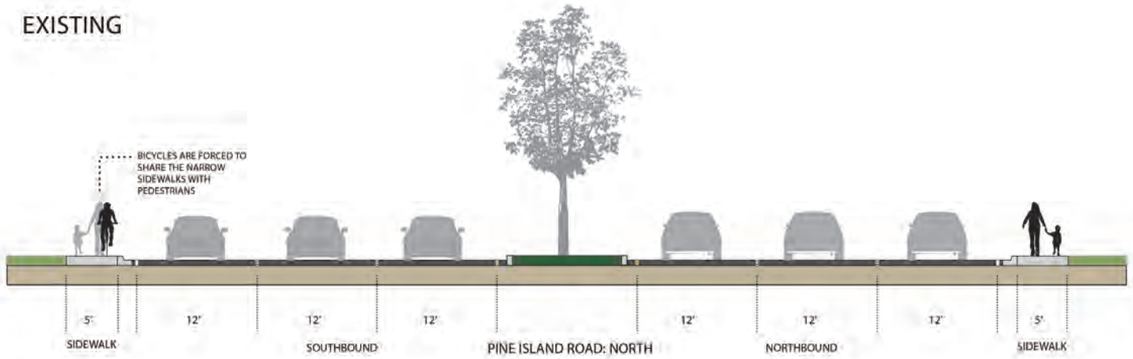
The on-street bikeway cross sections provide supplemental design guidance for key segments of the proposed on-street bikeway network. Note that recommendations for sidepaths, or greenways along a roadway, are also included with these cross sections.

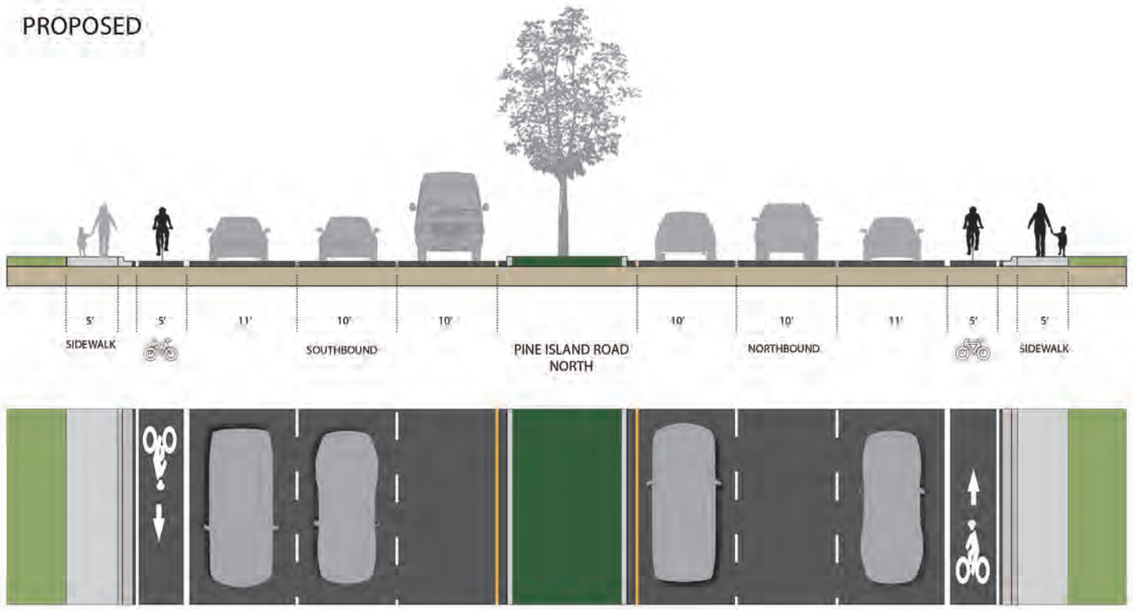
- Flamingo Road
- Pine Island Road
- North - Hiatus Road
- Nob Hill Road
- University Drive
- NW 136th Ave.
- Commercial Boulevard
- Oakland Park Boulevard
- Sunrise Boulevard
- Sunrise Lakes Blvd

Flamingo Road

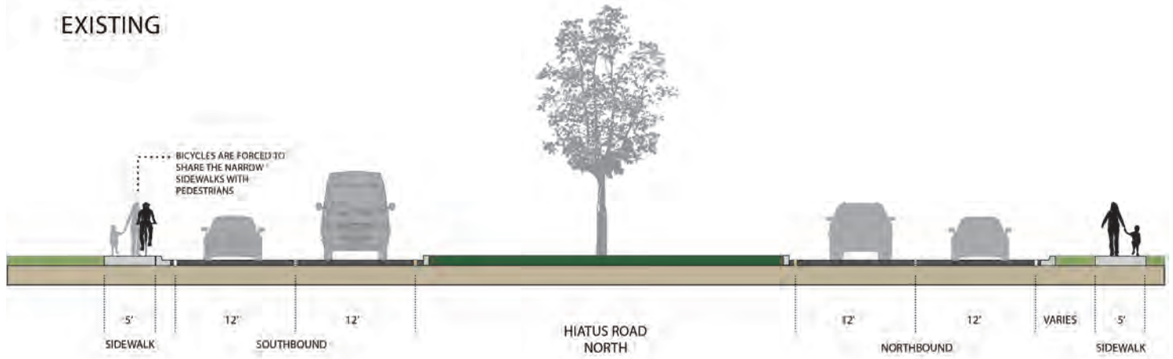


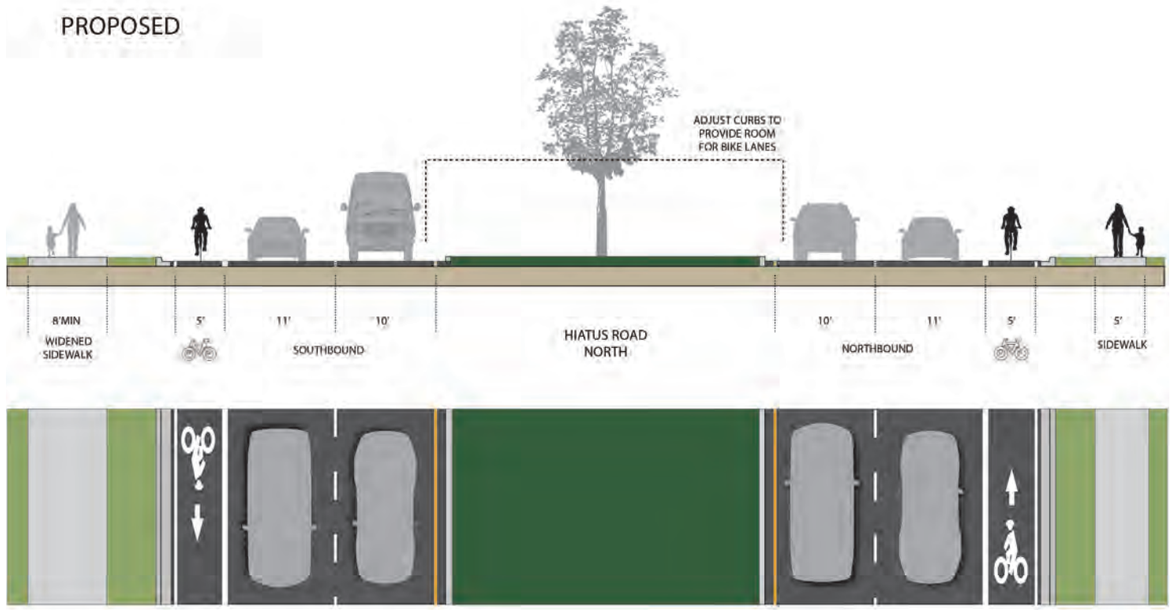
Pine Island Road Section



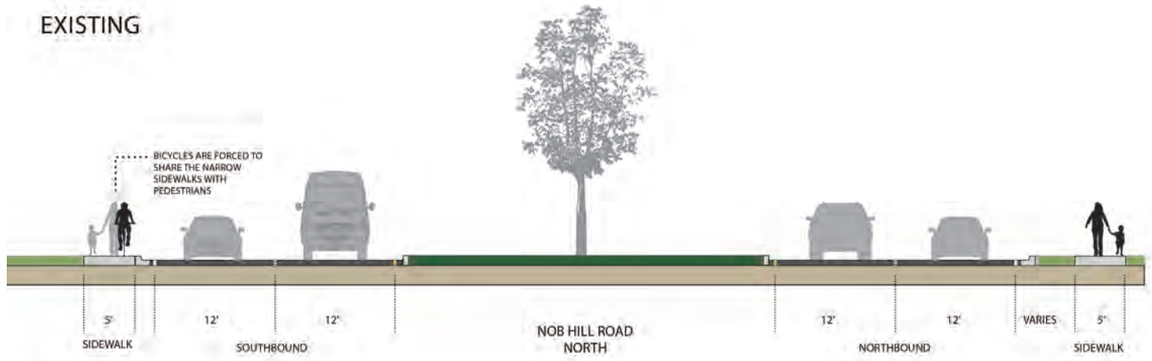


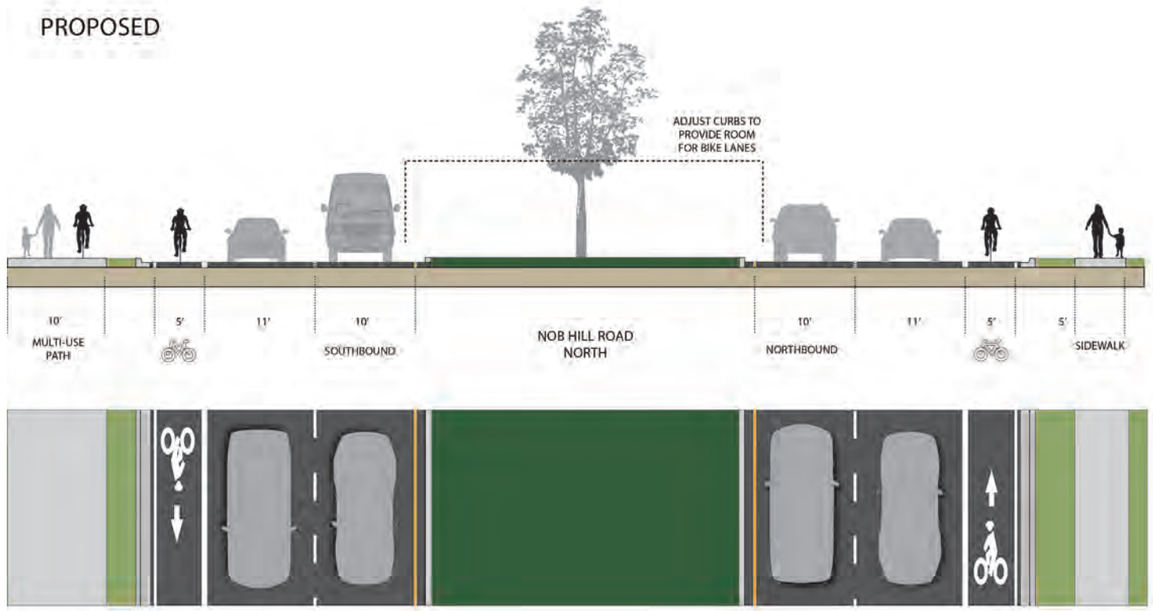
Hiatus Road Section north.



