



CORAL GABLES

BICYCLE / PEDESTRIAN PLAN

STANTEC

STREET PLANS COLLABORATIVE

ACKNOWLEDGEMENTS

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CITY OF CORAL GABLES CITY COMMISSION
MAYOR JIM CASON
VICE-MAYOR WILLIAM H. KERDYK, JR.
COMMISSIONER PATRICIA KEON
COMMISSIONER VINCE LAGO
COMMISSIONER FRANK QUESADA

CITY OF CORAL GABLES TRAFFIC & PARKING ADVISORY COMMITTEE

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OSCAR CAMEJO
DAVID HENDERSON

BIKE WALK CORAL GABLES
ROBERT RUANO
ALEX ADAMS
RICK SMIT
MARI GALLET
NICOLA STASI
MARY KEEL
CHIRSTINE RUPP
DAVID HENDERSON
NICHOLAS CABRERA
ADHYS IZQUIERDO
DEBBIE SWAIN
JOHN SWAIN
JON ULLMAN

MACK CYCLE COMMITTEE
MARY JANE MARK
SUE KAWALERSKI
BROOK DANNEMILLER

UNIVERSITY OF MIAMI
JANNETE GAVARRETE
RICARDO HERRAN
RICHARD SOBARAN
IAN McKEOWN

PROJECT TEAM

CITY OF CORAL GABLES
CARMEN OLAZABAL
ERNESTO PINO, R.A., LEED AP
SONIA SUCCAR FERRÉ, MA, LEED AP

THE STREET PLANS COLLABORATIVE
ANTHONY GARCIA
MIKE LYDON
MARTA VICIEDO

STANTEC
JAVIER SALMAN, AIA
EDDIE LAMAS, AIA
DIANA SUDASSI



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INTRODUCTION

Coral Gables is unique among the communities of Miami-Dade County in that it can trace its beginning to the early 20th century City Beautiful movement. The spirit of the City Beautiful movement was rooted in the notion that if cities were to be the centers of American progress then the infrastructure of those cities should be something that was celebrated. From tree plantings, to a robust street construction program, to key infill investments in the downtown core, the City of Coral Gables carries on that legacy today in its approach to public works and planning.

Regionally, the city is a transportation linchpin between the City of Miami to the north and east and the rest of the county to the west. Though it is not known for its bicycle or pedestrian infrastructure city leaders are making safe and convenient bicycle pedestrian facilities a priority in the *City Beautiful*. In 2010 the City Commission made the decision to invest \$400,000 in the expansion of bicycle facilities around the city. At that time, the city also embarked on a public works campaign to repave city streets and implement traffic calming projects around the city.

The primary purpose of this study is to recommend projects that can be implemented with this initial investment in bicycle facilities in the short term, while also identifying bicycle and pedestrian investments for consideration in the years ahead. The existing 10.5 mile bicycle network will be expanded with an additional 34 miles of new bikeways. The other primary uses of this document include:

- To recommend goals and objectives for bicycle pedestrian planning in the City;
- To guide city staff in choosing appropriate bicycle pedestrian facilities in future projects;
- To recommend policies and investments so that the needs of cyclists and pedestrians are weighed against the needs of other modes;
- To provide the City with a set of policy recommendations to increase bicycle and pedestrian safety;

The method used for planning and implementing the bicycle/pedestrian plan relies on empirical data and first hand user experience. From interviews with key community stakeholders, to an ongoing field observation process called the Handlebar Survey, a thorough understanding of the context led to the evaluation of key routes and projects around the city, along with recommendations of appropriate improvements for each. What follows is a review of relevant studies and data in Part 1, an analysis of existing conditions in the form of a handlebar survey in Part 2, a statement of Vision, Goals and Objectives in Part 3, and a set of policy and infrastructure recommendations in Part 4. The report concludes with a cost analysis and implementation plan that will help the city make improvements to the bicycle and pedestrian infrastructure of the city.



In order to become familiar with Coral Gable's bicycle /pedestrian planning history a review of more than 20 city, county, and state plans was conducted. This effort connects the current Coral Gables Bicycle Pedestrian Master Plan process with those from the past and to identify lessons learned and key strategies for successful implementation of the master plan. This review will prevent redundancy, reduce chances of error in determining the placement of planned infrastructure, and help dovetail this current master plan process into those planning efforts already underway at the local, county and state level.

* Projects marked with an asterisk (*) are projects that would benefit from additional bicycle and pedestrian review as they are included in this report. The improvements at Cocoplum Circle should have crosswalks all around the circle, and sidewalks connecting the bus stops at the circle. The Granada/Bird intersection is also key to the success of the future master plan and should carefully consider better cyclist crossing. The improvements to the Old Cutler Trail will be welcomed improvements in the quality of regional bicycle facilities.

Below is the list of plans reviewed. Following is a brief summary and analysis focusing on the most relevant information pertaining to the current study. Documents reviewed include:

- Miami-Dade Transportation Improvement Program (2012)
- Coral Gables Neighborhood Renaissance Program (2012)
- Coral Gables Comprehensive Plan - Mobility Element (2010)
- Miami Dade County – Long Range 2035 Transportation Plan (2009)
- Miami-Dade MPO Bicycle and Pedestrian Plan Update (2009)
- Miami-Dade MPO Bicyclist Count (2008)
- Miami-Dade MPO Bikeway Map (2008)
- Miami-Dade MPO Bicycle and Pedestrian Crash and Fatality Report (2008)
- Miami-Dade MPO Bicycle Facilities Plan (2007)
- Miami-Dade Parks, Recreation, and Open Space Master Plan (2007)
- M-Path Master Plan (2006)
- Miami-Dade MPO Crash data (2006)
- Miami-Dade MPO Bicycle Safety Plan (2006)
- Coral Gables Bicycle Pedestrian Master Plan (2004)
- Miami-Dade MPO Bikeway Priority Feasibility and Evaluation Study (2003)

MIAMI-DADE TRANSPORTATION IMPROVEMENT PROGRAM (2012)

SUMMARY: The Transportation Improvement Program (TIP) is the project funding policy document for Miami-Dade County transportation projects. The TIP includes investment priority for all modes of travel, including bicycle and pedestrian facilities.

ANALYSIS: Several roadway projects in Coral Gables were included in the 2013 TIP that may impact bicycle and pedestrian transportation. They include

- Old Cutler Trail (to be completed in 2014)
- Ponce de Leon Boulevard, between Alcazar Avenue and Salamanca Avenue



- Ponce de Leon Boulevard, between Salamanca Avenue and Antiquera Avenue
- Granada Boulevard and Bird Road, Design Complete*
- Cocoplum Circle *
- Commodore Trail Bikeway from SW 42nd Avenue to Aviation Avenue
- Old Cutler Road from Red Road to Sunset Drive
- Coral Way and Anderson Road - traffic circle*
- Intersection Improvements

CORAL GABLES COMPREHENSIVE PLAN - MOBILITY ELEMENT (2010)

SUMMARY: The City of Coral Gables Comprehensive plan is a planning document that prescribes an overall goal and vision for the city in various categories. The last update to the city comprehensive plan was in 2010.

ANALYSIS: The City of Coral Gables Comprehensive Plan contains several provisions related to bicycle infrastructure. In particular, these provisions include:

Policy MOB-2.3.4. The City shall require private and public development projects to adhere to the City's Citywide Bicycle Lane Master Plan, 2004 and possible expansion of bicycle and pedestrian ways throughout the City (see MOB-1: Bicycle Facilities Map).

Policy MOB-2.3.5. As a part of development review, the City shall promote the safe movement of bicycle and pedestrian traffic.

The Mobility Element also contains a proposed bicycle facility map that includes many popular routes which are included in the current study.

MIAMI DADE COUNTY – MPO LONG RANGE 2035 TRANSPORTATION PLAN (2009)

SUMMARY: The 25-year planning and policy document for Miami-Dade County transportation. Updated every five years, the plan includes investment priority for all modes of travel, including bicycle facilities.

ANALYSIS: Compared to the previous 2004 plan, the 2035 LRTP takes a more aggressive approach to designing and constructing bikeways. The map of prioritized projects for 2010-2014 demonstrates a fairly equal distribution of projects, including the implementation of Miami-Dade's first bicycle boulevards. In Coral Gables, priority projects include:

Alhambra Circle from Blue Road to SW 40th Street, Pedestrian Facility Improvements P C
 Granada Boulevard from Ponce De Leon Bd to Blue Road Pedestrian Facility Improvements P C
 Granada Boulevard from Hardee Road to S Dixie Highway Pedestrian Facility Improvements P C
 Granada Boulevard from Blue Road to SW 40th Street Pedestrian Facility Improvements P C
 SW 40th Street from Segovia Street to SW 42 Avenue Pedestrian Facility Improvements P C
 SW 57th Avenue from Blue Road to SW 40th Street Pedestrian Facility Improvements P C

M-Path from SW 37th Avenue to SW 67th Avenue Trail Improvements P C
 Old Cutler Road Path from SW 136th Street to SW 88th Street Trail Improvements P C

CORAL GABLES CAPITAL IMPROVEMENTS PROGRAM (ONGOING)

SUMMARY: The Coral Gables Neighborhood Renaissance program is a capital improvement program planned by the City of Coral Gables that includes the allocation of funding bicycle facilities that are the subject of this study, as well as road repaving and numerous traffic calming projects (listed below).

ANALYSIS: In addition to the roads indicated on the road repaving plan, there are numerous opportunities to improve bicycle and pedestrian access in all projects. Dovetailing with these projects in particular will allow the city to provide more bicycle facilities with the same allocation of funding.

DeSoto Fountain Traffic Circle Improvements. This traffic circle will be reconfigured to enhance traffic safety and flow in addition to adding landscaping. \$ 350,000 (NRP Funds)

Beautification of Granada and Columbus Circles. Traffic circles at Columbus Plaza (Columbus Boulevard and Coral Way) and Ponce de Leon Plaza (Granada Boulevard and Coral Way) will be enhanced for traffic safety and landscaping. The civic monuments at Columbus Plaza will be restored. \$ 325,000 (NRP Funds)*

Biltmore Way Streetscape Project. Biltmore Way will be improved with medians, landscaping and resurfacing from Anderson Road to Le Jeune Road (pending inclusion in the County transportation improvement program).*

Ponce de Leon Boulevard (Final Phase) Streetscape Project. The final phase of the streetscape project for Ponce de Leon Boulevard, a major north/south artery would be continued from where it currently ends at Salamanca Avenue to its intersection with SW 8 Street. \$2,100,000 (County Impact Fees)

Miracle Mile and Giralda Streetscape Projects. The streetscape designs for both Miracle Mile and Giralda Avenue call for the installation of improved urban lighting, wider sidewalks, tree canopy, benches, kiosks, the development of cleaner and more welcoming connections or “paseos” to garages and alleyways along with mid-block parks, outdoor art installations, intimate public space and plazas for events and gatherings. The plan for Miracle Mile calls for the conversion of angled parking to parallel parking.



MIAMI-DADE MPO: BICYCLE PEDESTRIAN PLAN UPDATE (2009)

SUMMARY: The County-wide bicycle pedestrian plan update provides a wealth of county data, including bike level of service and other evaluation data. The report also gives policy recommendations at the county level, road data, and a number of goals and objectives which are echoed in this report.

ANALYSIS: The 2009 plan will be the source of BLOS data for this study. The streets in Coral Gables all range from D-F BLOS.

CITY OF MIAMI BICYCLE MASTER PLAN (2009)

SUMMARY: The 2009 City of Miami Bicycle Master Plan has been widely praised for the advances made in promoting better bicycle policy in the City of Miami. The plan has facilitated city public works officials in making significant advances toward implementing the plan over the past four years. The plan envisions a variety of bikeway types, including bicycle boulevards and bike lanes. Connections between Coral Gables and Miami are important as the two cities share a significant border.

ANALYSIS: Physical engineering recommendations include bicycle lanes, traffic calming measures, and experimental treatments like shared lane use markings (sharrows) and bicycle boxes. The former two are methods are found throughout city, but bicycle boxes have not been used at all in Miami-Dade County. Additionally, the plan promotes bicycle boulevards or “neighborhood greenways” as a nationally recognized way to simultaneously calm traffic and create bicycle routes along primarily residential streets. This type of street retrofit has been studied by the County and may be a feasible option for many areas in the City of Coral Gables, including streets that run parallel to major corridors with high crash rates. Educating City Commissioners and other city/county agencies will help decision makers prioritize these relatively inexpensive safety and quality of life improvements.