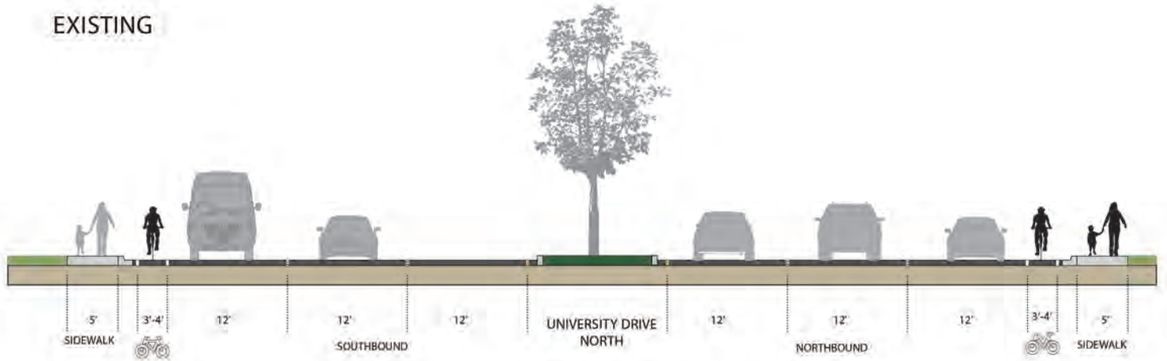


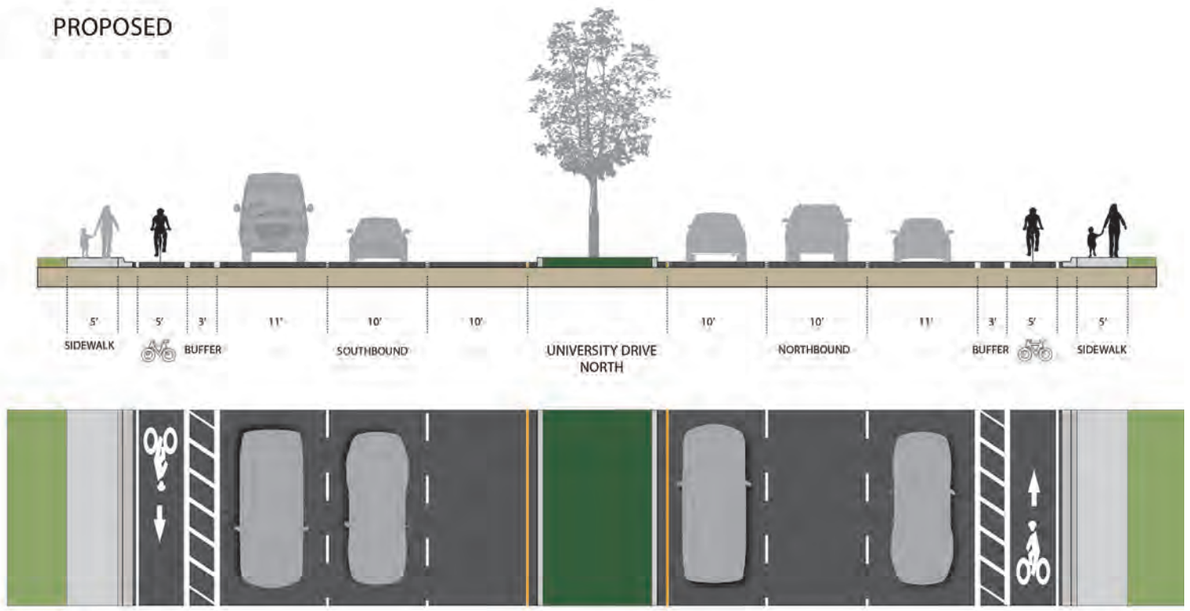
Nob Hill Road Section



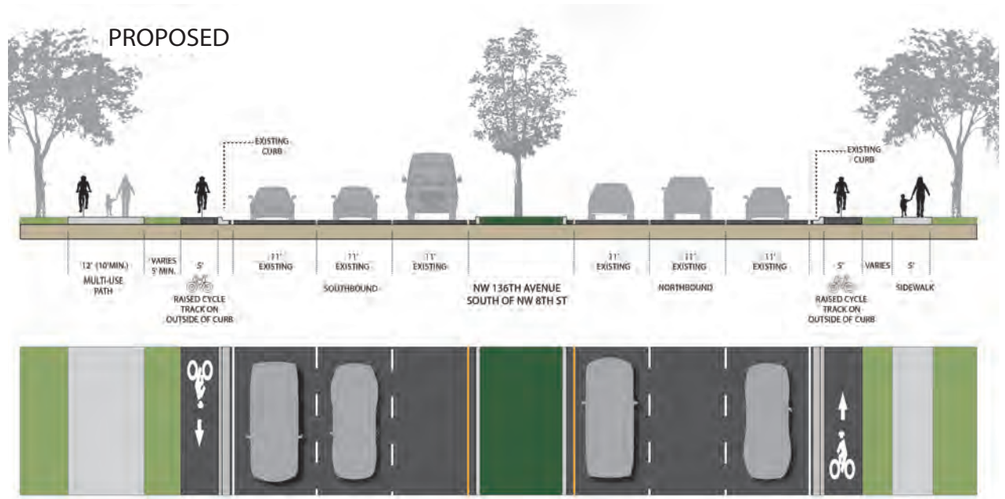


University Drive





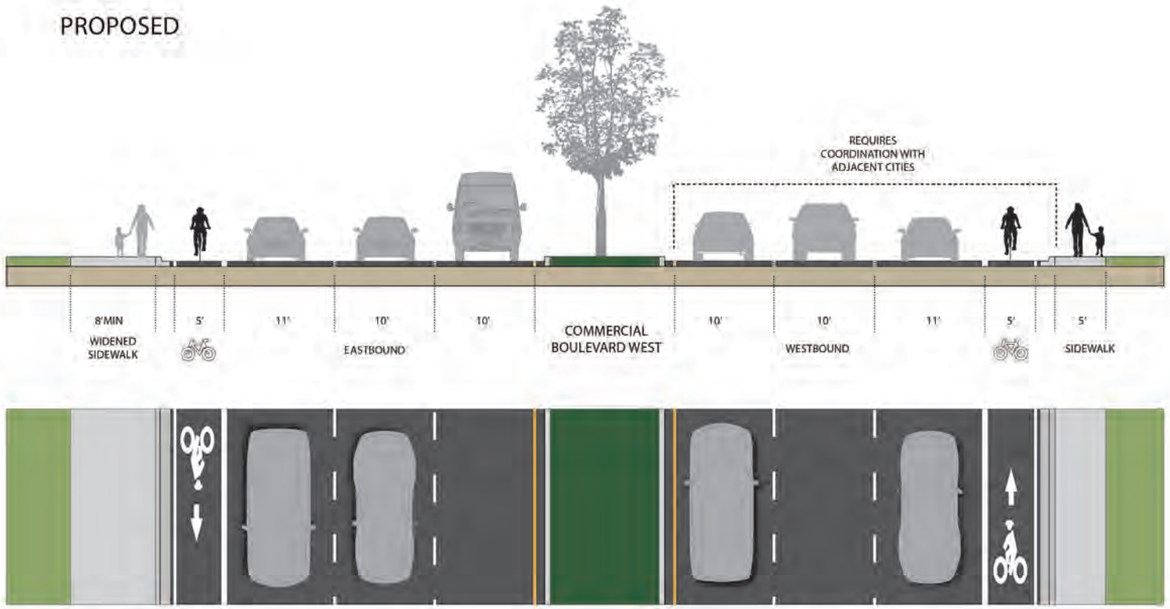
NW 136th Avenue



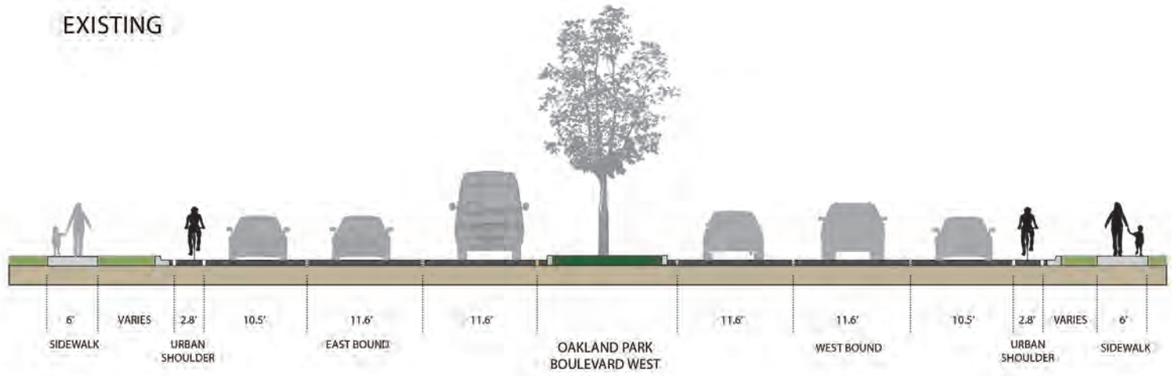
Cycle Tracks & Narrow Streets

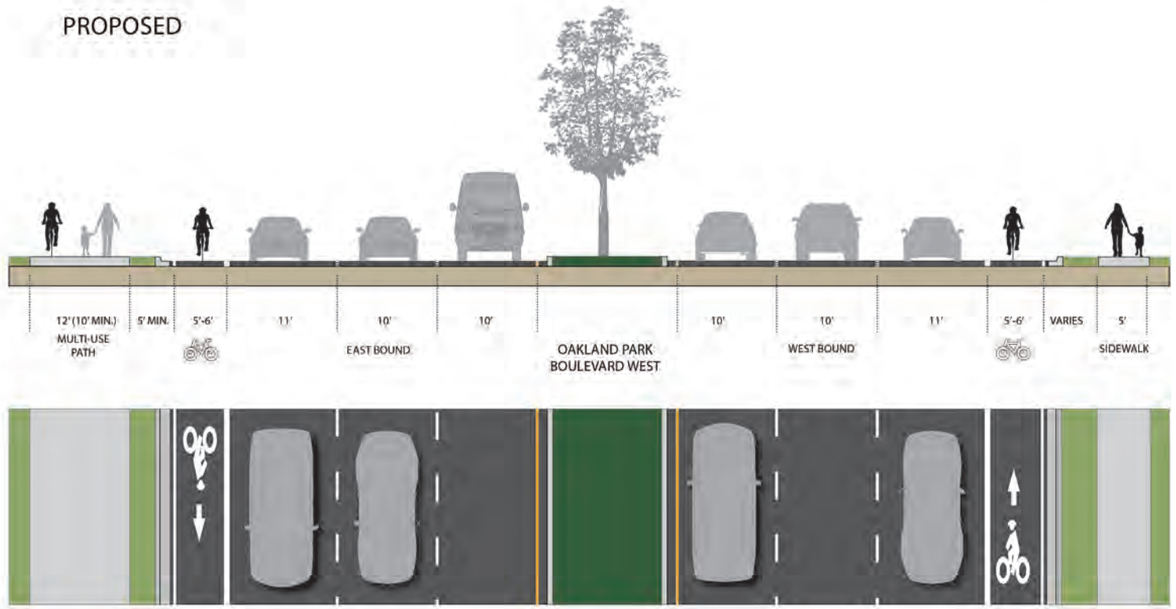
For some segments of roadways within Sunrise, such as the segment of NW 136th Avenue between the New River Greenway and NW 8th Street, the current road width and curb alignment does not allow for lane narrowing to accommodate bike lanes. These zones will require either widening the roadway or constructing a cycle track, or raised bike lane, outside of the existing curb (as shown in the above section). Where dedicated right turn lanes exist, the right turn lane can be re-purposed as a shared turn lane, allowing bikes to go straight or turn right.