The City of Miami Bicycle Master Plan has several important links into the City of Coral Gables, from the north and west. Some, like the South West 16 Street bike lane and the Grand Avenue bike lane, have already been implemented, while other links are still in the works. All adjacent City of Miami connections are noted in the Existing Conditions Map (page 21). Potential links to the City of Miami include:

SW 16 Street - Bike Lane - Existing
 Coral Gate - Bicycle Boulevard
 Coral Way - Bicycle Route
 SW 20 Street - Bicycle Boulevard
 SW 22 Terrace - Bicycle Boulevard
 SW 26 Street - Bicycle Boulevard
 Grand Avenue - Bike Lane - Existing
 Cortez - Bicycle Boulevard
 Pizzaro - Bicycle Boulevard
 Miller Road - SW 56 Street - Bicycle Boulevard
 Commodore Trail/ Inghram Highway- Shared Path



The bike lane on SW 16 Street is a main bike facility connection to make with the City of Miami.

MIAMI-DADE MPO: BICYCLE COUNT (2008)

SUMMARY: The MPO used 45 different points and intersection locations throughout the County to tally bicycle and pedestrian traffic. The effort was intended to demonstrate and track high activity areas. Counts are to be periodically updated so that an increase or decrease in use patterns may be logged.

ANALYSIS: The data was gathered on weekday mornings and weekend afternoons in the summer and winter of 2008. Two counts were taken in Coral Gables. They include:

- Metrorail Pedestrian Path & Red Road intersection - 255 bicyclists / pedestrians over a 4 hour period
- Old Cutler Road near Matheson Park entrance - 140 bicyclists / pedestrians over a 4 hour period

M-PATH MASTER PLAN (2007)

SUMMARY: THE M-PATH is a nearly contiguous 10.5 mi (17 km) bicycle and pedestrian trail. Built in 1984 along with the metro system it is a main commuting route to and from downtown. In late 2011, the MetroPath was extended and a 200 ft (61 m) bridge was added over the freeway entrance to the Snapper Creek Expressway (S.R. 878) near Dadeland North station.

ANALYSIS: The long term projects found in the 2007 Master Plan include:

- realigning curving parts of the path
- widening the path to 12'
- installing countdown pedestrian signals
- intersection improvements (to include, crosswalk realignments, refuge islands, raised intersections, bollards, etc.)
- enhancing lighting and landscaping along the path
- providing way-finding to the Metrorail stations
- constructing a non-motorized bridge at the Coral Gables Waterway

The short term improvements prescribed by the 2007 plan include:

- resurfacing critical sections,
- providing advance warning signals and re-striping crosswalks, installing north/south directional signs, as well as signage indicating distances to Metrorail stations
- installing 'STOP' pavement markings near intersections
- marking curving sections
- connect missing links through the University of Miami parking lot
- realigning the path at the South Miami Metrorail station
- install emergency call boxes at these "high crime areas"
- implementing encroachment prevention measures
- applying development standards during site plan review and approval

MIAMI-DADE COUNTY PARK, RECREATION AND OPEN SPACE MASTER PLAN (2007)

SUMMARY: The Miami-Dade County Open Space Master Plan is a visionary document that seeks to broaden the definition of open space to reflect the true civic nature of public space. Streets, plazas, greenways, natural areas, parks, cultural areas, and waterway trails form a tapestry of sustainable park and open space development for the next 50 years.

ANALYSIS: Related to bicycling, a primary recommendation is to create network of "Great Streets" by retrofitting the County's existing oversupply of wide, auto-centric arterial and collector roadways. Streets that are included in the list of "Great Streets" in Coral Gables include Miracle Mile, and Coral Way.

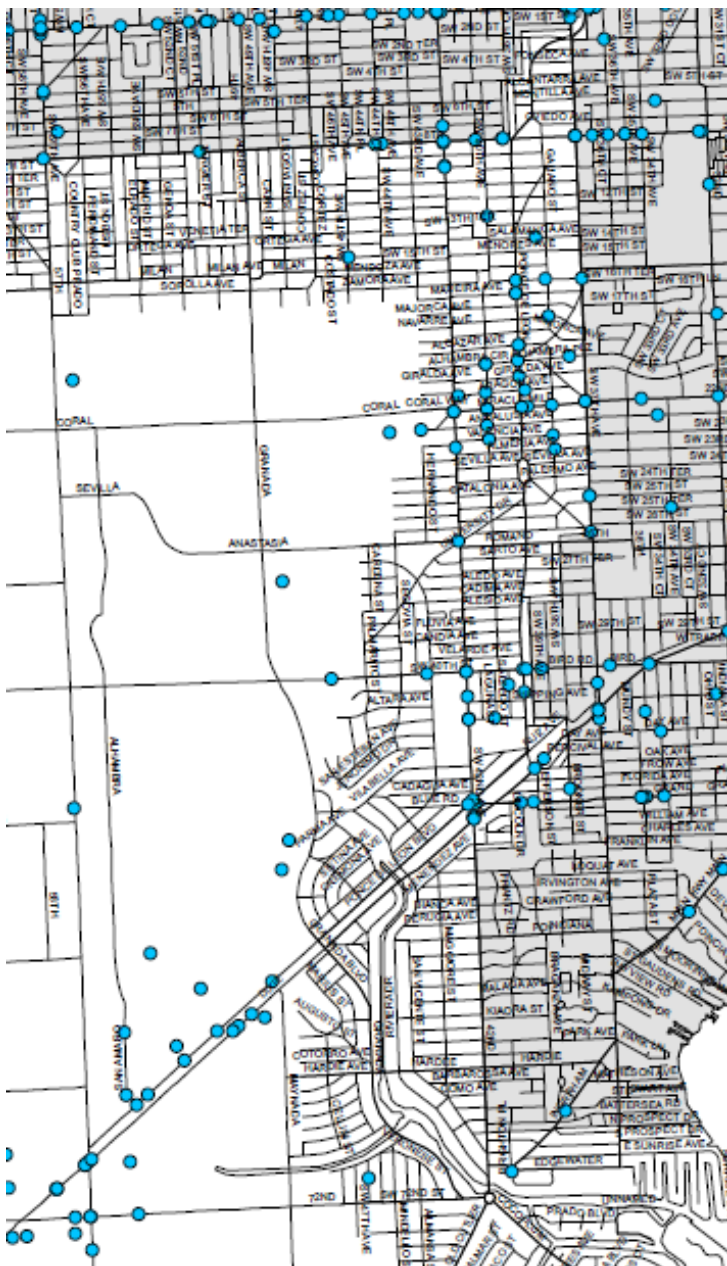


MIAMI-DADE MPO BICYCLE AND PEDESTRIAN INJURIES AND FATALITIES (2008)

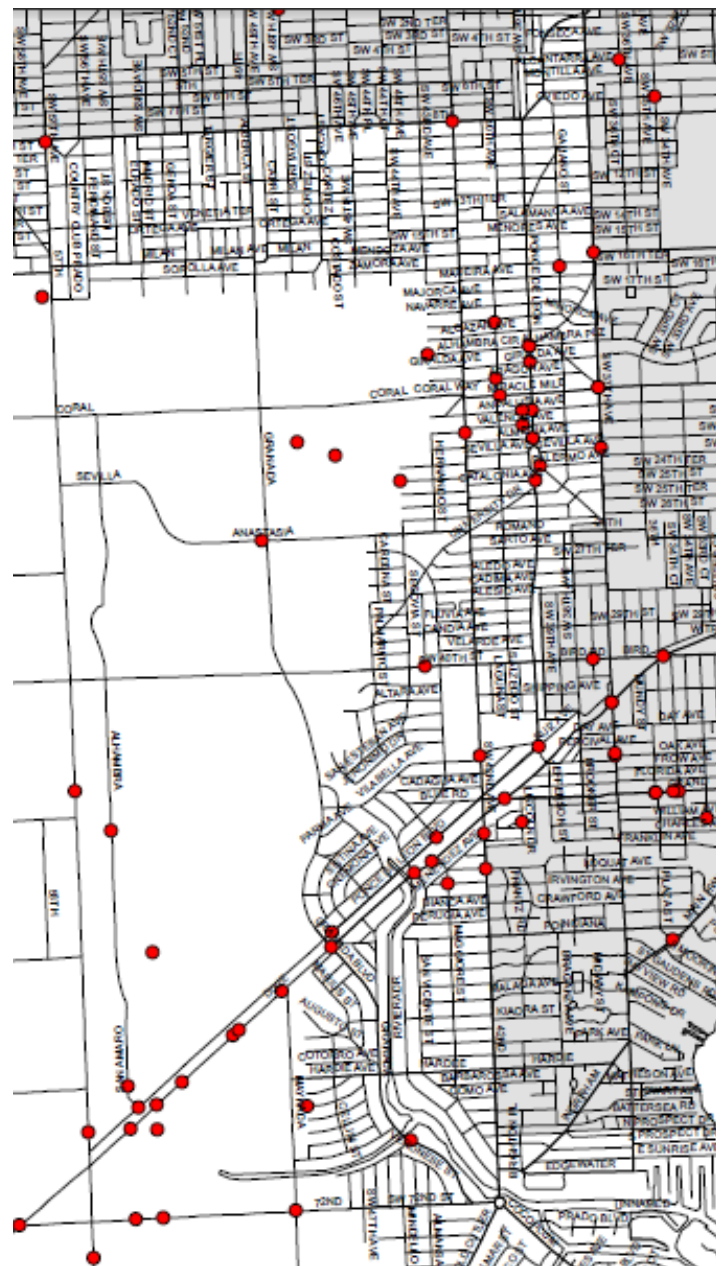
MIAMI-DADE MPO CRASH DATA (2000 – 2006)

SUMMARY: A graph displaying reported county-wide injury and fatality numbers from 1990 - 2008, as well as a GIS map of crashes for 2008 (shown below).

ANALYSIS: While this MPO document does not break out the crash trend lines in Coral Gables, the county as a whole is becoming a safer place to walk and bicycle. Bike crashes did increase slight over 2007, but fatalities continued to decline, and are now at an all-time low. As the maps below show, bicycle and pedestrian crashes are concentrated on arterial roads, around the downtown core, and along the M-Path (higher density neighborhoods with high levels of bicycle ridership, but few bicycle facilities). Particular concentrations are found along FDOT and County roads where multiple vehicle lanes and higher traffic volumes/vehicular speeds create more hostile conditions for people bicycling and walking.



Pedestrian Crashes, 2008



Bicycle Crashes, 2008

CITY OF CORAL GABLES BICYCLE/PEDESTRIAN MASTER PLAN (2004)

SUMMARY: The 2004 Coral Gables Bicycle Pedestrian Master Plan prescribed many of the same routes suggested in this report. The document contains data on selected routes which is still relevant today, including Bicycle Level of Service, Volume data, functional classification, and pavement width.

Some of the routes included are reasonable and consider major points of interest and potential links, while others are disconnected from the rest of the network. The study also excludes the Central Business District, which is a major trip generator. The major downside of this report is that it relies almost exclusively on bike lanes and roadway widening, rather than studying alternative bicycle facilities or lane narrowing.

ANALYSIS: City-wide bicycle/pedestrian master plan. The plan designates major bicycle routes, and prescribes 4' bike lanes for all routes. The document also has a sidewalk inventory that can still be used for this analysis, as well as a sidewalk improvement plan. Among the projects that overlap with the recommendations of this report are:

- University Drive, between LeJeune and Bird Road
- University Drive, between Bird Road and Blue Road
- Riviera, from Anastasia to CocoPlum Circle
- Ponce de Leon Boulevard, between University and Granada
- Alhambra Circle, from Coral Way to San Amaro
- Sevilla between SW 57 Ave and Lejeune
- Alhambra Circle, between LeJeune and Douglas
- Country Club Prado

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Understanding general transportation demographics in the city is important as it provides a baseline measurement to help city leaders improve transportation options. As it relates to bicycle and pedestrian planning, mapping transit usage patterns allows the project team to identify locations where we can reasonably expect a higher level of bicycle or pedestrian activity. Paying special attention to areas of high transit use is a priority.

Miami-Dade Transit provided bus stop and MetroRail ridership information for locations within the City of Coral Gables. The City is fortunate enough to be served by one MetroRail station within city limits, as well as another station on the border (Douglas Road). These stations, along with the 226 bus stops within the city account for 7,000 daily transit riders in the city.

The ridership data was synthesized into the transit intensity graph on page 15. As you can see, the major transit locations include:

- University Station (Ponce de Leon Boulevard)
- Lejeune Road /Coral Way Intersection
- Douglas Road /Coral Way Intersection
- Miracle Mile / Ponce de Leon Blvd

When compared with the crash data on Page 11, one can see that special attention should be paid to Miracle Mile and the CBD as a place of high transit use, and high bicycle/pedestrian crash rate.

CORAL GABLES TROLLEY

Another important transit asset in the City of Coral Gables is the trolley that runs north/south down Ponce de Leon Boulevard every ten to fifteen minutes. The trolley started in 2003 and connects the Douglas Road MetroRail station to the Central Business District and Flagler Street beyond.

The trolley is a free service provided by the City of Coral Gables and assisted by the Miami-Dade County Half Penny Transportation Surtax, the Florida Department of Transportation and the MPO. Recently, the trolleys were upgraded with bicycle racks and additional connection were made with the City of Miami trolley. Approximately 5,000 people use the trolley daily.



RIDERSHIP TECHNICAL REPORT

Division of Performance Analysis



June 2013

1

CORAL GABLES MODE-SHARE ANALYSIS*

We wanted to find out how people in Coral Gables get around. We researched the data, and came to some encouraging conclusions.

Total population: 47,783

Additional commuting population: +23,075

Total daily population: 70,858

Workers who live and work in the city: 6,291 (30.6%)

Total transit ridership: 13,000

MDT ridership (rail and bus): 7,000

MDT ridership (MetroRail): 4,082

MDT ridership (Bus): 3,608 (across 226 stops)

Trolley ridership (daily): 5,000

UM students with no car: 1,700

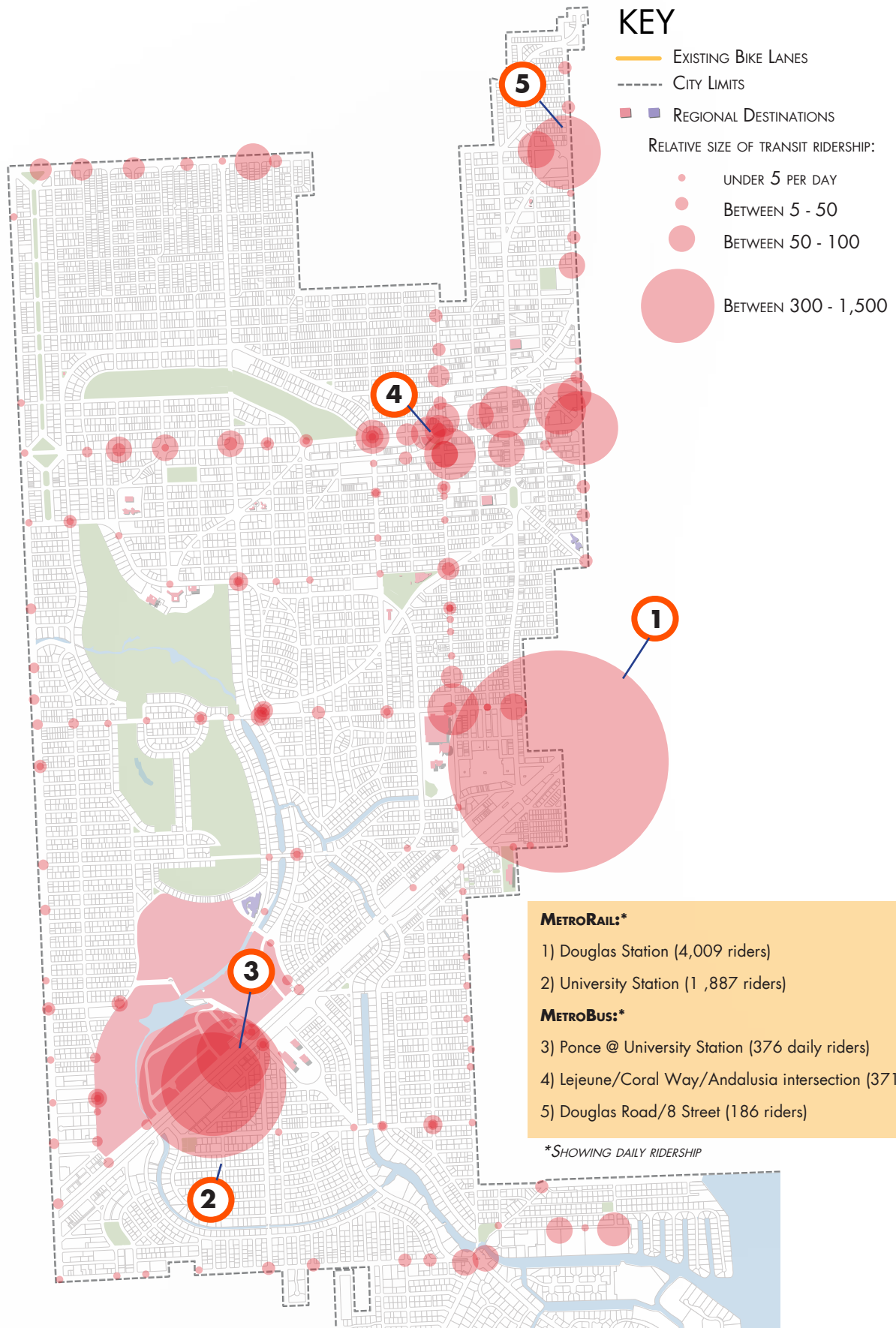
79.9% of city residents drive to work alone.

8% Walk, bike or take transit to work.

Transit	4.9% (2,364)
Walk	2.7% (1,310)
Bicycle	0.4% (192)

18% of residents or commuters use transit daily, and when taken with the mode share numbers above, at least **20%** of the daily population of Coral Gables is on foot or bike for part of their daily travel. A good reason to invest in better infrastructure.

* Information from 2008, 2010 Census Data



The Data Collection phase revealed general themes that require attention at a city-wide level. The residential neighborhoods in Coral Gables contain some of the best tree lined streets in Miami-Dade County. While many streets lack sidewalks, the traffic volumes and speeds on most residential streets are low enough to encourage bicycle traffic with little more than coordinated signage.

The main thoroughfares in the city are another matter. The city is centrally located in Miami-Dade county, and provides a main connection between commuters traveling between the City of Miami and points west and south. The needs of moving these commuters at rush hour times must be carefully balanced against the needs of bicyclists, pedestrians, and neighborhood residents. Roads that are performing at low levels of service at rush hour times should be prime candidates for traffic calming.

CENTRAL BUSINESS DISTRICT & UNIVERSITY OF MIAMI

Two locations in the city account for the majority of the employment, housing, and transit use in the city, in addition to being the major bicycle and pedestrian generators in the city: the Central Business District and the University of Miami. The master plan prioritizes safe and easy access between these two locations, and ensures regional connectivity to both locations from points beyond the city limits.

EXISTING BIKE LANES & THE M-PATH

One of the City of Coral Gables' best assets is a 2.6 mile segment of the M-Path that runs through the center of the city. This shared-use path is a regional commuting corridor, and a favorite route for recreational runners. In addition, the Old Cutler Trail also passes through Coral Gables, making an important city-wide connection at Cocoplum Circle. Connecting to this point is a high priority for the plan.

The existing investments that have been made in bicycle infrastructure is another asset within the city. The city has 3.9 miles of bike lanes (in addition to the county trails) that will form the basis of the bicycle master plan.

CORAL GABLES QUICK FACTS

Total Existing Bike Network: 10.5 miles
Number of Bikeway Types: 2
Existing Bicycle Lanes: 3.9 miles
Existing Shared-Use Path: 6.6 miles



Miracle Mile is the heart of Coral Gables, and one of the best pedestrian corridors in the county.



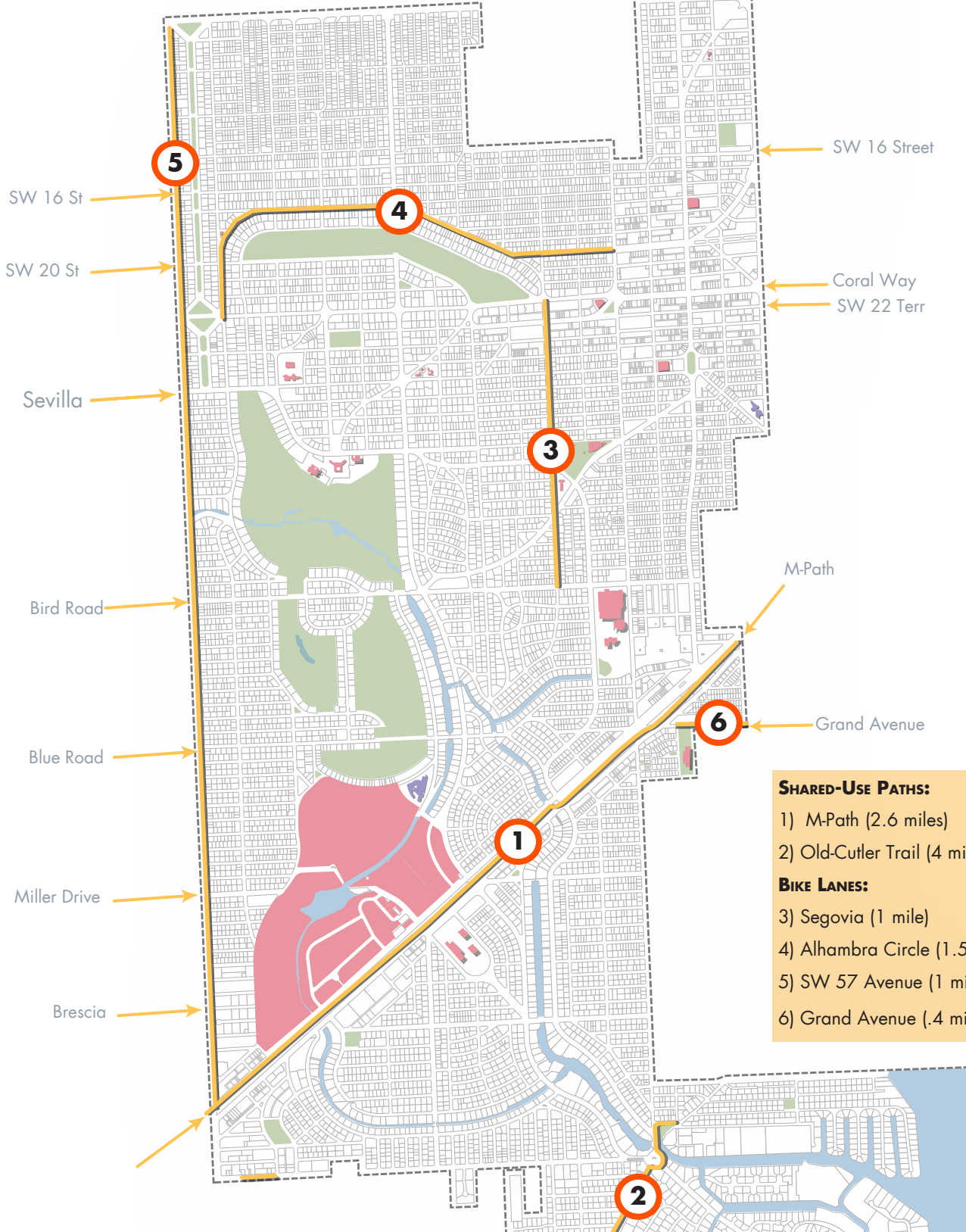
One of the top fifty best colleges in the United States, the University of Miami is a central institution in the city. Building bicycle and pedestrian amenities that connect to campus will strengthen bonds between UM and the City.



The M-Path is a regional bike route that is popular with cyclists and runners.