Commercial Boulevard

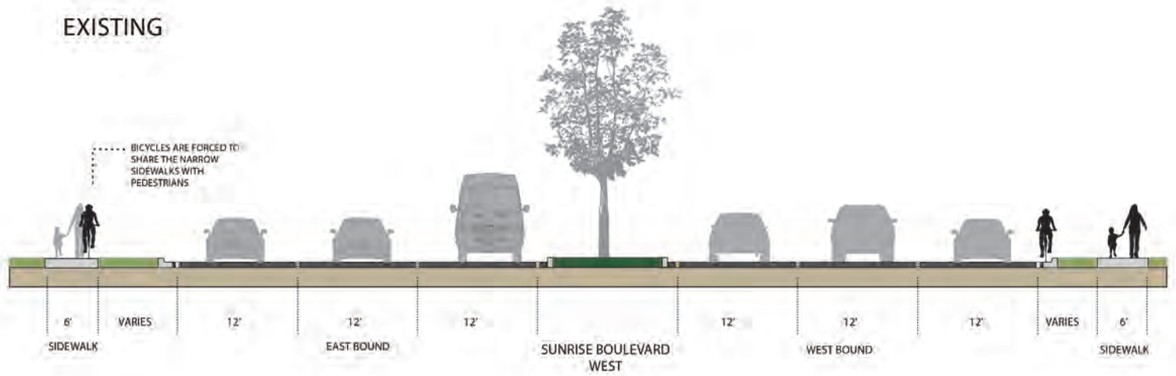


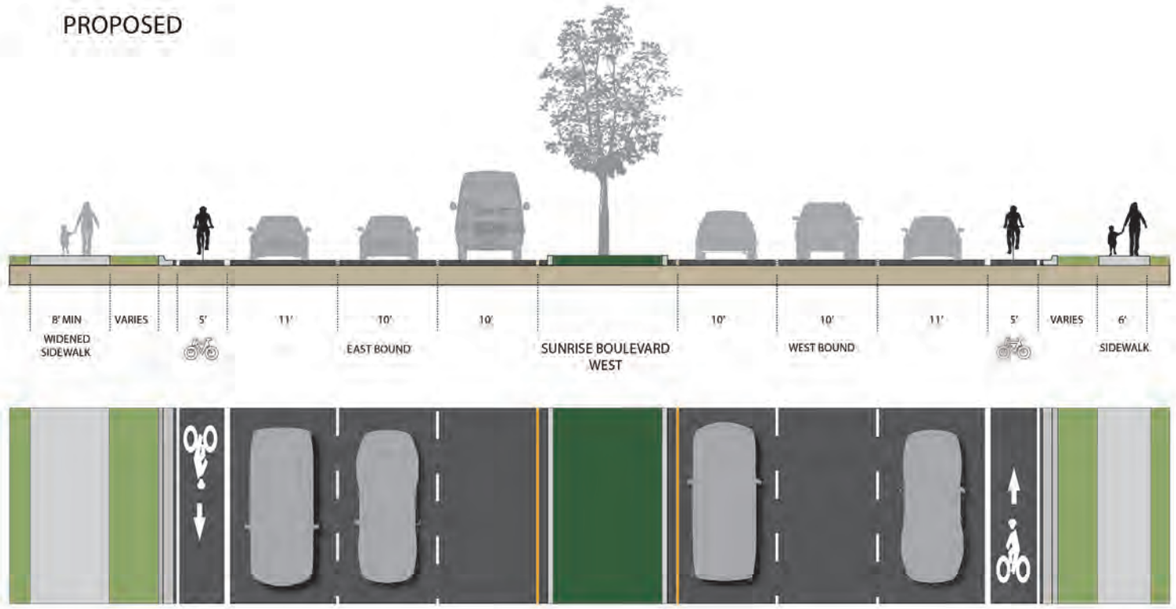
Oakland Park Boulevard



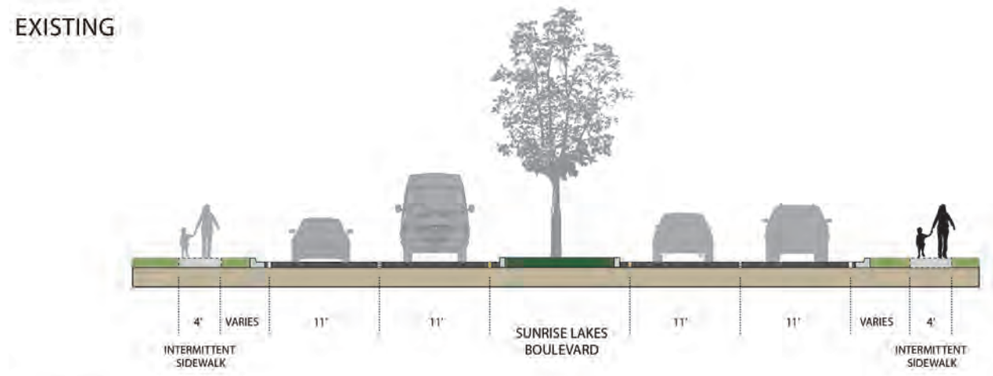


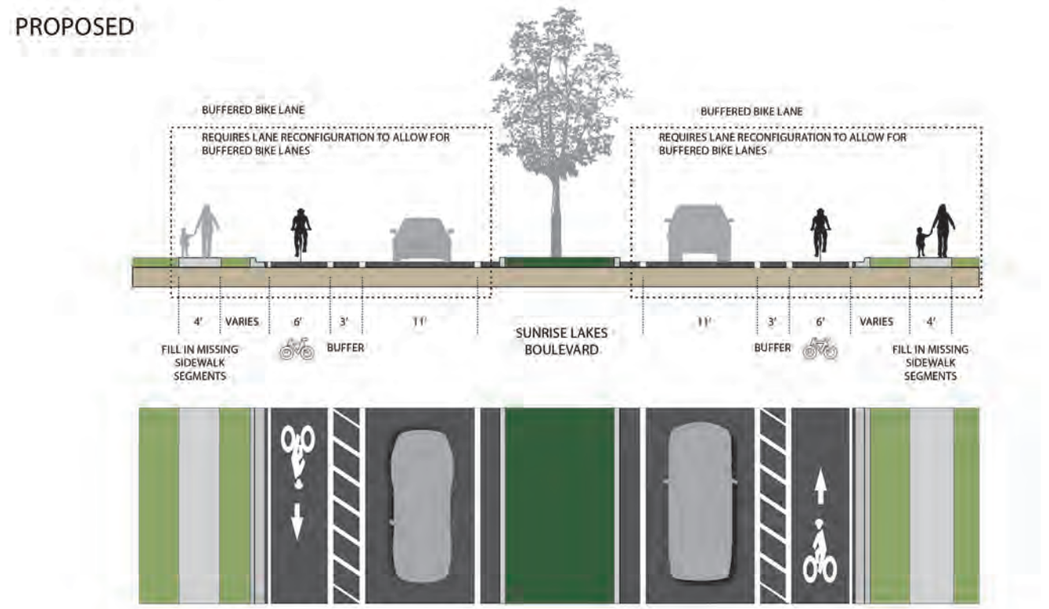
Sunrise Boulevard





Sunrise Lakes Boulevard





ON-STREET BIKEWAY RECOMMENDATIONS

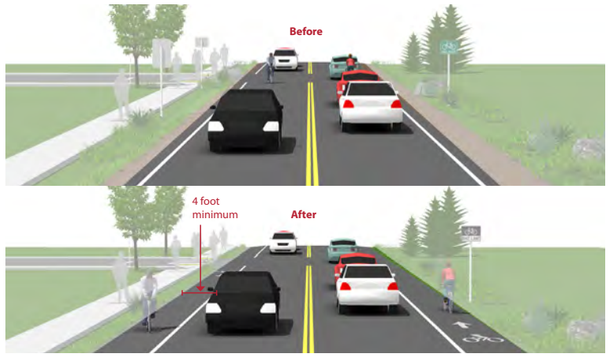
Implementation Strategies

Most major streets are characterized by conditions (e.g., high vehicle speeds and/or volumes) for which dedicated bike lanes are the most appropriate facility to accommodate safe and comfortable riding. Although opportunities to add bike lanes through roadway widening may exist in some locations, many major streets have physical and other constraints that would require street retrofit measures within existing curb-to-curb widths.

As a result, much of the guidance provided in this section focuses on effectively reallocating existing street width through striping modifications to accommodate dedicated bike lanes. Or in the case of Bike Boulevards, design streets to be low volume, low stress bike routes through a neighborhood.

These types of strategies can be implemented during regularly scheduled repaving or maintenance projects, done during streetscape enhancement projects or done as standalone re-striping projects. For more discussion on these types of implementation strategies, see the Implementation chapter of this report.

Roadway Widening

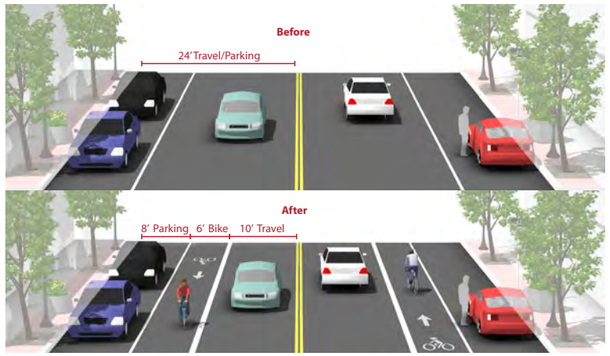


Bike lanes can be accommodated on streets with excess right-of-way through shoulder widening. Although roadway widening incurs higher expenses compared with re-striping projects, bike lanes can be added to streets currently lacking curbs, gutters and sidewalks without the high costs of major infrastructure reconstruction.

Additional Notes:

- 4 foot minimum width when no curb and gutter is present.
- 6 foot width preferred.

Lane Narrowing

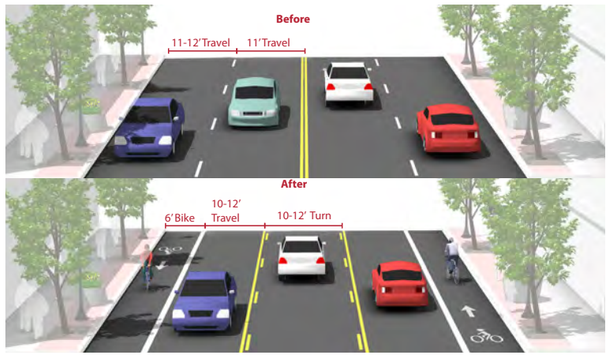


Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in local and national roadway design standards, or which are not marked. Most standards allow for the use of 11 foot and sometimes 10 foot wide travel lanes to create space for bike lanes.

Additional Notes:

- Vehicle lane width, Before: 10-15 feet
- Vehicle lane widths, After: 10-11 feet

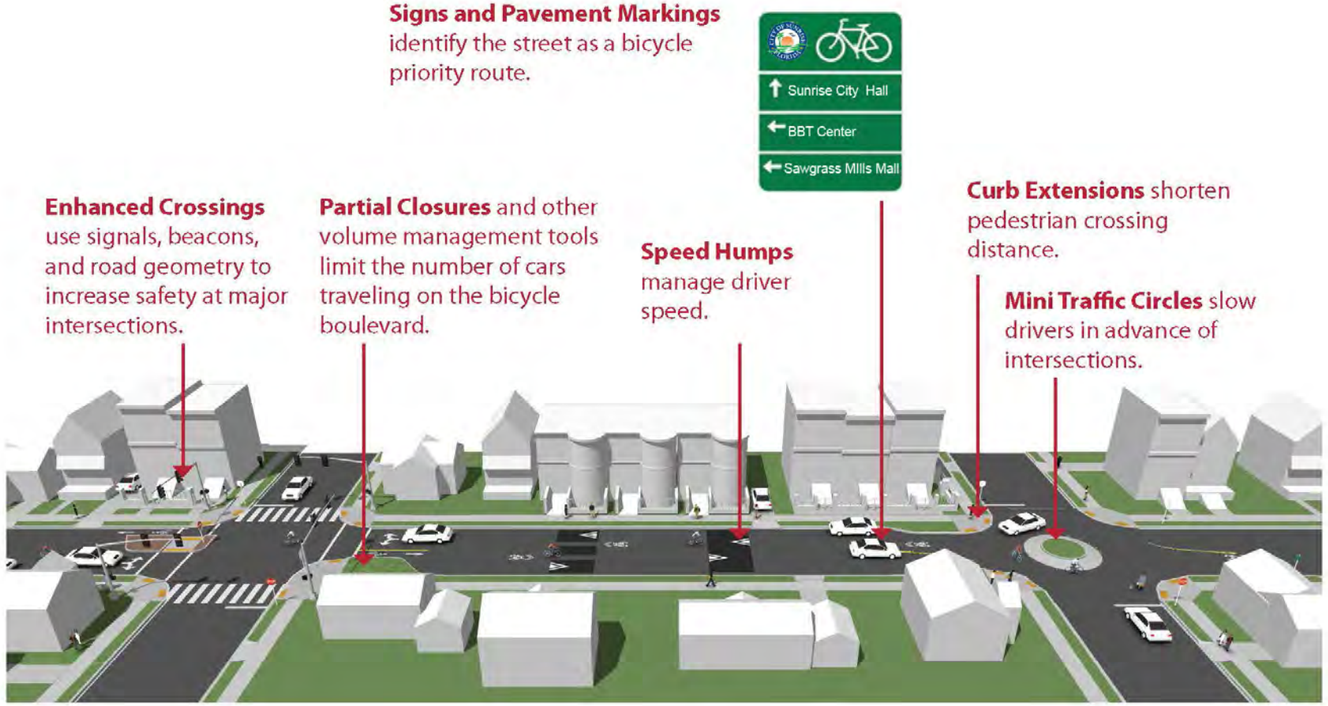
Lane Reconfiguration



The removal of a single travel lane will generally provide sufficient space for bike lanes on both sides of a street. Streets with excess vehicle capacity provide opportunities for bike lane retrofit projects.

Additional Notes:

- Vehicle lane width: Width depends on project. No narrowing may be needed if a lane is removed.
- Bicycle lane width: Width depends on project and type of bicycle facility proposed. Minimum bike lane width is 4 feet.



Implementation Strategies Continued

Bike Boulevard - Bicycle boulevards are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

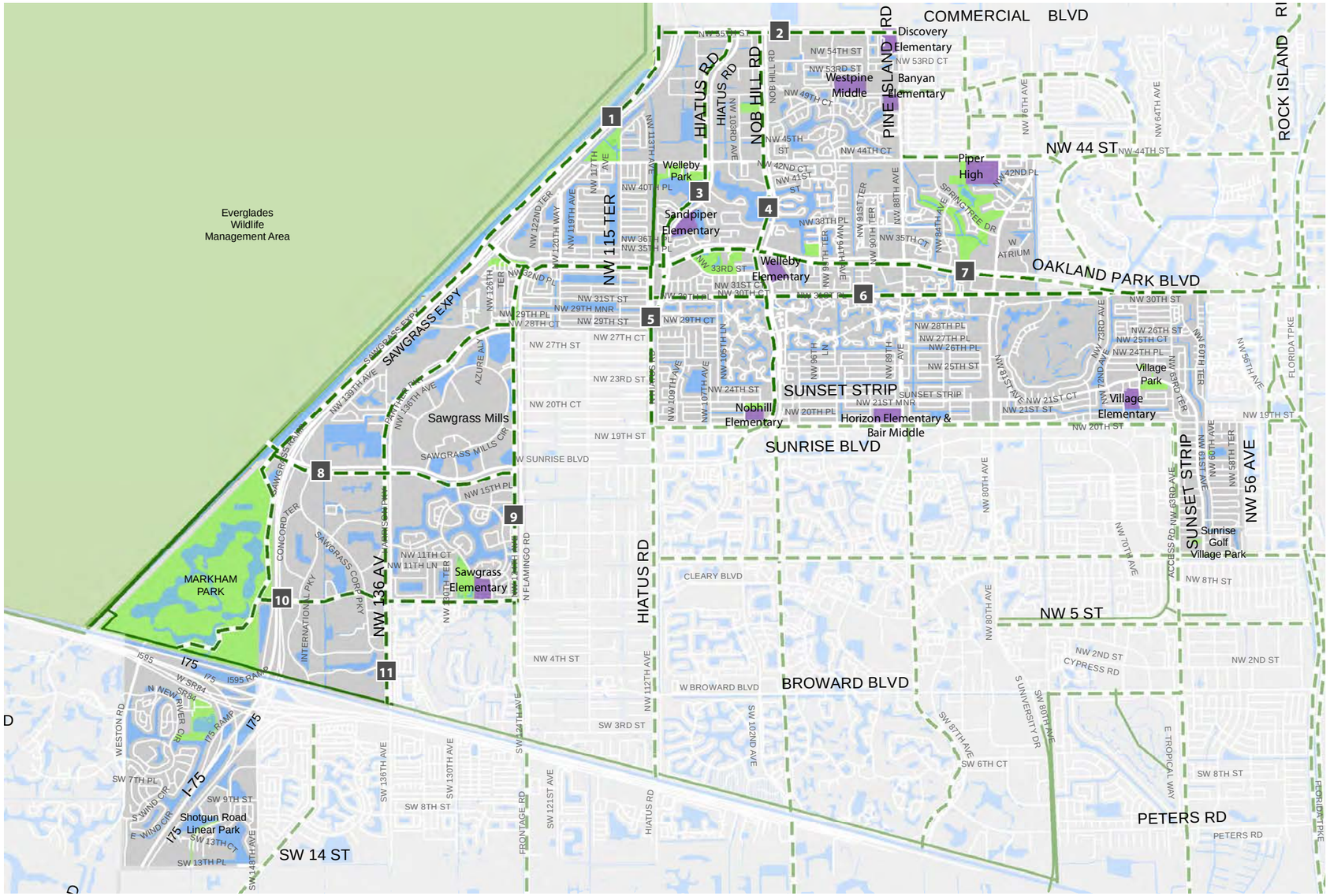
Additional Notes:

- Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
- Bicycle boulevards should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

GREENWAY RECOMMENDATIONS

Overview

The overall goal with the greenway recommendations is to create a complete and connected network of trails in Sunrise. The greenway network will provide off-street alternative to on-street bikeways and as well as provide a network of trails that can accommodate all ages and abilities. The greenway recommendations also combine recreation and transportation enhancements in to one investment. The trails and side paths can be a recreation or transportation facility by themselves as well as increase access to parks or other daily destinations in the City.