KEY

- EXISTING BIKE LANES
- CITY LIMITS
- ■ REGIONAL CONNECTION
- REGIONAL DESTINATIONS



SHARED-USE PATHS:

- 1) M-Path (2.6 miles)
- 2) Old-Cutler Trail (4 miles)

BIKE LANES:

- 3) Segovia (1 mile)
- 4) Alhambra Circle (1.5 mile)
- 5) SW 57 Avenue (1 mile)
- 6) Grand Avenue (.4 miles)

The City of Coral Gables has a budding bicycle/pedestrian culture. Several organizations in the City provide a number of educational and recreational opportunities for pedestrians and cyclists. The initiatives described below have promoted awareness of bicycle and pedestrian issues across the City. The continuation and expansion of these programs are essential to help achieve the goals listed in Part 3.

The main stakeholder groups involved with the creation of the plan include:

Bike Walk Coral Gables
Gables Bike Day
Dutch Consulate
Mack Cycle
UBike / University of Miami

The project team met with stakeholders early in the process to get initial impressions of the project, along with goals and objectives.

The Public Agencies consulted for this project included:

Miami-Dade Metropolitan Planning Organization
Miami-Dade County Public Works
Miami-Dade Transit
Coral Gables City Commissioners
Coral Gables Traffic Advisory Committee

The initial phase of individual meetings was followed by a public meeting which was held on November 19, 2013 at the Coral Gables Youth Center. At this meeting the project team gave a presentation on the existing conditions and best practices with regard to bicycle planning, and shared the findings of the literature review and data collection effort.

Throughout the process the consultant team was available to community stakeholders to discuss the project and contribute to the development of the plan. Having a good understanding of the existing programs



Commissioner Frank Quesada at the public meeting.

PUBLIC INPUT

We wanted to include as much input from knowledgeable stakeholders as possible. Among the many recommendations made by community, the following stand out:

from **BIKE WALK CORAL GABLES:**

- Create a safe east/west route near UM. (The waterway makes E/W travel more difficult)
- Reconfigure the Bird/University/Granada intersection which is very dangerous to cyclists and pedestrians. (This is a state road)
- Look for Renaissance Repaving Projects that could be striped for bike lanes. Additional areas could be connected to these streets.
- Look for existing streets that can be re-striped with bike lanes.
- Connect or extend existing bike lanes. (e.g. Segovia to Alhambra)
- Connect the University of Miami to the City of Coral Gables (e.g. extending Alhambra Dr bike lanes, connecting to the county's bike path plans for Miller Rd pathway, University Ave.)

from **JONATHAN ULLMAN:**

- Stripe complete E-W and N-S bike lanes through the Central Business District (CBD) connecting to bike lanes in our neighborhoods and parks.
- Stripe complete bike lanes from Old Culter to the CBD and from the University of Miami to the CBD and Youth Center

and groups involved helped the project team make policy recommendations, found on pages 84 - 88. Below are a few key points about the culture of biking and walking in Coral Gables.

GABLES BIKE DAY / BIKE WALK CORAL GABLES

Started in 2011, Gables Bike Day has become a regional success story for elevating the status of bicycle and pedestrian culture in the City Beautiful. The lead organizer, Bike Walk Coral Gables, formed out of the first Gables Bike Day Steering Committee. The group holds monthly rides throughout the city



Gables Bike Day, 2011

UBIKE

The University of Miami has a bicycle program called UBIKE that organizes bicycle registration and lock giveaway, community events and parking. The University has a zero car policy for incoming freshmen, and understands that the available parking supply limits the vehicles that can come to the Campus. For several years they have been seeking to build a culture of bicycle, pedestrian and transit transportation to/from campus. According to UM data, over 3,300 students live within 1/2 mile of campus. Ensuring that students, faculty and staff have more ways of getting to campus without getting in a car is a priority of this plan. In addition, the UBIKE team registered over 1,100 bikes in the 2012/2013 school year.



UM has been a vocal advocate of better bicycle and pedestrian infrastructure in and around campus. They understand the need to strengthen these connections as vehicular access to campus is limited.

EXISTING CITY SPONSORED ROAD DIET PROJECTS

Over the past several years the City has implemented several street reconstruction projects that have eliminated travel lanes in favor of bicycle and pedestrian facilities. The Segovia bike lane project is an example of a 'Road Diet' treatment, where a four lane road is reduced to two lanes with bike lanes. Other similar projects include the Biltmore Way traffic circle, and the reconstruction of Andalusia Avenue.



The bike lane on Segovia Street helped convert an over-capacity four lane road into a traffic calmed neighborhood street.

Central to the process of producing the master plan was a thorough analysis of the existing conditions as seen through the eyes of a cyclist and pedestrian. The aptly named 'handlebar survey' is a quantitative and qualitative analysis of streets around the city.

The project team canvassed the city with measuring wheels and speed guns to document conditions facing cyclists every day. The completed survey includes information such as lane widths, traffic volumes, and posted speeds, to best inform the choice of bicycle facility for each route.

HOW WERE ROUTES CHOSEN?

Streets were chosen that were observed in use by cyclists, or streets that formed continuous routes across the city. In addition, the recommendations of local bicycle groups were included in this assessment. Existing bike lanes were also assessed in order to understand their connections to other routes and state of repair.

Not all of the streets surveyed are suitable for a bicycle facility. This survey was the means by which stakeholders and city staff assessed appropriate routes for bicycle use, and more importantly which type of facility belongs on each route.

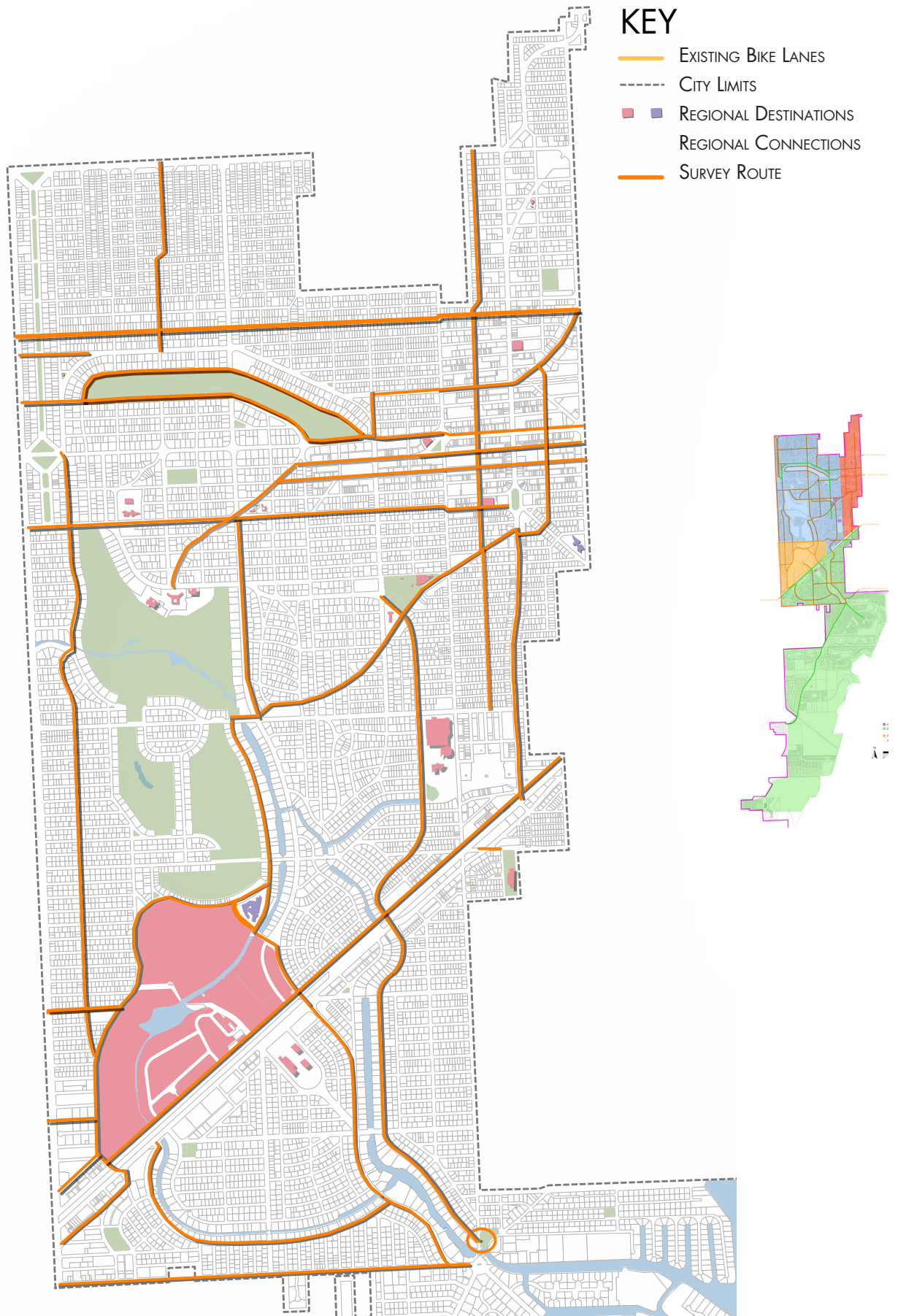
For the purposes of the study, 44 miles of road were evaluated in four main study areas around the City:

- Central Business District (CBD)
- University of Miami Coral Gables Campus
- Northwest Residential Area
- South of US1

What follows is a qualitative assessment of the top 23 routes surveyed.

HANDLEBAR SURVEY ROUTE LIST:

1. **SALZEDO STREET** (BETWEEN SW 8 STREET AND UNIVERSITY DRIVE)
2. **UNIVERSITY DRIVE** (BETWEEN PONCE AND LEJEUNE ROAD)
3. **UNIVERSITY DRIVE** (BETWEEN LEJEUNE ROAD AND BIRD ROAD)
4. **UNIVERSITY DRIVE** (BETWEEN BIRD ROAD & PISANO)
5. **RIVIERA DRIVE** (BETWEEN SEGOVIA STREET AND US1)
6. **RIVIERA DRIVE** (BETWEEN US1 & COCOPLUM CIRCLE)
7. **GREENWAY DRIVE** (AROUND THE CORAL GABLES GOLF COURSE)
8. **COUNTRY CLUB PRADO** (BETWEEN SW 8 STREET AND CORAL WAY)
9. **MILAN/MENDOZA** (BETWEEN SW 57 AVE AND GALIANO ST)
10. **BILTMORE WAY** (BETWEEN DE SOTO BLVD AND LEJEUNE ROAD)
11. **MIRACLE MILE** (BETWEEN LEJEUNE ROAD AND DOUGLAS ROAD)
12. **PONCE DE LEON** (BETWEEN MALAGA AVENUE AND M-PATH)
13. **GALIANO STREET** (BETWEEN SW 8 STREET AND MALAGA AVENUE)
14. **CAMPO SANO AVE** (BETWEEN SAN AMARO DR AND UNIVERSITY DR)
15. **SAN AMARO DRIVE** (BETWEEN SW 57 AVE AND CAMPO SANO AVE)
16. **PONCE DE LEON BOULEVARD** (BETWEEN 57 AVE AND LEJEUNE ROAD)
17. **BLUE ROAD** (BETWEEN SW 57 AVENUE AND LEJEUNE ROAD)
18. **PISANO AVENUE** (BETWEEN CAMPO SANO AVE AND GRANADA BLVD)
19. **MILLER DRIVE** (BETWEEN SW 57 AVENUE AND SAN AMARO DRIVE)
20. **ALHAMBRA CIRCLE** (BETWEEN CORAL WAY AND SUNSET DRIVE)
21. **SUNSET DRIVE** (BETWEEN 57 AVENUE AND COCOPLUM CIRCLE)
22. **SEGOVIA STREET** (BETWEEN SW 8 STREET AND BIRD ROAD)
23. **ALHAMBRA CIRCLE** (BETWEEN CORAL WAY AND LEJEUNE ROAD)



1. SALZEDO STREET BETWEEN UNIVERSITY DRIVE AND SW 8 STREET

PRELIMINARY OBSERVATIONS:

1. Main street through CBD with On-street parking
2. Low Speed (35 mph)
3. Heavily used commuter route (both bike and car)

RECOMMENDATIONS:

1. The existing 43' pavement width is enough to accommodate a 4' bike lane on either side of the street, from University to Andalusia. This is also a Neighborhood Renaissance project.
2. Road Diet for section between Andalusia and Alhambra to accommodate the bike lane. If a road diet is not pursued, signage and sharrows should be used to connect to the bike lane further south.
3. Coordinate signage from University to Alhambra Circle.
4. Install pedestrian crosswalks along corridor where none currently exist.

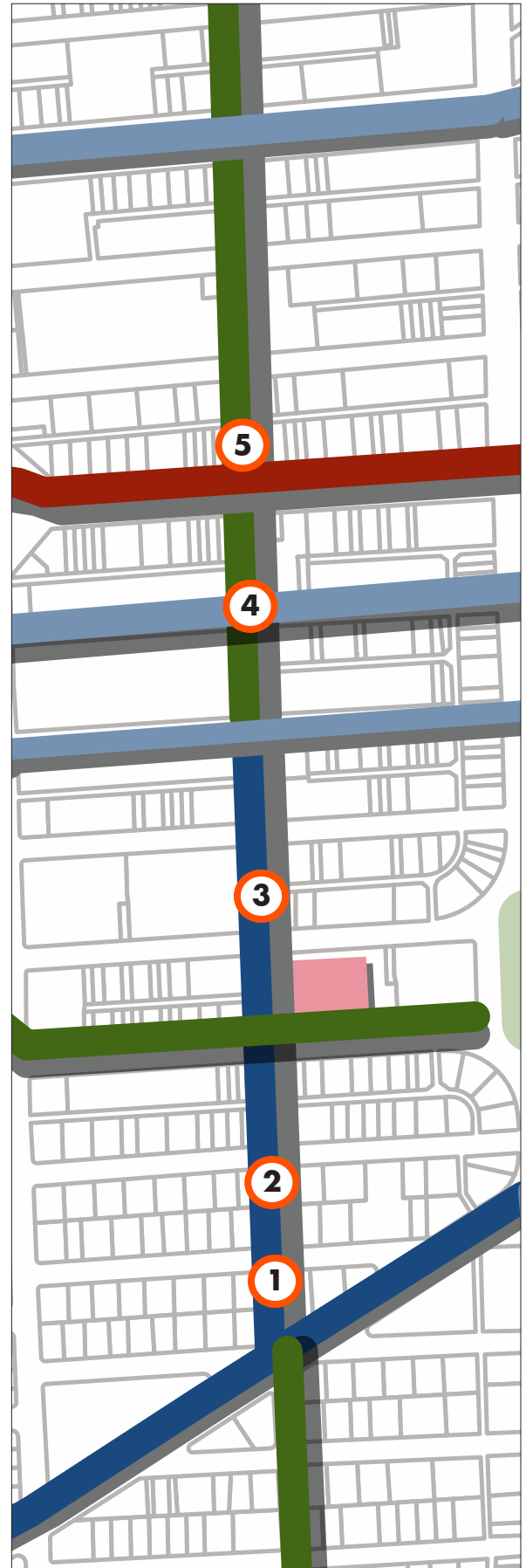
Salzedo Street is a primary route into the Central Business District. It connects University Drive to the core of downtown. Salzedo Street forms a well used bicycle route. There is no bicycle facility on this route.

Salzedo is predominantly a two-lane street fronted by commercial buildings between University Drive and Alcazar, and residential buildings between Alcazar and SW 8 Street. It has a four lane section between Alhambra and Andalusia.

It is characterized by moderate rush hour traffic volume and speed, but low volumes and speed non-peak. There are 5' sidewalks on both sides of the street, along with on-street parking throughout most of the corridor.

Poorly marked crossings are a challenge for pedestrians, and there is no signage or wayfinding for area cyclists.

Parts of the corridor can accommodate a conventional bike lane (between University and Andalusia), but between Andalusia and Alhambra there is no room to accommodate a separate bike lane without reconfiguring the road. One option for this section is to apply a road diet to the street, leaving one lane in either direction with a center turn lane. A two-way protected bike lane is also a possibility on this route if you remove the parking spaces on one side of the street.



1. SALZEDO STREET BETWEEN UNIVERSITY DRIVE AND SW 8 STREET



1. ROAD DIET Salzedo is a prime candidate for a road diet considering the low volume of traffic and speeds. There is an opportunity here to re-stripe with bicycle facilities at low cost.



2. PARKING OPPORTUNITY Existing on-street parking is underutilized for parking, but is used by commuters as a de facto bicycle facility.



3. CROSSWALK Pedestrians frequently cross the street at mid-block locations due to poorly marked crosswalks.



4. MAJOR INTERSECTION The intersection of Miracle Mile and Salzedo is a pinch point for both automotive, bicycle, and pedestrian traffic. Use a center turn lane here to make room for on-street bike lanes.



5. PINCH POINT. This section of Salzedo is a pinch point for traffic traveling south, but not north. Use a center turn lane here to yield space for on-street bike lanes.

2. UNIVERSITY DRIVE BETWEEN PONCE DE LEON BOULEVARD AND LEJEUNE ROAD

PRELIMINARY OBSERVATIONS:

1. Main street into CBD from points south
2. Moderate speed/ volume
3. Heavily used commuter route (both bike and car)

RECOMMENDATIONS:

1. Install sidewalk between Salzedo and Ponce on the north side of the street.
2. Install bike lane along corridor, to connect with bike lanes on Ponce and south on University
3. Apply road diet to corridor, eliminate extra lane going northwest into downtown, plant street trees, and improve pedestrian crossings.
4. Enlarge pedestrian refuge islands, reduce radius.

University Drive between LeJeune Road and Malaga Avenue is a four lane road characterized by mixed speeds and volumes. It is a main auto commute and bike commute route into downtown Coral Gables. There is no bicycle facility on this route. There are sidewalks on the both sides of the street, except for the north segment between Salzedo and Ponce, adjacent to the public parking lot. No street in the downtown core should lack this basic pedestrian amenity.

This section of University is fronted by a mix of urban residential apartments, single family residences and small office buildings. The San Sebastian Apartments are an important source of student housing for the University of Miami. This connection with UM is an important point to note when considering the overall network plan. This segment of University can accommodate a bike lane given the current 4 lane configuration, but considering the volume and pattern of travel along the corridor, one of the lanes traveling northeast should be removed and the space reallocated as a bike lane.

The pavement is in poor condition, and the corridor lacks a sidewalk in an urban area that should have sidewalks. The intersection of LeJeune Road and University is designed to facilitate high speed - a challenge for bicycle and pedestrian safety. Enlarging the pedestrian islands where right turn lanes have been segregated is a start, but ultimately these turn lanes should be given much tighter turn radii to ensure that motorists are forced to come to a stop. The turning lane going south-west has been the site of several fatal collisions over the past several years.



1. CROSSWALK This intersection has been the site of numerous pedestrian deaths over the years. The high speed nature of LeJeune is a challenge, as well as the wide right turn from LeJeune to University.

2. UNIVERSITY DRIVE BETWEEN PONCE DE LEON BOULEVARD AND LEJEUNE ROAD



2. MAJOR INTERSECTION The intersection of University Drive and Lejeune Road is a pinch point for both automotive and pedestrian traffic, and an important connection to consider.



4. NO SIDEWALK This section of University lacks a sidewalk. No street in the downtown core should lack this basic pedestrian amenity.



3. ROAD DIET University Drive is a prime candidate for a road diet considering the low volume of traffic moving north after the intersection. There is an opportunity here to re-stripe the street with bicycle facilities at a low cost.



2. REMOVE RIGHT TURN BAY. The right turn lane from University to Lejeune creates a major conflict point between pedestrians and motorists. This has been the site of several collisions.

3. UNIVERSITY DRIVE BETWEEN BIRD ROAD AND LEJEUNE ROAD

PRELIMINARY OBSERVATIONS:

1. Main street into CBD from points south
2. Moderate speed/ volume
3. Heavily used commuter route (both bike and car)

RECOMMENDATIONS:

1. Install bike lane along corridor, to connect with bike lane on University Drive south of Bird, and on University Drive north of LeJeune.
2. Install new crosswalks at intersection of Bird/Granada/University on all sides without a crosswalk, with special attention to the bus stop at the southeast corner - a known pedestrian hot spot.

University Drive between Bird Road and LeJeune Road is a two lane road characterized by mixed speeds and volumes. Most of the time it is a low volume and speed street, but peak times see major congestion at the intersections of Bird and LeJeune. It is a main auto commute and bike commute route into downtown Coral Gables. There is no bicycle facility on this route. There is a sidewalk on the both sides of the street.

This section of University is fronted by single family residences and cultural uses (library, youth center).

The pavement is wide enough to accommodate a bike lane without extra pavement in most locations, though additional pavement may be required at certain locations.

At the intersection of Bird/Granada/University bicyclists can use the only existing sidewalk and crossings at this intersection, across University and Granada. There is no pedestrian crossing at this location across Bird Road, in spite of the bus stop on the south-east corner. A low-cost, easy to implement bicycle connection should use the existing crosswalks and newly installed pedestrian bridge to bring cyclists through this intersection.



1. MAJOR INTERSECTION The intersection of University Drive and LeJeune Road is a pinch point for both automotive and pedestrian traffic. This right turn movement is a danger for cyclists. The approach and connection across LeJeune must be seamless and clear for bicyclists and motorists.



2. SHADED FACILITY. The segment of University Drive in front of the Coral Gables Library is a popular route because of the ample tree canopy.



3. ADDITIONAL PAVEMENT University Drive is one of the most scenic roads in Miami-Dade county, a reason why many commuting cyclists use this corridor, some minor widening is necessary.

3. UNIVERSITY DRIVE BETWEEN BIRD ROAD AND LEJEUNE ROAD



4. AMPLE PAVEMENT Existing lanes are wide along this stretch of University Drive and could use a road diet.



5. COMMUTER ROUTE cyclists frequently use the crosswalk across Granada/University.



4. UNIVERSITY DRIVE BETWEEN BIRD ROAD & PISANO AVENUE

PRELIMINARY OBSERVATIONS

1. Low volume, low speed road.
2. Bird/University intersection hostile to bike/ped
3. Major connection to UM.

RECOMMENDATIONS:

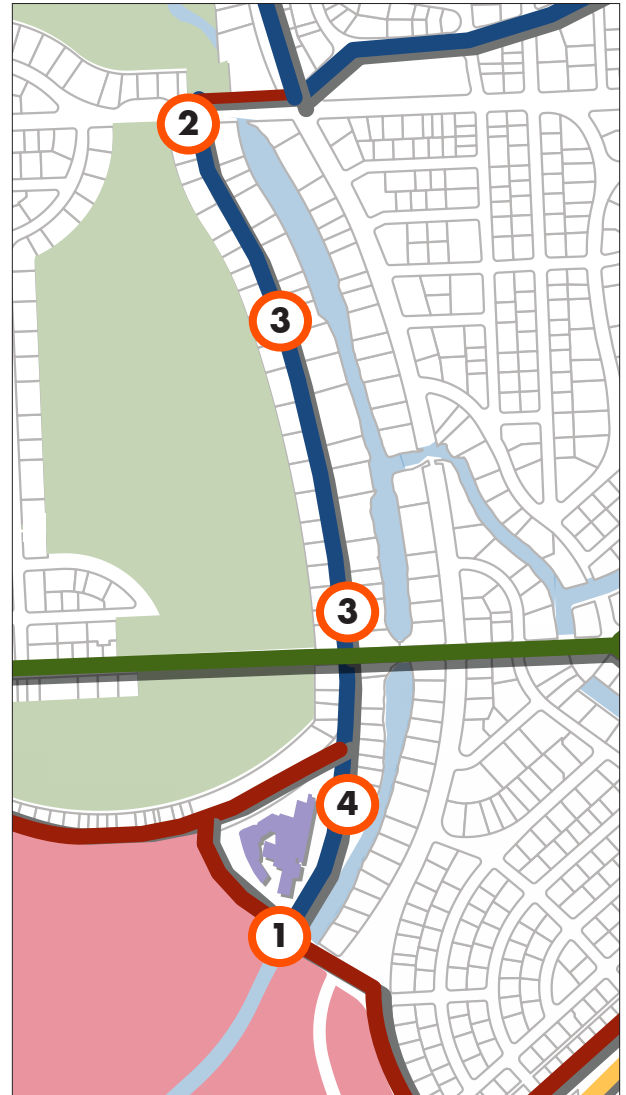
1. Install bike lane along corridor, to connect to new pedestrian bridge across Bird Road.
2. Install new crosswalk across Bird Road.
3. Install sidewalk on east side of street, from Bird to Pisano.