Existing and Proposed Trails

City of Sunrise Bicycle, Pedestrian, and Trails Master Plan

Data Sources: Broward MPO, Broward County, City of Sunrise

October 2014

exhibit 3.2

Existing Multi-Purpose Path
Proposed Multi-Purpose Path
Schools
Parks
Water Features
Sunrise City Limits
Broward County Urban Limits

0 0.5 1 Miles

table 3.2

Project Number	Project Name	Facility Type	From	To	Length (Miles)	Implementation Strategy	Implementation Notes
1	Sawgrass Expressway Trail	Trail	Commercial Blvd	I-75/I-595	6.6	New Construction	See Sawgrass Expressway trail cross section; Construct new trail along east side of canal; Coordinate with Markham Park and Broward County to identify access point and routes through Markham Park; Construct trail heads at Commercial Blvd and Sawgrass Expressway, Oakland Park Blvd and Sawgrass Expressway, Sunrise Blvd and Sawgrass Expressway and NW 8th St and Markham Park; Construct canal crossing at Sawgrass Expressway Trail and Sunrise Blvd to access Conservation Levee Greenway
2	Commercial Blvd Sidepath	Sidepath	Pine Island Rd	Sawgrass Expressway Trail [South side of street]	1.8	Sidewalk Expansion	See Commercial Blvd cross section ; Construct multi-use path along southside of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
6	NW 30th St Canal / NW 52nd Ave Trail	Trail	Hiatus Rd	Sunrise Lakes Dr/ Lauderhill city limits	4.2	New Construction	Construct new trail along canal; Trail should follow southside of canal from Hiatus Rd to Pine Island Rd; Use bridge at Pine Island Rd to cross to northside of canal; Trail should follow northside of canal from Pine Island Rd to Sunrise Lakes Dr
4	Nob Hill Rd Sidepath	Sidepath	Commercial Blvd	Proposed 19th St Canal Trail (Plantation) [West side of street]	3.1	Sidewalk Expansion	See Nob Hill Rd cross section; Construct multi-use path along west side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
5	NW 113th Ave Canal Trail	Trail	Oakland Park Blvd	proposed 19th St Canal Trail (Plantation)	1.3	New Construction	Construct new trail along west side of canal; Construct midblock crossing at intersection of trail and Oakland Park Blvd to connect to existing trail along the east side of the canal north of Oakland Park Blvd
3	Hiatus Rd Side-path	Sidepath	Commercial Blvd	NW 29th Manor [West side of street]	2.3	Sidewalk Expansion	See Hiatus Rd cross section; Construct multi-use path along west side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
7	Oakland Park Blvd Sidepath	Sidepath	Sawgrass Expressway Trail	Sunrise city limits [South side of street]	4.2	Sidewalk Expansion	See Oakland Park Blvd cross section; Construct multi-use path along south side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
8	Sunrise Blvd Sidepath	Sidepath	Sawgrass Expressway Trail	Flamingo Rd (South side of street]	1.9	Sidewalk Expansion	See Sunrise Blvd cross section; Construct multi-use path along south side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
9	Flamingo Rd Sidepath	Sidepath	Oakland Park Blvd	NW 8th St [West side of street]	2.5	Sidewalk Expansion	See Flamingo Rd cross section; Expand existing sidewalk to multi-use path along west side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist. Construct New Multi-Modal Path on East side of road. East side will require coordination with the City of Plantation and Adjacent cities for regional connectivity.
10	NW 8th St Side-path	Sidepath	Flamingo Rd	Markham Park [North side of street]	2.0	Sidewalk Expansion	Construct multi-use path along north side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist. Coordination with Broward County Parks and Recreation
11	NW 136th Ave Sidepath	Sidepath	Flamingo Rd	New River Greenway [West side of street]	3.4	Sidewalk Expansion	See NW 136th Ave cross section; Construct multi-use path along west side of roadway; Reconstruct existing sidewalk or construct new multi-use trail where a sidewalk does not exist
Total Recommended					33.2		
Total Existing					3.2		
Total Existing + Recommended					36.4		

Network Recommendation

The greenway network includes a combination of trails, which are completely separate from a roadway, and side paths, that are parallel a roadway. The greenway recommendations for this plan include over 33 miles of new trails and sidepaths. At full build out of the proposed greenways, Sunrise will have over 36 miles of greenways, improving connections to neighborhoods, schools, parks, shopping, jobs, transit, and surrounding cities.

The recommendations for each roadway were carefully selected based on current roadway characteristics, future planned characteristics as well as design considerations such as volumes, speeds and recreation benefits. Greenway segment details are presented in table 3.2

GREENWAY RECOMMENDATIONS

Greenway Design

A Multi-use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

Key features of multi-use paths include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

Trails

- Trails are multi use paths that are separate from a roadway and follow natural features, such as a water way or ridge, utility corridors, such as a powerline easement, or along a rail road corridor, such as a rail-with-trail route. These corridors offer excellent transportation and recreation opportunities, particularly for recreation and users of all skill levels preferring separation from traffic.

Sidepath

- Multi-use paths along roadways, also called Sidepaths, are a type of path that run adjacent to a street. Because of operational concerns it is generally preferable to place paths within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available.
- Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.
- The AASHTO Guide for the Development of Bicycle Facilities cautions practitioners of the use of two-way sidepaths on urban or suburban streets with many driveways and street crossings.

Neighborhood Access

- Neighborhood accessways provide residential areas with direct bicycle and pedestrian access to parks, trails, greenspaces, and other recreational areas. They most often serve as small trail connections to and from the larger trail network, typically having their own rights-of-way and easements.
- Additionally, these smaller trails can be used to provide bicycle and pedestrian connections between dead-end streets, cul-de-sacs, and access to nearby destinations not provided by the street network.

Crossings

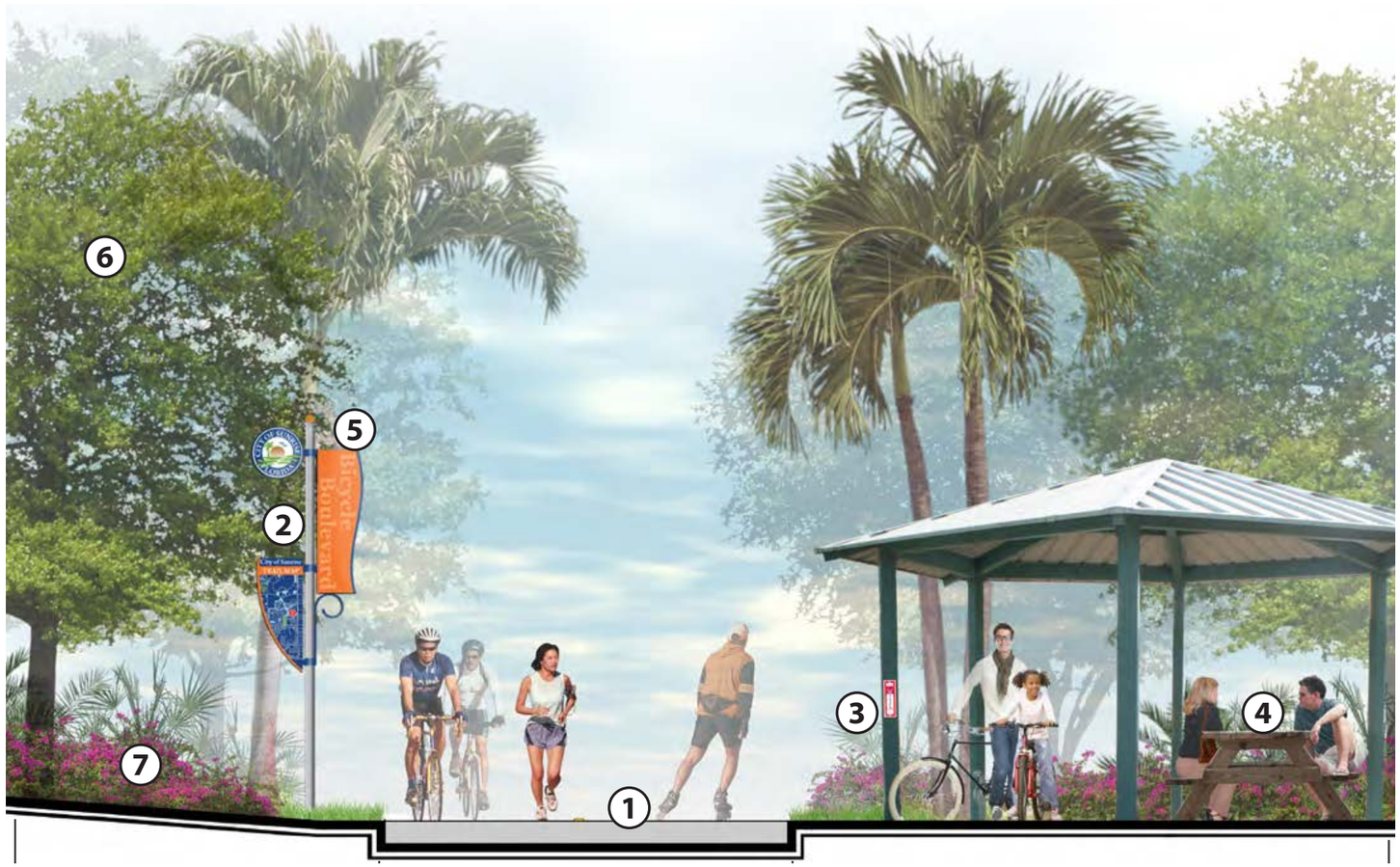


ILLUSTRATION FROM LEISURE SERVICES MASTERPLAN

Multi-Use Path

1. 12' wide (10'min), paved Multi-use Path/ Trail with a concrete or recycled asphalt surface.
2. Regulatory and directional signage/wayfinding including trail mile markers
3. GPS markers/branding (emergency location assistance)
4. Occasional seating or resting areas
5. Potential sponsorship of amenities via advertising or naming rights
6. Tree canopy wherever possible
7. Predominantly native or "Florida friendly" landscaping

At-grade roadway crossings can create potential conflicts between path users and motorists, however, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. This is evidenced by the thousands of successful facilities around the United States with at-grade crossings. In most cases, at-grade path crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Path facilities that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians.

Consideration must be given to adequate warning distance based on vehicle speeds and line of sight, with the visibility of any signs absolutely critical. Directing the active attention of motorists to roadway signs may require additional alerting devices such as a flashing beacon, roadway striping or changes in pavement texture. Signing for path users may include a standard "STOP" or "YIELD" sign and pavement markings, possibly combined with other features such as bollards or a bend in the pathway to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.

A number of striping patterns have emerged over the years to delineate path crossings. A median stripe on the path approach will help to organize and warn path users. Crosswalk striping is typically a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically yield to crosswalk users, additional measures may be required to increase compliance.

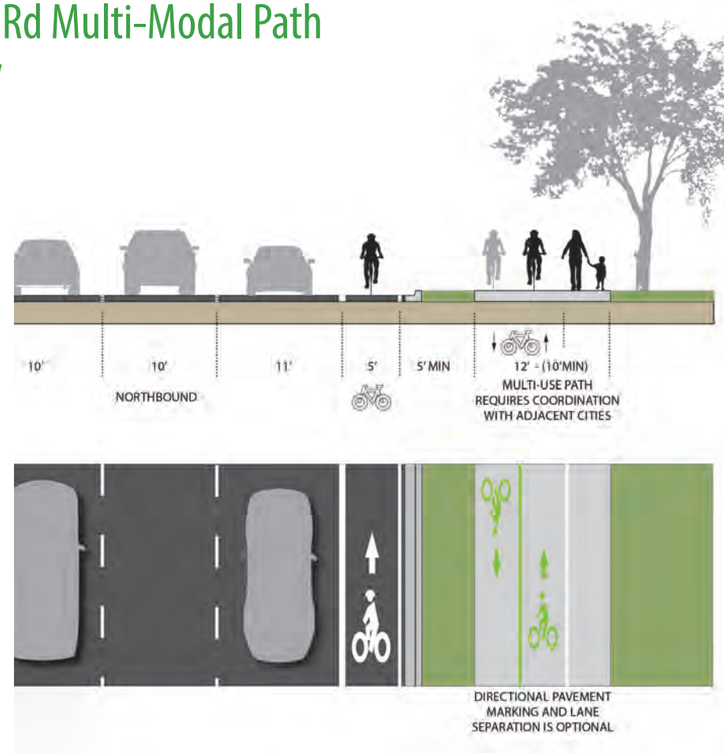
Mid-block crossings can be used to facilitate direct access connections across roadways. See page 78 for more information regarding mid-block crossings

GREENWAY RECOMMENDATIONS

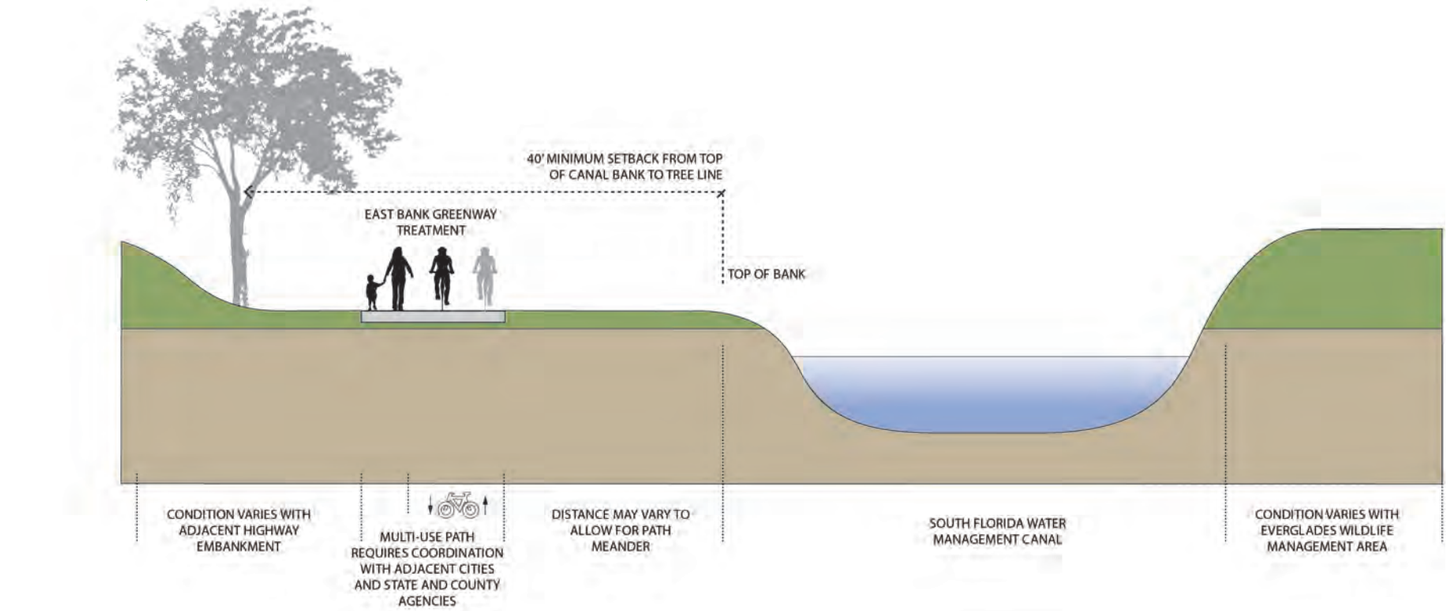
Key Greenway Cross Sections

The greenway cross sections provide supplemental design guidance for key segments of the proposed greenway network. The cross sections in this section correspond specifically with proposed trails. Please see the On-Street Bikeway section of this chapter for cross section details for proposed sidepaths along roadways.

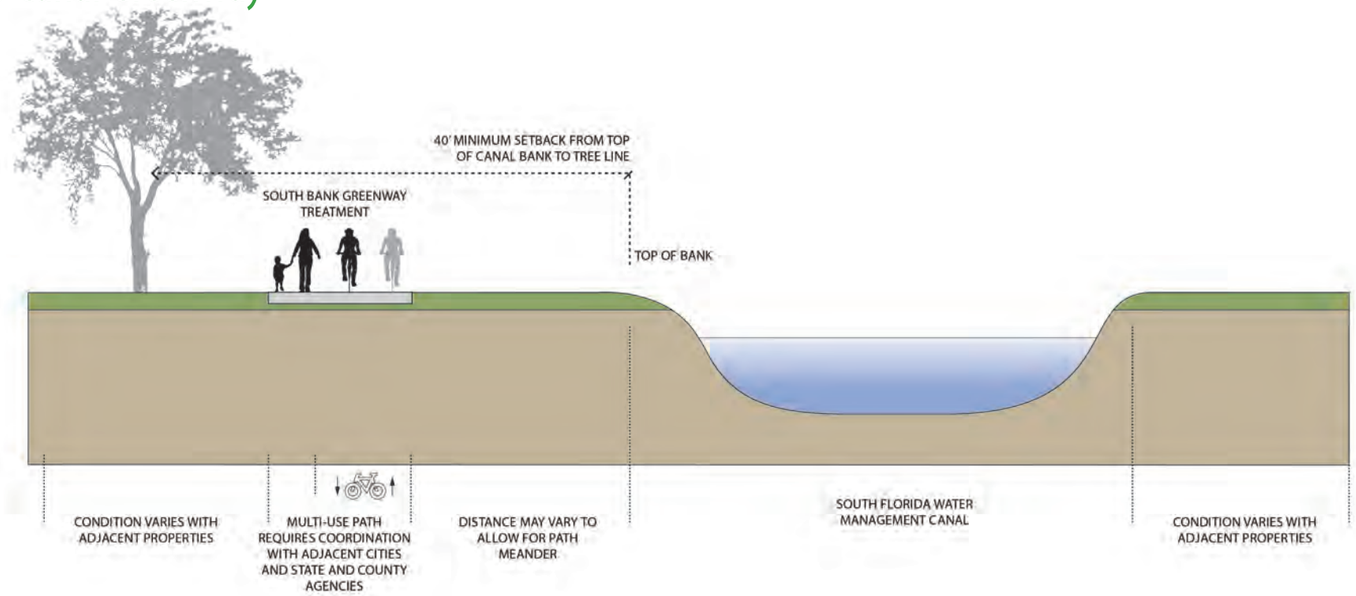
Flamingo Rd Multi-Modal Path Greenway



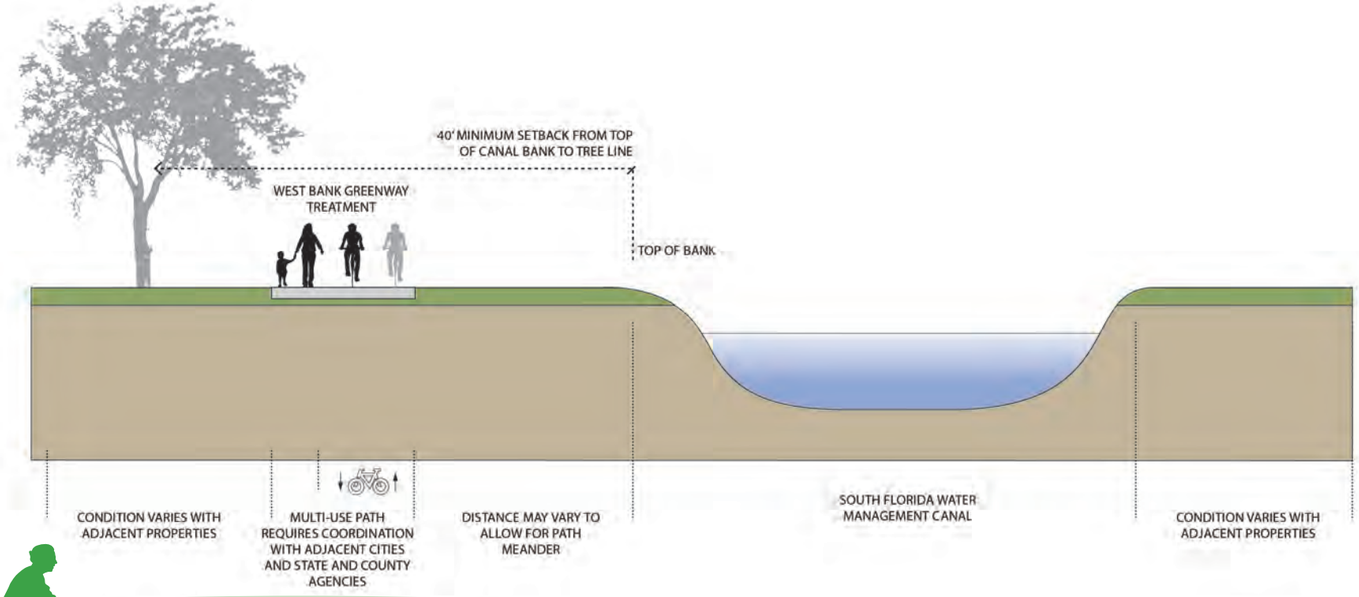
Greenway - Sawgrass Expressway



C-13 Canal Greenway



C-42 Canal Greenway



PEDESTRIAN & TRANSIT RECOMMENDATIONS

The recommendations presented within this section should be followed, regardless of the responsible party, facility type or source of funding.
This section includes several elements that summarize the geographic and design needs of pedestrians and transit riders:

- **Pedestrian Priority Corridors**
- **Pedestrian Priority Zones**
- **Mid Block Crossings**
- **Transit Areas**
- **Intersection Crossings**
- **Sidewalk Design**

These topics are covered in the subsequent sections

Overview

The focus on pedestrian recommendations is on access to transit, parks and schools as well as along major corridors. These areas present the greatest need in terms of safety as well as access to jobs, recreation and education.

Investments in walking infrastructure in Sunrise, including sidewalks, street crossings and transit stops, should be prioritized when considering funding. Improvements in walking infrastructure will need to be coordinated between different departments, jurisdictions and property owners, depending on the type of facility (e.g. cross walk vs sidewalk) needed, right-of-way ownership (e.g. City versus County street) and type of project (e.g. maintenance project versus a capital project).

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PEDESTRIAN & TRANSIT RECOMMENDATIONS

Priority Pedestrian Area Policies

For Priority Pedestrian Corridors and Zones, the following conditions should be provided. If they are not provided, the City of Sunrise should identify ways to provide them.

Gaps in the sidewalk network should be closed.
The sidewalk network should be complete and connected within the Priority Pedestrian areas. Sidewalks should have access across swales to provide connectivity to crosswalks

Priority pedestrian areas should be universally accessible.
Sidewalks and crossings should be ADA compliant and adequately maintained.

Sidewalks should be on both sides of the roadway.
Pedestrians should have access and a pathway on both sides of a roadway.

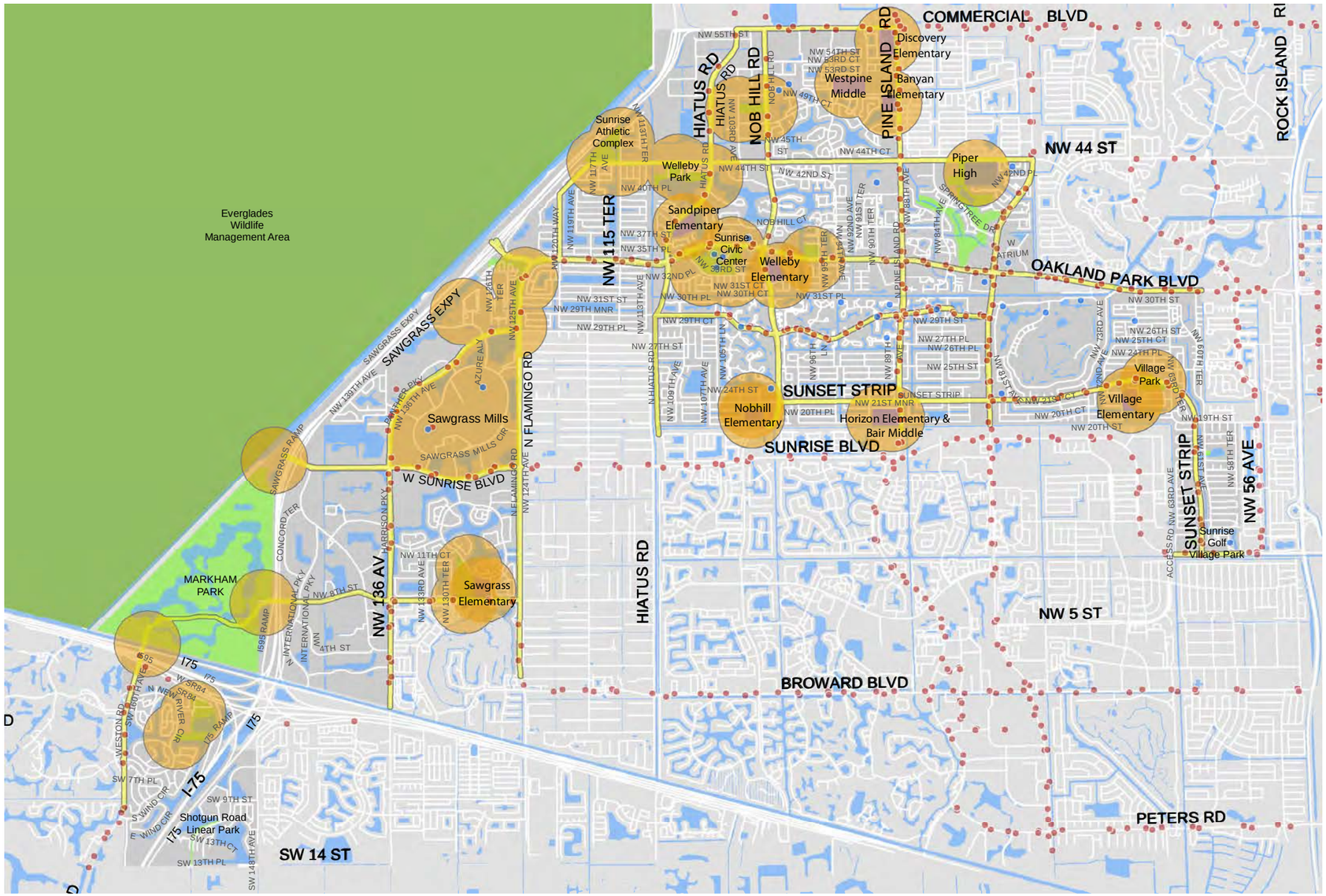
Bus stops should be accessible by a sidewalk.
All bus stops in Priority Pedestrian areas should be connected to the sidewalk network and the waiting areas should be paved and ADA compliant.

Frequent and safe street crossings should be provided.
Within Priority Pedestrian Zones and along Priority Pedestrian Corridors, pedestrians should be able to cross frequently. Crossing should be marked or signalized to provide a safe crossing.

Mid-block Crossings
Should be located at appropriate locations to provide safe , signalized crossings. This is critical at major corridors where signalized intersections are spread apart and limits safe cross access for pedestrians

Bus stops should be located in close proximity to street crossings.
Bus stops should be located as close as possible to marked or signalized street crossings to encourage riders to cross the street safely.

Bridges and underpasses should provide sidewalks on both sides of the roadway.
Pedestrians should be able to cross under or over canals and interstates on both sides of the roadway.



Pedestrian Priority Areas

City of Sunrise Bicycle, Pedestrian, and Trails Master Plan

Data Sources: Broward MPO, Broward County, City of Sunrise

October 2014

Priority Pedestrian Corridors
Priority Pedestrian Zones
City of Sunrise Mini Bus Stops
Broward County Transit Bus Stops
Schools
Parks
Water Features
Sunrise City Limits
Broward County Urban Limits

0 0.5 1 Miles

Implementing Policy Priorities

To adequately assess the needs along the Pedestrian Priority Corridors and Priority Pedestrian Zones, the following implementation strategies should be employed:

- **Inventory**

  The City of Sunrise should inventory the pedestrian facilities, including the location and width of sidewalks along with the location of marked crossings. The inventory should be maintained in GIS and regularly updated based on maintenance and construction projects.

- **Safety Audits**

  The City of Sunrise should conduct regular safety audits along priority corridors and within priority zones to assess the unique safety needs and appropriate safety improvements. See the Programs and Policy section of this chapter for more information on Safety Audits.

PEDESTRIAN & TRANSIT RECOMMENDATIONS

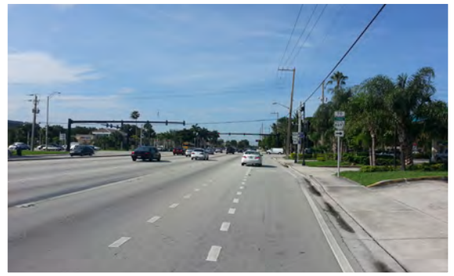
Pedestrian Priority Corridors

The Pedestrian Priority Corridors are the arterials, collectors or major transit corridors in the City. These corridors are characterized by higher vehicle speeds and volumes than on neighborhood streets. They are also served by transit routes, with the exception of NW 44th St. Many of the major destinations and commercial areas are also located along these corridors.

For these corridors, a particular focus should be made on providing frequent and safe crossings, appropriate bus stop space and locations and access to adjacent neighborhoods and businesses. A focus should also be made to coordinate infrastructure improvements with FDOT, Broward County, Broward County Transit and adjacent cities. These corridors are maintained and served by multiple jurisdictions and agencies.

Priority Pedestrian Zones

Similar to priority corridors, Priority Pedestrian Zones such as Schools, Parks, and Shopping Districts, have unique needs and should be a top priority when considering investments in pedestrian infrastructure. For these areas, a particular focus should be made on providing frequent and safe crossings as well as reducing vehicle speeds.