University Drive is a main bicycle connection into the University. Ensuring safe and convenient bicycle access to the University is a primary goal of the master plan.

University Drive represents one of the main north south corridors that has the potential to seamlessly connect to the heart of campus. This segment is predominantly a low volume, low speed road. The 26' width can accommodate 4' bike lanes with 9' travel lanes. Some minor widening may be necessary.

The intersection of Blue Road and University is a significant crossroads for peak hour travel. The corridor lacks a continuous sidewalk on either side, but its low speed character is an advantage for on-street bike lanes.

The intersection of Campo Sano and University Drive was recently redesigned with a traffic calming island, but it lacks space for pedestrians. This intersection should be improved to connect to the shared-use path on Campo Sano.



1. UNIVERSITY CONNECTION Cyclists already use the University Drive connection. The proposed projects will help unify the route into a continuous and legible corridor.



2. BIRD ROAD INTERSECTION There is currently no bicycle or pedestrian access into University from Bird Road. There is significant congestion at this intersection at Peak Times.

4. UNIVERSITY DRIVE BETWEEN BIRD ROAD & PISANO AVENUE



1. UNIVERSITY CONNECTION Utilizing the system of canals within campus to form a shared path network is low hanging fruit for the University to make strides in bicycle and pedestrian safety.

4. LIMITED PAVEMENT University Drive lacks sidewalks and curbs. A proposed bicycle facility on this stretch could serve as a transition from an on-street facility further north on University to an internal protected shared-use path along the canal.



3. NO SIDEWALK There are several sections of sidewalk that exist, but the corridor predominantly lacks sidewalks. Connecting the pieces would make sense, even if only on the east side of the street.

3. LOW SPEED / LOW VOLUME A clear and safe connection along University Drive is possible given the low speed and volume along this stretch.

5. RIVIERA DRIVE BETWEEN SEGOVIA AND US1

PRELIMINARY OBSERVATIONS:

1. Low Speed, low volume street
2. Route connects major parks and schools
3. Ability to connect to M-Path
4. No pedestrian accommodation adjacent to high school.

RECOMMENDATIONS:

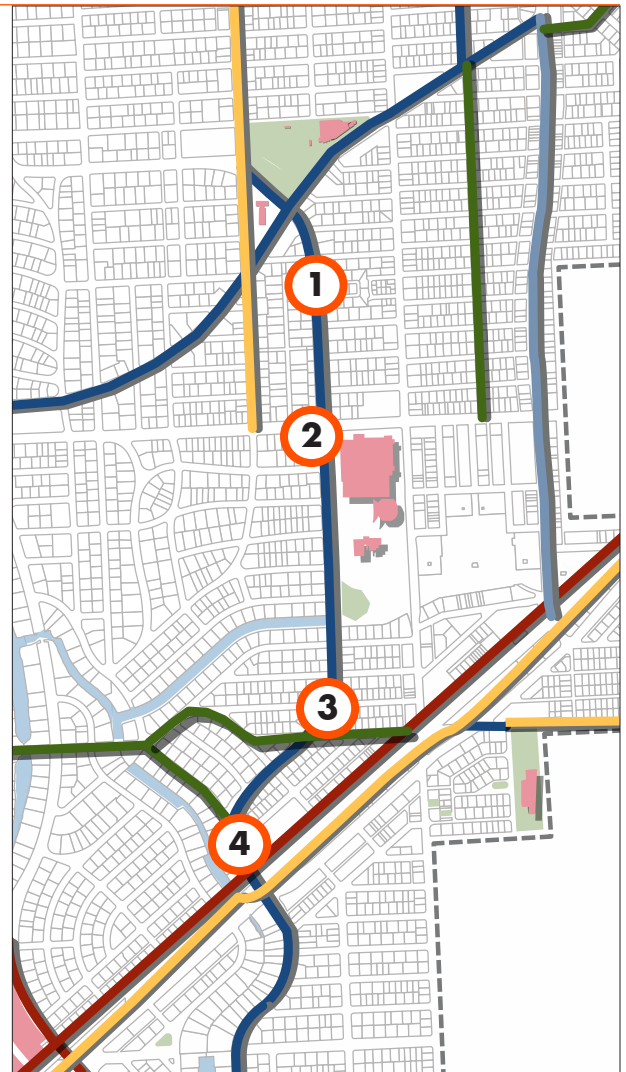
1. Install a sidewalk along the west side of the high school.
2. Install bike lane or bike boulevard along corridor.
3. Install bicycle crosswalk across Ponce / US1.

Riviera Drive is a two-lane, tree-lined street that is characterized by low traffic volume and speed. There are 5' sidewalks on both sides of the street (in certain sections), and the travel lanes are narrow.

An advantage of making Riviera Drive a bicycle facility is that it connects the Coral Gables Youth Center and Coral Gables High School. This project would be an important SRTS project. In addition to the important M-Path connection, and the use of the existing Segovia Bike Lane.

The traffic light at Bird Road is another advantage of this route. Segovia is only one block away, but lacks a safe way to cross Bird Road. The existing 26' pavement in some segments can accommodate a bike lane, with 9' travel lanes. Some minor pavement widening may be necessary at pinch points.

Once at the intersection of Ponce de Leon Boulevard, then US1, an improved bicycle crossing should be installed to get bicyclists across these busy thoroughfares.



1. LOW SPEED Riviera is a great candidate for a bike boulevard or bike lane. It is a low volume, low speed road.

5. RIVIERA DRIVE BETWEEN SEGOVIA AND US1



2. INTERSECTION The intersection of Bird Road and Riviera is wide, and not pedestrian friendly. Curb radii should be tighter, but the light makes this an ideal location to cross Bird Road.



2. INCOMPLETE STREET Streets like Riviera that connect community assets like a high school should receive the full complete streets treatment, with street trees, sidewalks, and bicycle facilities.



4. LOW VOLUME Riviera is a great candidate for a bike boulevard or bike lane. It is a low volume, low speed road.



2. SIDEWALK The recently installed Bird Road sidewalk is a major improvement along one of the City's main thoroughfares.



3. DETERIORATING ASPHALT The asphalt in this section of Riviera is deteriorating and forms a hazard to bicyclists.

6. RIVIERA DRIVE (SOUTH) BETWEEN US1 AND LEJEUNE

PRELIMINARY OBSERVATIONS:

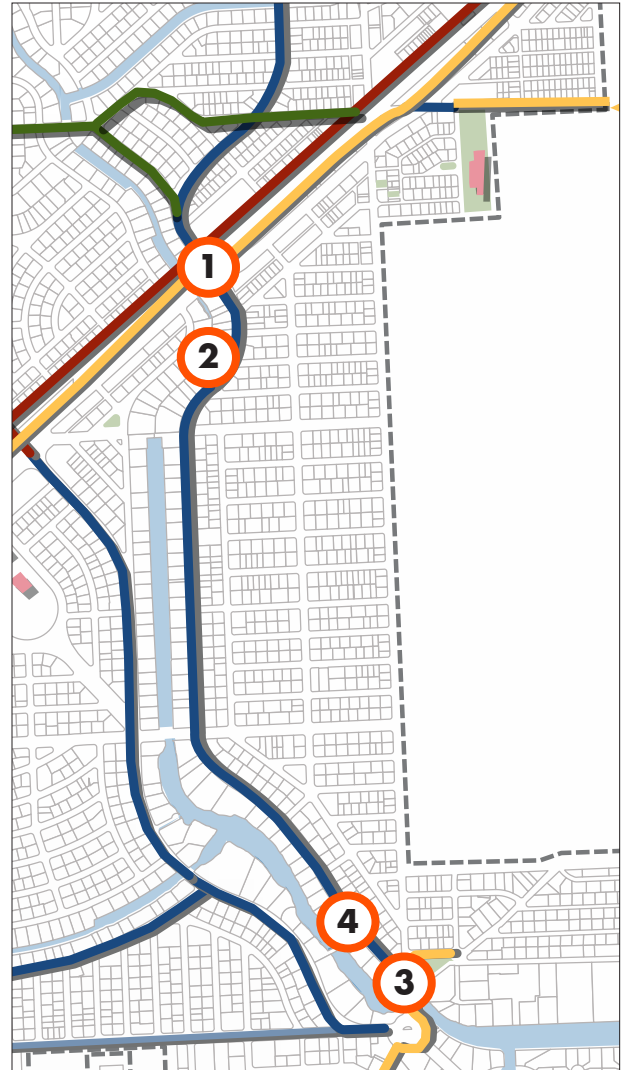
1. Ability to connect to Old Cutler Trail
2. Challenging crossing @ LeJeune, US1
3. Low volume, low speed thoroughfare

RECOMMENDATIONS:

1. Install bike lane or bike boulevard along corridor.
2. Install bicycle & pedestrian crosswalk across US1.
3. Install bicycle crosswalk across LeJeune.

Riviera south of US1 is not dissimilar from the segment north of US1. It is a low speed, low volume road. This is a perfect segment for a bicycle boulevard, including sharrows and coordinated signage. Another alternative may be to install bike lanes. Some segments have 26' of pavement, enough to accommodate a bike lane with 9' travel lanes and 4' bike lanes. Some minor pavement widening may be necessary at pinch points.

The route is capped at both ends by very challenging crossings. The major benefit of this route is that it connects the M-Path to the Old-Cutler trail (which later connects to the Black Point trail).



1. MISSING CROSSWALK Connecting bicyclists through the US1 intersection will be challenging, all the more so because pedestrians lack a safe crosswalk as well.



2. TYPICAL CONDITION Riviera is low speed and low volume - a perfect low street bicycle route.

6. RIVIERA DRIVE (SOUTH) BETWEEN US1 AND LEJEUNE



3. CROSSWALK A crosswalk is necessary to ensure a safe crossing across LeJeune.

3. REGIONAL CONNECTION The Riviera route connects to the Commodore Trail.



4. LOW SPEED STREET Riviera is a great candidate for a bike boulevard.

7. GREENWAY DRIVE AROUND THE CORAL GABLES GOLF COURSE

PRELIMINARY OBSERVATIONS:

1. Low Speed, low volume street
2. Park-like setting
3. Heavily used recreational route.

RECOMMENDATIONS:

1. Install 12' shared-use path around golf course side of street.
2. Connect to adjacent bike lanes and amenities like Country Club Prado and Alhambra via sign and pavement markings.

Greenway Drive is a narrow two-lane street that surrounds the Coral Gables golf course. It is characterized by low traffic volume and speed. There is a 5' sidewalk on the residential side of the street.

Greenway Drive already forms a heavily used bicycle, running, and walking route that serves local residents. There is no bicycle or pedestrian facility on this route.

Poorly marked crossings at intersections are a challenge for pedestrians, and there is no signage or wayfinding for area cyclists.

Pedestrians frequently walk or run in the road or along the golf course at peak times. The recommendation of this report is to install a 12' shared-use path on the golf course side of the street.



1. WIDE PAVEMENT AREA This section of Greenway Drive has angled parking adjacent to the tennis center. Pedestrians were observed crossing Granada at this location.



7. GREENWAY DRIVE AROUND THE CORAL GABLES GOLF COURSE



2. Low Volume/Low Speed Greenway Drive is a low speed, low volume loop around the Coral Gables golf course.



3. LIMITED PAVEMENT AREA The roadway is very narrow in many locations along the route. There is a sidewalk along most of Greenway, but it is not complete, and peak hour bicycle, pedestrian, runner volumes create conflicts on the sidewalk.



4. MAJOR INTERSECTION The intersection of Greenway Drive, Coral Way and Anderson Road is a major conflict point between modes. An upcoming traffic calming project should take pedestrian and bicycle connections into account.



5. No SIDEWALK. Some locations along Greenway Drive lack sidewalks.

8. COUNTRY CLUB PRADO BETWEEN SW 8 STREET AND CORAL WAY

PRELIMINARY OBSERVATIONS:

1. Low Speed, low volume street
2. Park-like setting
3. Possible recreational route.

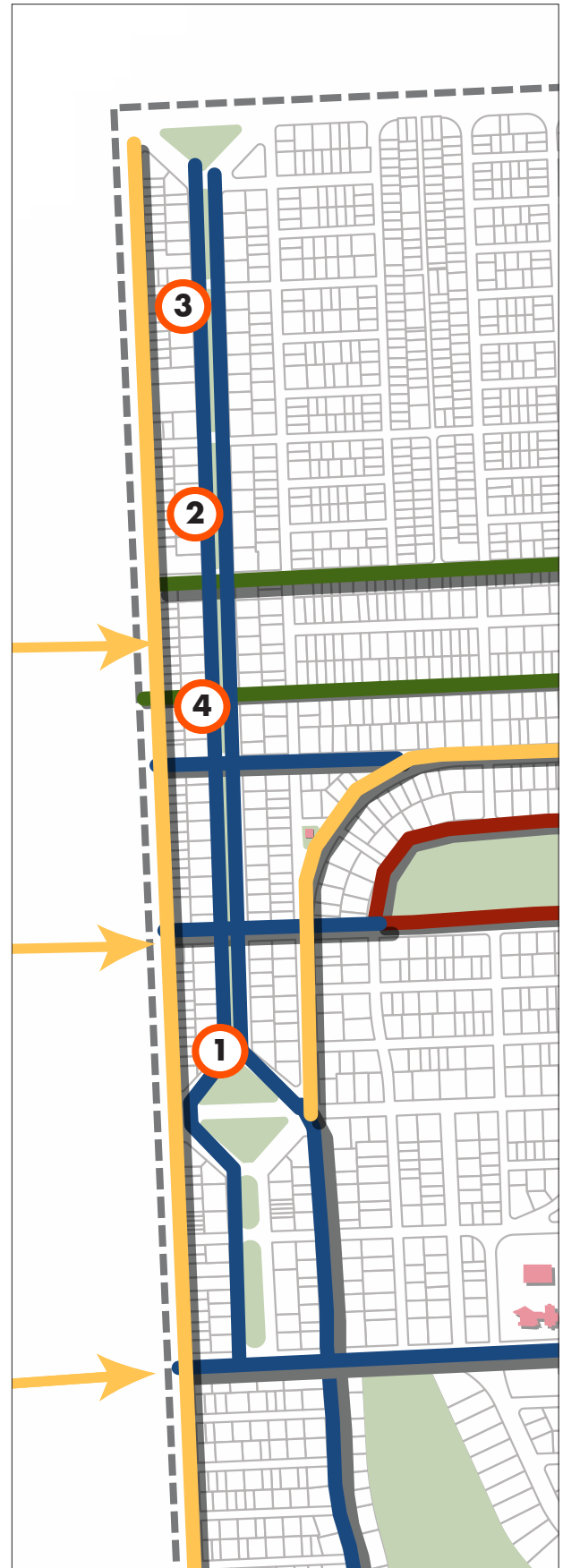
RECOMMENDATIONS:

1. Install pedestrian amenities within the park.
2. Connect to adjacent bike lanes and amenities like Greenway Drive and Alhambra via sign and pavement markings.
3. Continue sidewalks across the parkway.

Country Club Prado is a two-lane boulevard flanking a linear park. It is characterized by low traffic volume and speed. There are 5' sidewalks on both sides of the street, and the travel lanes are narrow.

Country Club Prado already forms a heavily used bicycle, running, and walking route that serves local residents. The street should be striped with a bike lane, or made into a bicycle boulevard.

Poorly marked crossings at intersections are a challenge for pedestrians, and there is no signage or wayfinding for area cyclists. A jogger was recently the victim of a hit and run collision at the intersection of Country Club Prado and South Greenway Drive, underscoring the need for improvements at this location. East/west traffic at rush hour times is a challenge for bicyclists and pedestrians who use the route.



1. Low VOLUME Country Club Prado is a low volume, low speed, neighborhood street.

8. COUNTRY CLUB PRADO BETWEEN SW 8 STREET AND CORAL WAY



2. SIDEWALK The street is served by existing 5' sidewalks on both sides of the street.



3. PARK The Country Club Prado parkway should be better utilized as an open space amenity for residents. Pedestrian amenities such as benches and informal paths would allow better access.



3. CROSSWALK Crosswalks are non-existent. There should be some markings defining pedestrian crossings, in addition to consistent four-way-stops.

4. SIDEWALK. The sidewalk does not continue across the parkway.

9. MILAN/MENDOZA BETWEEN SW 57 AVENUE AND GALIANO STREET

PRELIMINARY OBSERVATIONS:

1. Low Speed, low volume street
2. Neighborhood connections
3. Possible bicycle boulevard route.

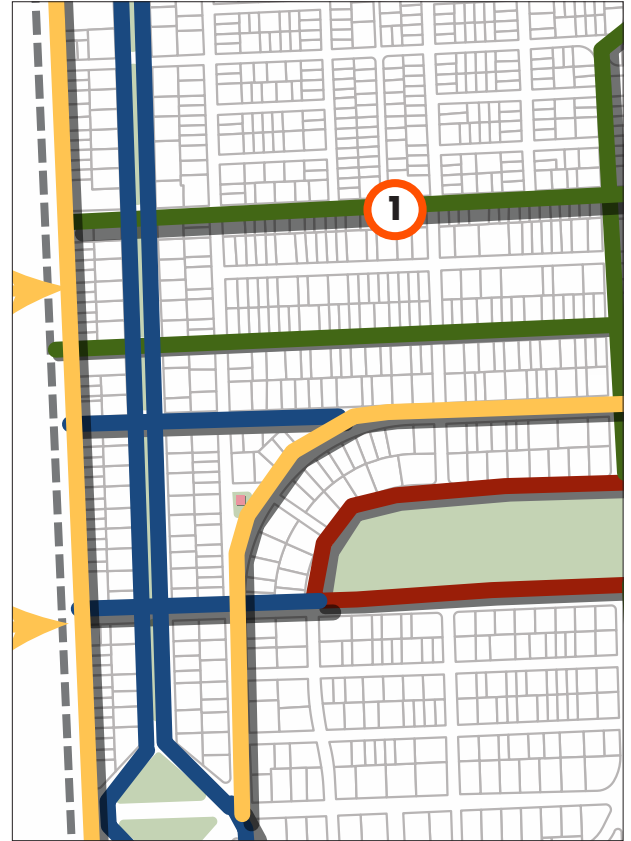
RECOMMENDATIONS:

1. Install bike boulevard.

The Milan/Mendoza route is a quiet, 2-lane, residential route that crosses the north Gables residential neighborhoods. Many of the streets in the north Gables have similar street sections, and pose similar opportunities and challenges. This route in particular can connect West Miami to the City of Miami, providing an important east/west regional connection.

This neighborhood is a popular commuter route through Coral Gables at peak times. Traffic calming devices have been installed throughout in the form of traffic circles. Streets are tree lined, and have standard sidewalks on both sides. There are many curb cuts due to residential driveways, but street visibility is good.

Many similar streets are good candidates for bicycle boulevard treatments to further calm traffic, and provide signs and wayfinding devices.



1. TRAFFIC CALMING This roundabout is a good start toward making Milan a bicycle friendly street.

10. BILTMORE WAY BETWEEN LEJEUNE ROAD AND DE SOTO CIRCLE

PRELIMINARY OBSERVATIONS:

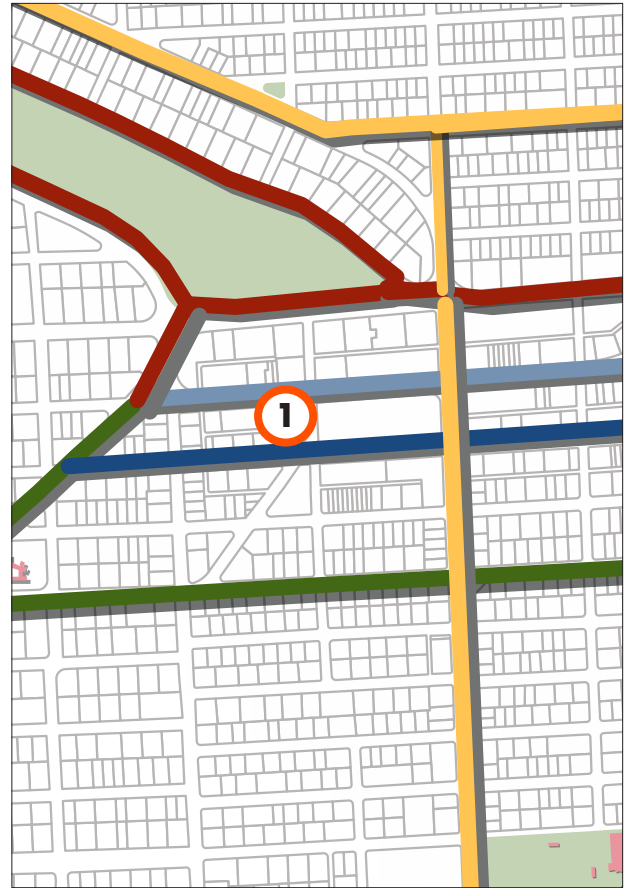
1. Excessively wide street given volume
2. Angled on-street parking
3. Important connection to CBD
3. Opportunity for improvement with upcoming reconstruction project.

RECOMMENDATIONS:

1. Redesign street with narrow lanes, a tree lined median and sidewalks, parallel parking, and 5' protected bike lanes.

Biltmore Way is an important east/west connection between Miracle Mile, the CBD and adjacent residential neighborhoods. It is currently two lanes in either direction with angled parking and sidewalks on either side. There are no street trees and parking is under utilized.

The ample amount of pavement beg for a dramatic road diet for the corridor. In the short term, the angled parking can be converted to parallel, and a parking protected bike lane can be installed at relatively low cost. In the long run, this corridor is up for reconstruction and should include some form of protected bicycle lane, either at pavement level or sidewalk level.



1. ROAD DIET! This four lane road can be redesigned as a tree lined two-lane road with a protected bike lane or shared path, and would connect with Miracle Mile to the east and tourist attractions to the west.

11. CORAL WAY (MIRACLE MILE) BETWEEN LEJEUNE ROAD AND DOUGLAS ROAD

PRELIMINARY OBSERVATIONS:

1. Main street through CBD
2. Moderate Speed/Volume
3. Heavily used auto-commuter route.

RECOMMENDATIONS:

1. Include sidewalk level parking protected bike lane in upcoming Miracle Mile street reconstruction.
2. Improve enforcement of "no right on red" policies.

Miracle Mile is Coral Gables' main street. It is a regional shopping destination, and the historic and municipal center of the city. There is no bicycle facility on this route, though it is the site of the yearly Gables Bike Day.

The corridor is characterized by heavy volume, but low speeds for such a heavily visited commercial route. Surrounding offices provide a robust pedestrian population at lunch, and the many restaurants provide active destinations along the corridor.

The crossings are well marked, and are evenly spaced, but conflicts between pedestrians and motorists are plentiful. Right and left turns are a major point of conflict. The angled parking is a challenge for cyclists who want to ride in the street, but most observed cyclists along this corridor vie for sidewalk space.

Currently the sidewalks are broken and in disrepair. The Miracle Mile BID has lead the way in planning for improvements to the corridor to include parallel parking and a wider sidewalk. The design of this corridor can easily accommodate the inclusion of a parking protected bicycle lane or shared use path. The crash data on Page 11[show clearly that this corridor is one of the most dangerous for bicyclists and pedestrians.

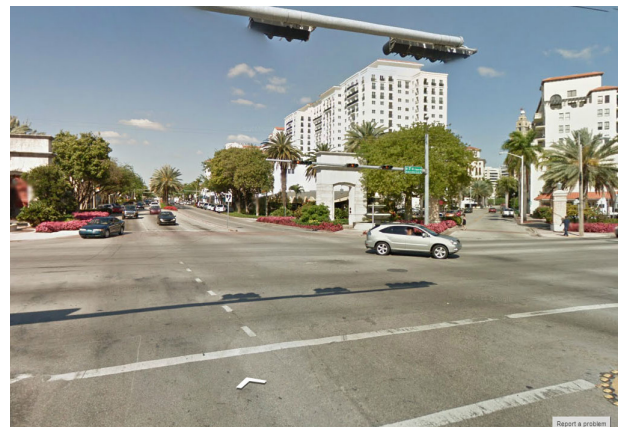
Together with Biltmore way, this route is one of the main east/west routes envisioned by this master plan. As the City of Miami continues to develop its bikeway network, greater connections are anticipated along Coral Way, and SW 22 Terrace (to the south).