Schools

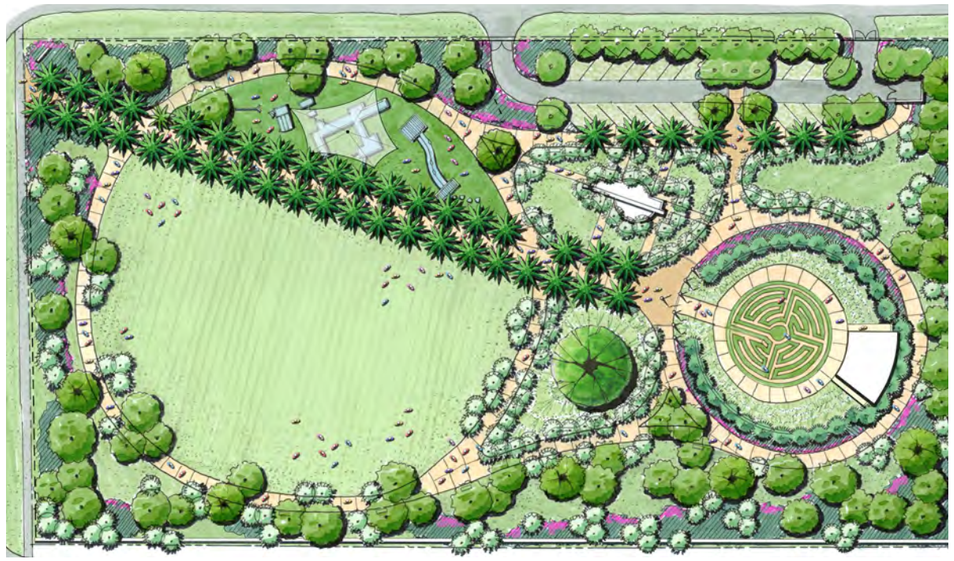
- Children and young adults should be able to walk to school safely. Most students are not old enough to drive and should have the opportunity to get to school by means other than driving.
- Additionally, schools are community centers and often have activities going on after regular school hours, both for school-related activities as well as other community events. Adequate sidewalks, frequent crossings and other safety infrastructure should be provided to accommodate safe access from neighborhoods surrounding schools, particularly for students.
- Fully connected walks and crossings should be provided from neighborhoods to schools

Parks

- Parks provide recreation opportunities for the community and should be accessible by foot from adjacent neighborhoods. All parks should be accessible from the adjacent neighborhoods by sidewalk.

- Consideration should also be given to pedestrian only access points to parks. This strategy can decrease the distance one has to walk to enter a park, which in turn decreases the time it takes to walk to a park.

- Future connections should coordinate with recommendations from the Leisure Services Master Plan



Sawgrass Mills Mall

- Sawgrass Mills Mall is a significant regional destination. Shoppers, employees and nearby residents are drawn to the area. With growth of the mall and nearby businesses, along with higher density residential development and transit services, pedestrian access in and around the mall will be important.

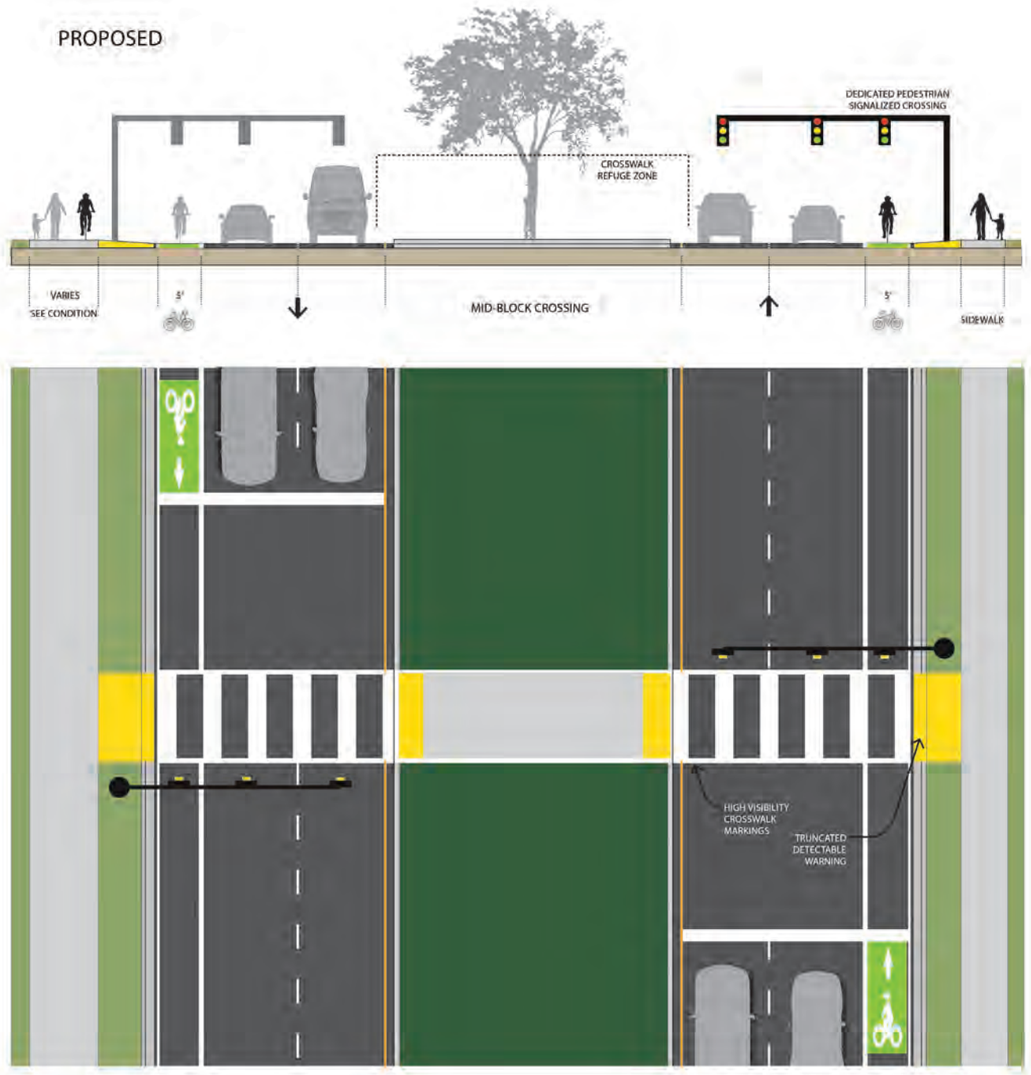
- Within the mall property, sidewalks should be provided from the roadway to all buildings. Around the edges of the mall, the roadway should have sidewalks on both sides of the street. Additionally, bus stops should be located adjacent to marked or signalized crossing.

- Future connectivity projects should be coordinated with the Sawgrass Mills Mall on-going infrastructure study being conducted by the City of Sunrise

PEDESTRIAN & TRANSIT RECOMMENDATIONS

Mid-block Crossings

Can range from marked, signalized intersection crossings to full signal crossings. Crossings typically consist of marked crossing areas, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions. When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time. Fully signalized mid-block crossings where vehicular traffic completely stops would be most applicable at major corridors where extended blocks limit intersection crossing.



Multi-Use Path Crossings at Intersections

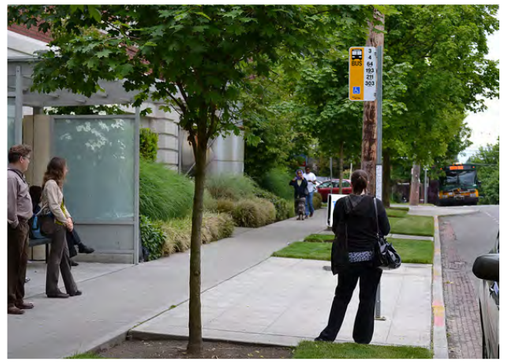
Signalized crossings provide the most protection for crossing path users through the use of a red-signal indication to stop conflicting motor vehicle traffic. A full traffic signal installation treats the path crossing as a conventional 4-way intersection and provides standard red-yellow-green traffic signal heads for all legs of the intersection. Pedestrian signals are used to indicate when bicyclists and pedestrians should cross and a crosswalk markings should be used to establish where trail users should cross the intersection.

Far-side bus stops

- This type of bus stop is the most common and preferred for safety reasons. At intersections, they allow pedestrians to cross behind a bus and increase visibility of crossing pedestrians for drivers waiting at the signal.

Near side bus stops

- This type of bus stop is used when far-side stops are not feasible or when the near-side stop better interfaces with pedestrian destinations.



Midblock bus stops

- This type of bus stop is used when there are long blocks with important destinations midblock or if there is a major transit stop that requires multiple buses queuing at the same time.

Transit Areas

Bus stops should be easily visible by pedestrians and accessible by sidewalks. The frequency, placement and size of bus stops should be based on a variety of factors including maximizing access to destinations, minimizing delay in service and serving ridership needs.

At a minimum, bus stops should have:

- **Safe access** – All bus stops should be accessible by a sidewalk and appropriate street crossing locations.

- **Dedicated space for bus stop** – Adequate space should be provided for people to wait for a bus. Additionally, buses should have safe and adequate space to stop safely to allow riders to board. Bus stop space should be designed to meet demand and ridership levels.

- **ADA compliant** – Bus stops should be universally accessible and comply with ADA standards. Sidewalk widths, landing pads and curbs should allow wheelchair access and loading.

PEDESTRIAN & TRANSIT RECOMMENDATIONS

Intersections and Crossings

The specific type of treatment at a crossing may range from a simple marked crosswalk to full traffic signals or grade separated crossings. Crosswalk lines should not be used indiscriminately, and appropriate selection of crossing treatments should be evaluated in an engineering study should be performed before a marked crosswalk is installed. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

Attributes of pedestrian-friendly intersection design include:

- **Clear Space:** Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.
- **Visibility:** It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.
- **Legibility:** Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.
- **Accessibility:** All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.
- **Separation from Traffic:** Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.
- **Lighting:** Adequate lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, suburban and rural intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.

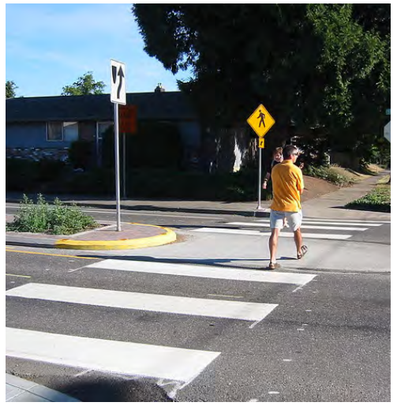
PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE

FACILITY TYPE	Local Streets 15-25 mph		Collector Streets 25-30 mph			Arterial Streets 30-45 mph							
	2 lane	3 lane	2 lane	2 lane with median refuge	3 lane	2 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
Crosswalk with warning signage and yield lines	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	EJ	EJ	EJ	✓	✓

LEGEND

Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

Marked and Signalized Crossings



Marked Crosswalks

- A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.
- At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks. See midblock crossings for more details.

Crosswalk with Warning Signage

- To enhance visibility of pedestrians and to encourage vehicles and other roadway users to yield or stop for pedestrians in a cross walk. warning signs and yield lines can be added in advance of cross walk. The type and local of sign should be selected based on the context and standards for the street being considered.

Active Warning Beacon (RRFB)

- Active warning beacons are user actuated illuminated devices designed to increase motor vehicle yielding compliance at crossings of multi-lane or high volume roadways.
- Types of active warning beacons include conventional circular yellow flashing beacons, in-roadway warning lights, or Rectangular Rapid Flash Beacons (RRFB).

Pedestrian Hybrid Beacon

- A hybrid beacon, previously known as a High-intensity Activated CrosswalK (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian and/or bicycle signal heads for the minor street. There are no signal indications for motor vehicles on the minor street approaches.
- Hybrid beacons are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal (or where there are concerns that a conventional signal will encourage additional motor vehicle traffic on the minor street). Hybrid beacons may also be used at mid-block crossing locations.

Full Traffic Signal

- At intersections with full traffic signals, pedestrian crossings should have pedestrian signal heads and the pedestrian signal should be synchronized to coordinate crossing with vehicle timing and provide adequate time for pedestrians cross safely.

Grade Separation

- In unique situations, grade separation may be required for pedestrians to safely cross to destinations. Bridges help by linking areas separated by barriers such as waterways or interstates.

PEDESTRIAN & TRANSIT RECOMMENDATIONS

Sidewalk Design

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments.

Attributes of Well Designed Sidewalks

Accessibility:

- A network of sidewalks should be accessible to all users.

Adequate width:

- Two people should be able to walk side-by-side and pass a third comfortably. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate the high volume of walkers.

Safety:

- Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.

Continuity:

- Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.

Landscaping:

- Plantings and street trees should contribute to the overall psychological and visual comfort of sidewalk users, and be designed in a manner that contributes to the safety of people.

Drainage:

- Sidewalks should be well graded to minimize standing water.

Social space:

- There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.

Quality of place:

- Sidewalks should contribute to the character of neighborhoods and business districts.

Sidewalk Widths

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of sidewalks according to general street type. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.

- **Local Streets: 5-6 feet**
- **Commercial Areas: 6-12 feet**
- **Arterials and Collectors: 6-8 feet**
- Note that six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably

Sidewalk Amenities

A variety of streetscape elements can define the pedestrian realm, offer protection from moving vehicles, and enhance the walking experience. Key features are presented below.

Street trees

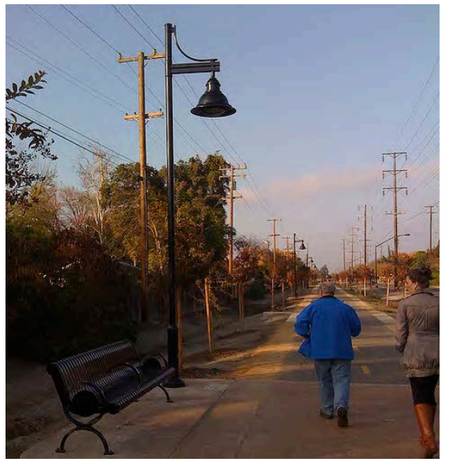
- In addition to their aesthetic and environmental value, street trees can slow traffic and improve safety for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down. It is important that trees do not block light or the vision triangle.

Green features

- Green stormwater strategies may include bioretention swales, rain gardens, tree box filters, and pervious pavements (pervious concrete, asphalt and pavers). Bioswales are natural landscape elements that manage water runoff from a paved surface. Plants in the swale trap pollutants and silt from entering a river system.

Street furniture

- Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Benches should be 20" seat height to accommodate elderly pedestrians comfortably.



Lighting

- Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections. Pedestrian scale lighting can provide a vertical buffer between the sidewalk and the street, defining pedestrian areas. Pedestrian scale lighting should be used in areas of high pedestrian activity.

SUPPORT FACILITIES

Overview

Creating a biking culture in Sunrise and increasing the convenience to bike will require more than expanding the network. Support infrastructure such as bike parking, access to transit and wayfinding can improve and expand how one gets around by bike in the City, how one navigates the city and how someone secures their bike at the end of their trip.

Bicycle Parking

Bicyclists expect a safe, convenient place to secure their bicycle when they reach their destination. This may be short-term parking of 2 hours or less, or long-term parking for employees, students, residents, and commuters. Sunrise should consider amending the code to require bicycle parking for new development.

Bike Racks

Short-term bicycle parking is meant to accommodate visitors, customers, and others expected to depart within two hours. It should have an approved standard rack, appropriate location and placement, and weather protection. The Association for Pedestrian and Bicycle Professionals (APBP) recommends selecting a bicycle rack that:

- Supports the bicycle in at least two places, preventing it from falling over.
- Allows locking of the frame and one or both wheels with a U-lock.
- Is securely anchored to ground.
- Resists cutting, rusting and bending or deformation.

Bike Corrals

- Bicycle corrals (also known as on-street bicycle parking) consist of bicycle racks grouped together in a common area within the street or in a parking lot traditionally used for automobile parking. Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing high-volume bicycle parking. Bicycle corrals can be implemented by converting one or two motor vehicle parking spaces into on-street bicycle parking. Each motor vehicle parking space can be replaced with approximately 6-10 bicycle parking spaces.

Secure Bike Parking

- A Secure Parking Area for bicycles, also known as a BikeSPA or Bike & Ride (when located at transit stations), is a semi-enclosed space that offers a higher level of security than ordinary bike racks. Accessible via key-card, combination locks, or keys, BikeSPAs provide high-capacity parking for 10 to 100 or more bicycles. Increased security measures create an additional transportation option for those whose biggest concern is theft and vulnerability. Bike SPAs can be stand along structures or occupy space with a building.

End of Trip Facilities

- An end of trip facility is much like a BikeSPA or Bike & Ride but it includes amenities such as showers and lockers. These will give bicyclists that ability to bike on their lunch break or bike to work and clean off before stepping into the office

Bicycle Access to Transit

Safe and easy access to transit stations and secure bicycle parking facilities is necessary to encourage commuters to access transit via bicycle. Bicycling to transit reduces the need to provide expensive and space consuming car parking spaces.

Many people who ride to a transit stop will want to bring their bicycle with them on the transit portion of their trip, so buses and other transit vehicles should be equipped accordingly. BCT provides bike racks on their busses, but the feature is currently not available on the Sunrise mini bus. Sunrise may consider adding this feature to their busses.

Access

- Provide direct and convenient access to transit stations and stops from the bicycle and pedestrian networks.
- Provide maps at major stops and stations showing nearby bicycle routes.
- Provide wayfinding signage and pavement markings from the bicycle network to transit stations.
- Ensure that connecting bikeways offer proper bicycle actuation and detection.

Bicycle Parking

- The route from bicycle parking locations to station/stop platforms should be well-lit and visible.
- Signing should note the location of bicycle parking, rules for use, and instructions as needed.
- Provide safe and secure long-term parking such as bicycle lockers at transit hubs. Parking should be easy to use and well maintained.

SUPPORT FACILITIES

Way-finding

Way-finding signage, as part of a signage program that also includes warning and regulatory signage, enhances resident and visitor orientation. A clear wayfinding system should contribute to economic development by pointing visitors to key destinations around the City. The City of Sunrise should develop a customized wayfinding program that includes directional signage to local destinations. Bicycle and pedestrian travel times to popular destinations could also be included on directional signage.

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

Wayfinding Sign Placement

Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

Confirmation Signs

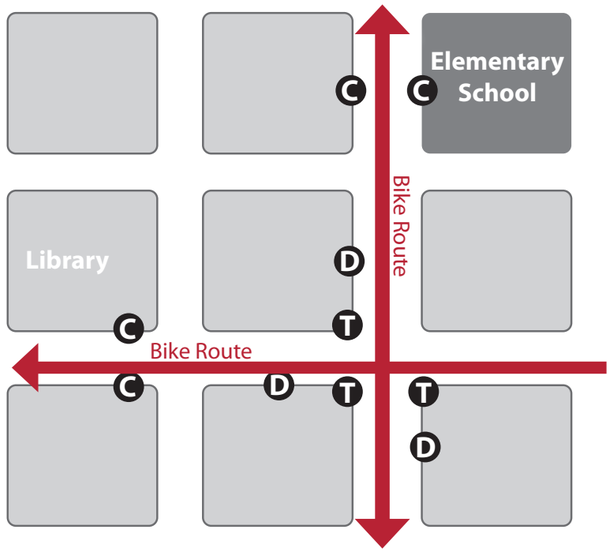
Every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along on-street bicycle facilities, unless another type of sign is used (e.g., within 150 ft of a turn or decision sign). Should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

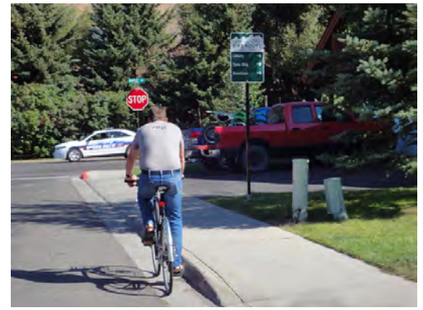
Turn Signs

Near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through). Pavement markings can also indicate the need to turn to the bicyclist.

Decisions Signs

Near-side of intersections in advance of a junction with another bicycle route.
Along a route to indicate a nearby destination.





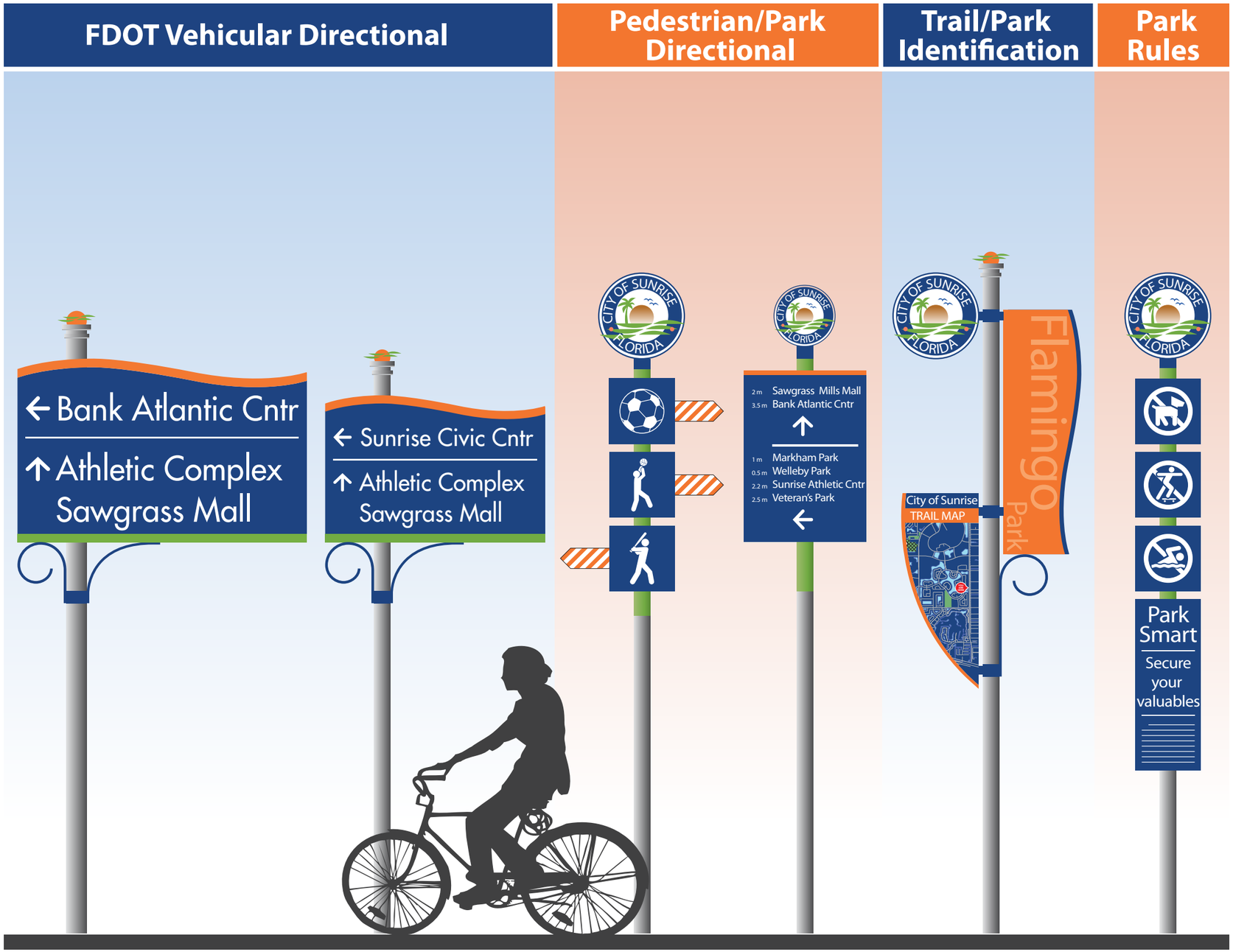


ILLUSTRATION FROM CITY OF SUNRISE WAYFINDING

PROGRAMS AND POLICIES

Overview

Of the Five E's of a Bicycle Friendly or Walk Friendly Community, four are related to programs: education, encouragement, enforcement and evaluation. Programs will compliment engineering improvements, such as bike lanes and trails and give the Sunrise community the tools they need to safely and confidently walk and bike. Additionally, walking and biking related policies impact all Five Es and serve as evaluation and planning tools for institutionalizing the principles of bicycling and walking friendliness.

All of the Five Es work together to enhance the biking and walking experience in Sunrise. The following section presents recommended programs and policies to support the vision and goals of this Plan. The recommendations can be undertaken by local and regional agencies, community organizations and the City of Sunrise.

Engineering → What facilities exist and how can new facilities be designed to promote walking and biking?

Education → What education programs are there for bicyclists, pedestrians, and motorists?

Encouragement → How does the City of Sunrise and other interested groups promote and encourage biking and walking?

Enforcement → What can the City of Sunrise do to enforce and promote safety walking, biking and driving behavior?

Evaluation → How can the City of Sunrise measure biking and walking rates and safety trends?

Education

Safe Routes to School

Safe Routes to School is a national program that supports improving walking and biking access to schools as well as programs to educate students about how to walk and bike safely to school. It can be a resource for grant funds to build improvements as well as information resource for education and encouragement programs at schools.

Broward County operates the School Safety Program, which is a partnership with Broward County Engineering, Broward County School District, local jurisdictions, PTA groups and others. Broward County also manages a Traffic Safety Committee to coordinate transportation policy and investments around schools.

The City of Sunrise should regularly meet with local school representatives, Broward County School District representatives and the Broward County School Safety Program to coordinate walking and biking projects around schools. Additionally, the City of Sunrise should coordinate events, such as bike rodeos, with schools within the City.

Additional Resources

- National Center for Safe Routes to School: http://www.saferoutesinfo.org/
- Broward County School Safety Program: http://www.broward.org/Traffic/Pages/SchoolSafetyProgram.aspx

Bike Rodeos and Classes

A Bike Rodeo is an event where children can learn and practice bicycling skills in a controlled, supervised environment. Depending on the age of the children involved, a bike rodeo event can include educational components, such as teaching hand signals, proper helmet fitting, and even basic maintenance skills such as changing and inflating a tire. The highlight of any bike rodeo event is a skills course, where children ride through a designed obstacle course to practice turns, braking, and coasting. Some bike rodeo leaders hand out awards to positively reinforce good bicycling habits.

Additional Resources:

- National Center for Safe Routes to School: http://www.saferoutesinfo.org/program-tools/organizers-guide-bicycle-rodeos
- Safe Kids Worldwide: http://www.safekids.org/sites/default/files/documents/Bike-Rodeo-Station-Guide.pdf

Safety Campaign

Educational campaigns that target motorists and those walking, biking and taking transit creates a shared sense of responsibility among all roadway users, rather than singling out one user group. A joint campaign can focus on rights and responsibilities of everyone using the streets of Sunrise. Information may include important bicycle laws, bulleted tips for safe bicycle travel, safe street crossing actions, keys to safe motor vehicle operation and general facility rules and regulations.

Educational materials are often available for download from national organizations, such as the Pedestrian and Bicycle Information Center, or state or local resources, such as FDOT's recent Alert Today – Alive Tomorrow campaign.

This plan recommends that the City of Sunrise establish a variety of outreach strategies for educating motorists and those walking, biking and taking transit about safely sharing the street. Campaign activities can include distributing materials at local events or print advertisements and PSAs.

Additional Resources

- Pedestrian and Bicycle Information Center – Programs and Campaigns: http://www.pedbikeinfo.org/programs/index.cfm
- Florida Pedestrian and Bicycle Safety Resource Center: http://www.pedbikesrc.ce.ufl.edu/pedbike/default.asp

Encouragement

Open Street Event

Car-free, open street events have many names- Sunday Parkways, Ciclovias, Summer Streets, and Sunday Streets-and involve periodic street "openings" that create a temporary park that is open to the public for walking, bicycling, dancing, and other physical activity. The purpose of the event is to encourage physical activity by providing a fun, welcoming environment for activity. Car-free street events have been very successful internationally and are rapidly becoming popular in the US. Local businesses open doors and set up tables along sidewalks to support the event and generate foot and bike traffic for their businesses.

Additional Information

- Open Streets Project: http://openstreetsproject.org/
- Gables Bike Day: http://openstreetsproject.org/coralgables/

Silver Sneaker Program

The City of Sunrise can develop a Silver Sneaker Program to a walking and biking program that is specifically tailored for seniors. Activities could include adult tricycle or bicycle rides, nature walks and safety education about walking, biking and taking transit.

This type of program can be incorporated into existing Leisure Services programs, including the Sunrise Senior Center, or done in partnership with other groups, such as community organizations or assisted living centers.

The City of Tamarac currently has a bike share program with thier Silver Sneaker program. Sunrise may look into adding this to their program and possibly expanding it to Tamarac.

Additional Resources

- Silver Sneakers Fitness Program:

http://silversneakers.com/

Bicycle and Pedestrian Resource Page

Many current and potential pedestrians and bicyclists do not know where to find information on traffic laws, events, maps, tips, and recreation groups. The City of Sunrise could develop a "one-stop" webpage on the City's website that houses all pedestrian- and bicycle-related information and promotions. A webpage is not difficult to set up, but it will only be successful if the site is easy to use, easy to find, and updated frequently. The site should be reviewed and updated regularly with the most current information. The Bicycle and Pedestrian Advisory Board can assist in keeping the site up to date. Other recommended programs in this chapter could be housed on the website, such as a bike map, safety campaign information, and a calendar of upcoming events.

Additional Resources

- Portland, OR: Portland, OR: http://www.portlandoregon.gov/transportation/60164
- Duck, NC: Duck, NC: http://www.townofduck.com/ducktrail/

National Bike Month Events

Cities and towns across the county participate in National Bike Month annually, which is held in May. Due to our May weather Florida has its Bicycle Month in March. The League of American Bicyclists hosts a website for event organizers.

It is recommended that the City of Sunrise host National Bike Month events and activities annually, with support from the BPAB and local bicycling groups and businesses. Examples of Bike Month activities include:

- A bike ride with the Mayor
- Bike to Work Day events, such as morning commuter energizer stations with food encouragement, information and sponsored goodies for participants.
- Bike Commuter Challenge program with awards for participants

Additional Resources

- •National Bike Month: http://bikeleague.org/bikemonte

Employer-Based Programs

The Bicycle and Pedestrian Advisory Board and the City of Sunrise should encourage local businesses to offer discounts to patrons who bicycle, walk or take transit to their business. The discount could be a daily or once-weekly promotion that encourages residents and visitors to visit local businesses by an alternative mode. This could be especially popular with businesses in areas that have limited motor vehicle parking and overly congested lots. In return for businesses' participation, the City of Sunrise could develop a list of "Bicycle-Friendly Local Businesses" to feature, along with discount information, on its one-stop website for bicycle and pedestrian information.

Enforcement

Safety training for officers

Public safety officer training courses provide officers with safety education related to the rights and responsibilities of bicyclists, pedestrians and motorists. The training can explain matters such as common errors in reporting a bicycle or pedestrian collision, laws related to motorists passing a bicyclist, or pedestrians and crosswalk use.

Additional Resources

- Pedestrian and Bicycle Information Center – Law Enforcement: http://www.pedbikeinfo.org/programs/enforcement_enforcelaws.cfm

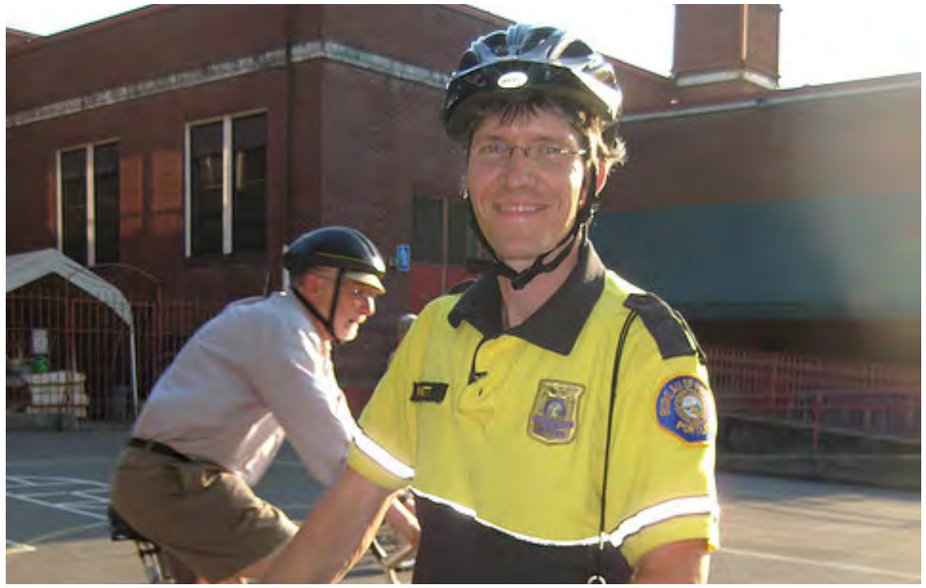
Targeted Enforcement

Public safety officers should conduct regularly schedule enforcement efforts to educate and enforce laws that impact walking and biking. The enforcement should be conducted in areas where there are known safety issues, such as high bicycle or pedestrian crash locations. Enforcement efforts can focus on issuing warnings and sharing safety information, or issuing citations with fines.

The City of Sunrise Police Department is already conducting targeted enforcement and education campaigns. These efforts should continue to support an active and safe walking and biking culture in the City.

Public safety officer on BPAB

To re-enforce the focus on enforcement and to help with coordination, a public safety officer should serve on the Bicycle and Pedestrian Advisory Board (BPAB). The officer can provide regular updates on bicycle and pedestrian crashes, coordinate safety campaigns with the BPAB and help with other safety related policies that help implement this plan.



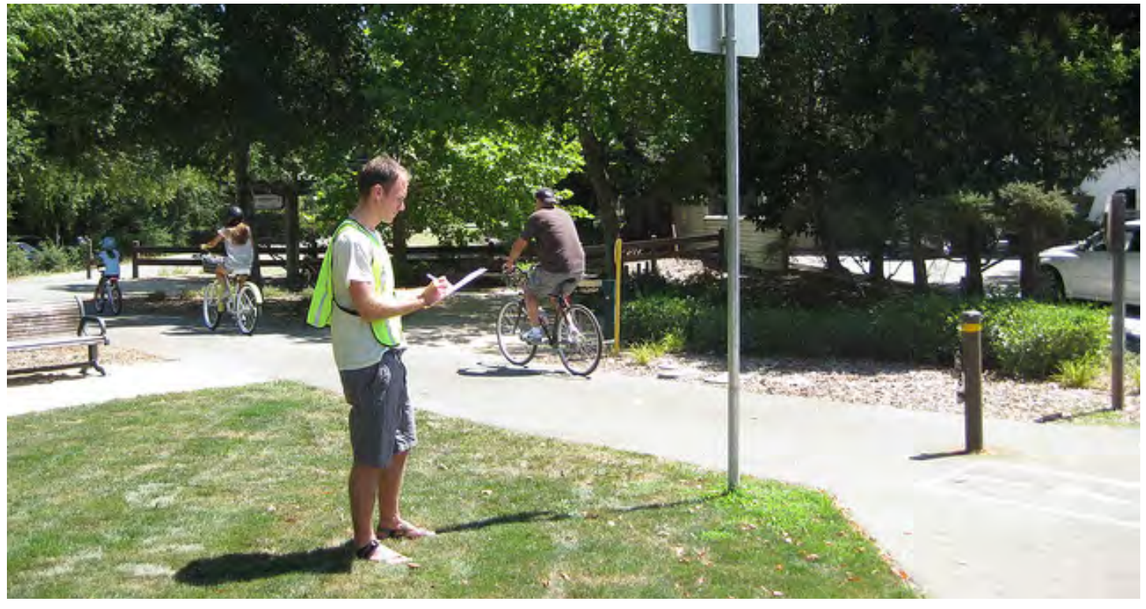
Evaluation and Planning

Conduct annual bike/ped counts and key locations

The BPAB, in coordination with City of Sunrise and regional partners, such as the Broward County MPO, should establish an annual bicycle and pedestrian count and survey program. The effort will help document increases in walking and biking rates, measure impacts of facilities after they are installed and document and track needs and concerns of those currently walking and biking in Sunrise. The count program can include manual counts and surveys, online surveys or installing automated counters along key routes, such as the New River Greenway.

Additional Information

- National Bicycle and Pedestrian Documentation Project: http://bikepeddocumentation.org/
- Pedestrian and Bicycle Information Center – Data Collection Tools: http://www.pedbikeinfo.org/planning/tools.cfm



Conduct roadway safety audits

Safety audits help identify safety issues related to walking, biking and transit along a specific roadway as well as potential solutions to correct safety issues. Audits typically include analyzing available data, conducting site visits with multiple stakeholders, and forming consensus on action steps to improve safety conditions along the street.

Additional Resources

- Broward County MPO Walking Audits: http://www.browardmpo.org/services/complete-streets/walking-audits
- Pedestrian and Bicycle Information Center – http://www.pedbikeinfo.org/planning/tools_audits.cfm
- FHWA Road Safety Audit: http://safety.fhwa.dot.gov/rsa/

POLICY

Overview

Policy recommendations are based on a review of existing codes, ordinances and land use regulations for the City of Sunrise. While many elements of the City of Sunrise's policies are supportive of bicycle and pedestrian friendly development, it is evident that the City could significantly strengthen several areas of policy regarding complete streets, bicycle parking standards and walking and biking infrastructure.

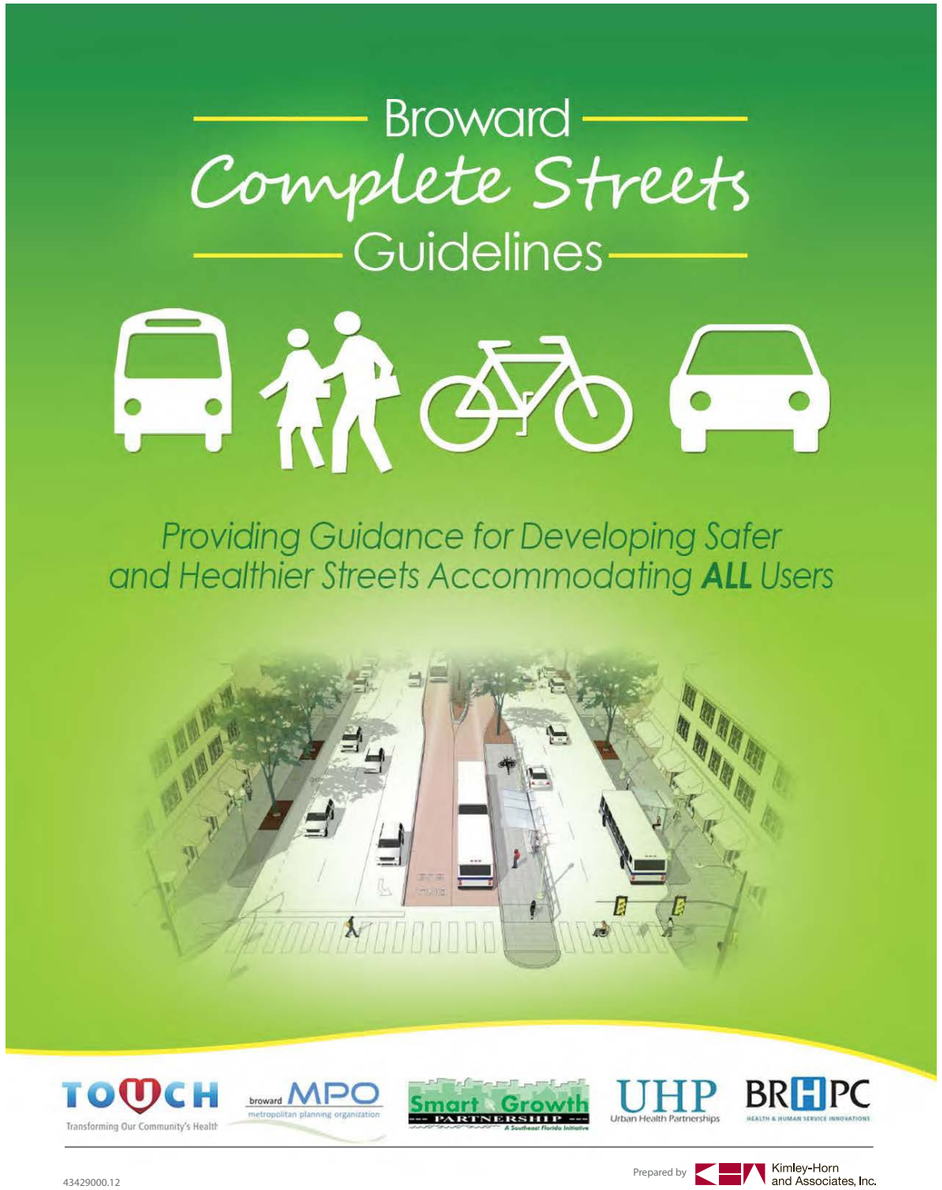
Complete Streets Policy

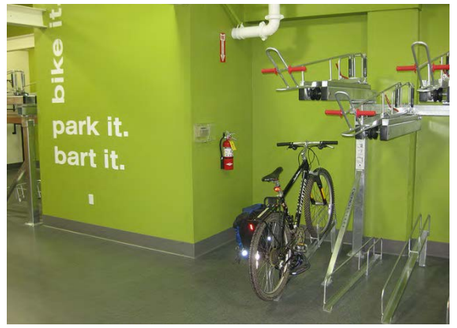
City of Sunrise Complete Streets Policy

- The City of Sunrise has adopted a Complete Streets ordinance, which supports the accommodation of all modes, along a roadway. For local roadway projects, the City's Complete Streets ordinance should be used to support this plan.

Broward County Complete Streets Policy

- Broward County has adopted a complete streets ordinance, which supports the accommodation of all modes, along a roadway. For projects on county maintained roadways, the Broward County Complete Streets Policy should be used to support this Plan. The County has modified its engineering standards to enable implementation of its complete street policies.





New Development

When re-zoning applications or site plans are submitted to the City of Sunrise, they should be reviewed for concurrency with this Plan. Street improvements, such as providing right-of-way for sidewalks, bike lanes, or trails or bicycle and pedestrian access to a site, should be assessed. Additionally, site designs for new developments should address bicycle and pedestrian circulation and access to buildings on the site. Amending the Comprehensive Plan and Land Development Code to concur with this Master Plan and require bicycle parking would provide the most wholistic way to create continuity across Sunrise.

Bicycle Parking

Bicycle parking facilities are imperative to making a bicycle friendly city attainable. Currently, the City's development codes do not address bicycle parking requirements, including bicycle parking standards. This Plan recommends adopting bicycle parking standards. These standards should apply to new construction as well as when new businesses occupy an existing space or a major renovation of an existing space occurs. Bike parking standards should address the number of bike parking spaces, bike parking site location and even providing bike parking in lieu of parking spaces for vehicles. The focus should be on making bicycle parking available, accessible and visible in Sunrise. An example of potential bicycle parking requirements is listed below as sampled by the Town of Davie Code of Ordinances. Bicycle Parking Requirements. Secure and convenient off-street bicycle parking facilities shall be provided as follows at no cost to users. All bicycle parking facilities shall be provided on private property in a highly visible location to intended users, protected from sun and rain by a roof, canopy or other approved cover, and situated to maximize the Crime Prevention through Environmental Design (CPTED) principle of natural surveillance. Bicycle racks and bicycle lockers are approved for use.

1. Office and institutional: One (1) space per forty (40) required parking spaces (at maximum requirement, before reductions) or fraction thereof.
2. Residential multi-family: One (1) space per three (3) units.
3. Retail, service, entertainment:

- (a) For the first four hundred fifty (450) required parking spaces, one (1) bicycle space per fifteen (15) required automobile parking spaces or fraction thereof
- (b) For all additional required parking spaces above four hundred fifty (450), one (1) bicycle space per fifty (50) required parking spaces or fraction thereof.

4. Mixed-use: Add the requirements of the separate uses.