2. CROSSWALK The intersection of Coral Way and Lejeune is intimidating to pedestrians and cyclists. Crossing safely is a challenge.



3. MAJOR DESTINATION The oak trees along Miracle Mile are a major asset for both pedestrians and bicyclists providing shade and protection from the elements.

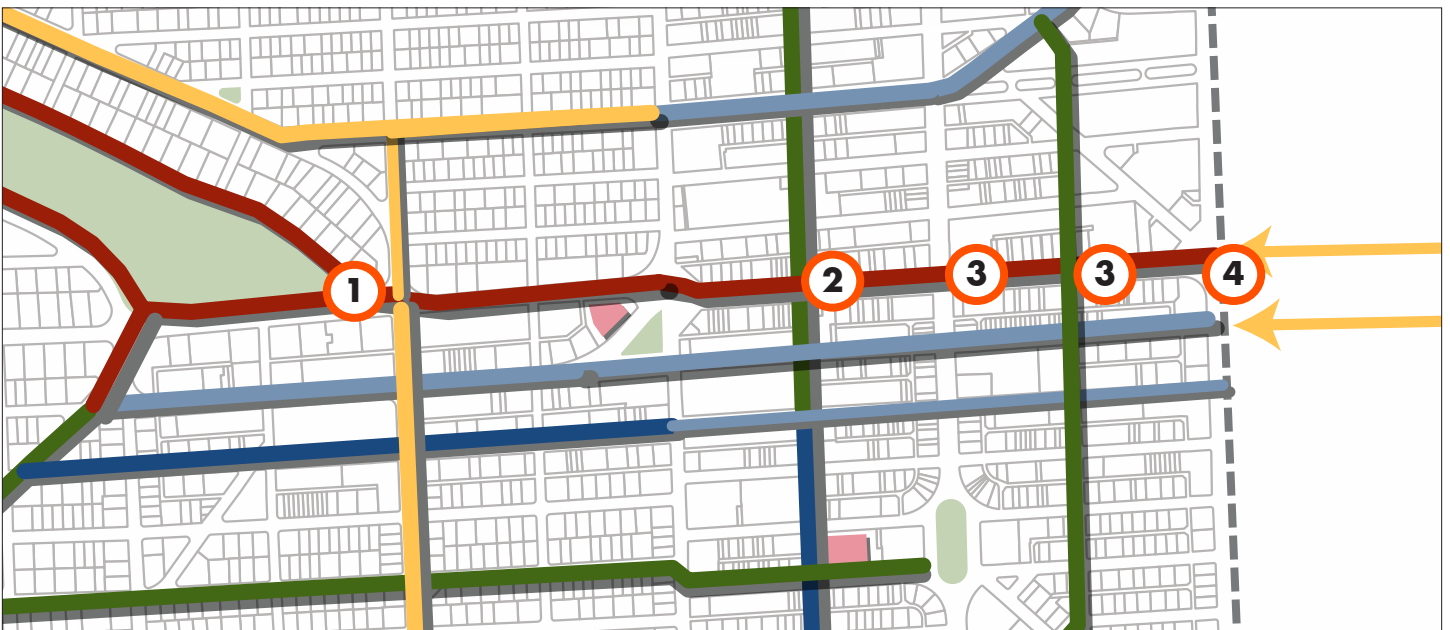


3. MAJOR INTERSECTION The intersection of Miracle Mile and Douglas is a major pedestrian and bicyclist entry point into the city. Greater care should be taken to improve safety at this location.

11. CORAL WAY (MIRACLE MILE) BETWEEN LEJEUNE ROAD AND DOUGLAS ROAD



3. MAJOR DESTINATION Miracle Mile is one of the most active pedestrian corridors in the county due in large part to the pedestrian oriented building frontage and shaded sidewalks.



12. PONCE DE LEON BOULEVARD BETWEEN MALAGA AVENUE AND M-PATH

PRELIMINARY OBSERVATIONS:

1. Main street into CBD
2. Low Speed/Volume
3. Potential connection to M-Path

RECOMMENDATIONS:

1. Include sidewalk level parking protected bike lane in Renaissance repaving project.

Ponce de Leon Boulevard between Malaga and the M-Path is a low speed, low volume route that is not heavily used by auto commuters.

It connects the downtown core with the M-Path, and is characterized by two lanes of traffic in either direction, lined by on-street parking and a center median.

The street is fronted by low rise, urban offices at one end, and suburban low-density housing at the other. The segment of Ponce closer to Bird Road is a popular housing rental location for students attending the University of Miami.

Between Bird Road and the M-Path, the character of Ponce changes with the introduction of angled parking and more urban street frontage. Here too there is sufficient pavement width to accommodate a bicycle connection.



1. FADED CROSSWALKS The intersection of Ponce and University is a pinch point between motorists and cyclists. The crosswalks at the intersection are faded.



12. PONCE DE LEON BOULEVARD BETWEEN MALAGA AVENUE AND M-PATH



4. M-PATH CONNECTION The stretch of Ponce adjacent to Merrick Park is an important link in the route that connects the CBD with the M-Path.



3. AMPLE SIDEWALKS The sidewalks are ample in this section of Ponce, but street trees along the sidewalk are lacking.



2. NO CROSSWALK There are very few pedestrian crosswalks in the east/west direction throughout the corridor.



2. EXCESS PAVEMENT. The peak conditions on this section of Ponce do not require two lanes in either direction. This is an opportunity to provide an important regional connection at a low cost.

13. GALIANO STREET BETWEEN SW 8 STREET AND MALAGA AVENUE

PRELIMINARY OBSERVATIONS:

1. Main street through CBD
2. Low Speed/ Moderate Volume

RECOMMENDATIONS:

1. Install bike lane. Over much of its length, Galiano can accommodate a new bike lane without widening the road or eliminating parking.
2. Add pedestrian crosswalks at every intersection.

Galiano spans north/south through the heart of the CBD, and represents a typical urban street that a cyclist might find in the Central Business District. It is a low speed street, with one lane in either direction and on-street parking. Sidewalk widths vary, but the street frontage is continuous, as either offices, residential or retail.

While there are breaks in its continuity, Galiano forms an important north/south route into the North Gables area. The existing pavement in most cases can accommodate a new bike lane, and it is also a Renaissance Repaving project. These two factors make this a relatively inexpensive route for the city to implement.



1. ROAD DIET Galiano can accommodate a bike lane within the current pavement width. Considering the low volume of traffic and speeds - there is an opportunity here to re-stripe the street with bicycle facilities at a low cost.



13. GALIANO STREET BETWEEN SW 8 STREET AND MALAGA AVENUE



2. URBAN STREET Galiano's existing design is typical for streets in the CBD. It provides an example of how other similar streets can accommodate bicycle facilities.



3. EXISTING PATTERNS Cyclists frequently use the sidewalk in the CBD. Pedestrian/cyclist conflicts are more severe in downtown areas with limited sidewalk space and robust pedestrian activity.



4. CROSSWALK Currently very few crosswalks exist along Galiano. Crosswalks should be at every intersection along this road given the density of residents.



5. MESSY INTERSECTION. The intersection of Galiano and Giralda is confusing for pedestrians and cyclists. Adding crosswalks and expanding pedestrian islands can fix this problem.



6. POTENTIAL FOR BIKE LANE Along this stretch of Galiano there is enough room to accommodate a new bike lane without widening the road or eliminating parking.

14. CAMPO SANO DRIVE BETWEEN SAN AMARO DRIVE AND UNIVERSITY DRIVE

PRELIMINARY OBSERVATIONS:

1. Limited bike/ped connections at roundabout
2. Narrow (5') existing path given volume of use
3. Crosswalk @ Pisano lacks definition
4. No pedestrian accommodation behind hospital.
5. University Dr. intersection lacks pedestrian facilities.
6. Low volume, low speed thoroughfare

RECOMMENDATIONS:

1. Expand sidewalks into shared-use path along University side of street.
2. Install new sidewalk behind Doctors Hospital.



1. ROUNDABOUT This roundabout should have improved bicycle/pedestrian connections.



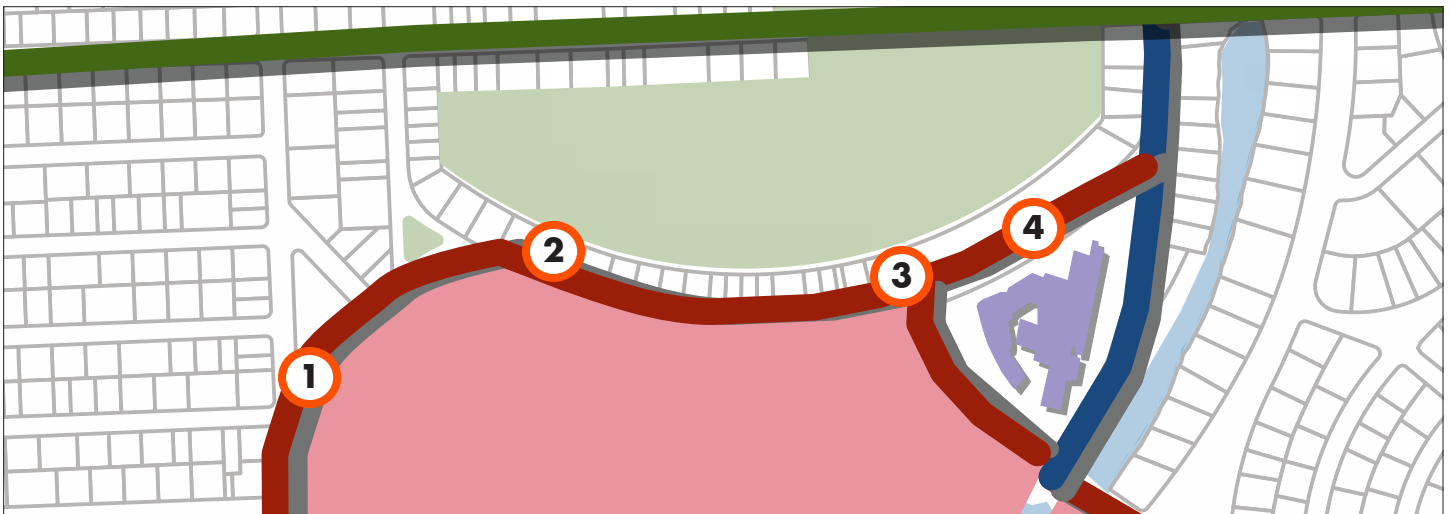
2. SIDEWALK Campo Sano has already received traffic calming measures, as evidenced by the narrow lanes - what it needs now is wider sidewalks and street trees.

Campo Sano is a two lane road, with a 5' sidewalk on the south side of the street. It is characterized by low speeds, and several traffic calming elements.

Campo Sano already forms a heavily used bicycle and running route around the University of Miami and could form a regional connection between University Drive, San Amaro and the M-Path.

Wide curb radii around the Hospital are a challenge for safe pedestrian crossings, but techniques such as the mountable curbs can help bridge the gap between the needs of emergency vehicles and safe pedestrian crossings.

Crosswalks are lacking at the intersections of Pisano Drive, the intersection of University Drive lacks definition for motorists, cyclists and pedestrians.



14. CAMPO SANO DRIVE BETWEEN SAN AMARO DRIVE AND UNIVERSITY DRIVE



2. SIDEWALK The existing 5' sidewalks along Campo Sano are heavily used by bicyclists, runners and pedestrians.



3. CROSSWALK The crosswalk at Pisano Drive and Campo Sano is non-existent. There should be a clearly defined shared-use crosswalk that connects to a new shared-use path behind the hospital.



3. CROSSWALK The Campo Sano Sidewalk abruptly ends at Pisano Drive.



4. SIDEWALK. Once behind the hospital there is no continuous sidewalk. The path shown here is part of the ADA access into Doctor's Hospital.

15. SAN AMARO DRIVE BETWEEN PONCE DE LEON BOULEVARD & CAMPO SANO AVENUE

PRELIMINARY OBSERVATIONS

1. Ample pavement to work with
2. Limited crosswalks between Ponce and Miller
3. Heavily used recreation corridor

RECOMMENDATIONS:

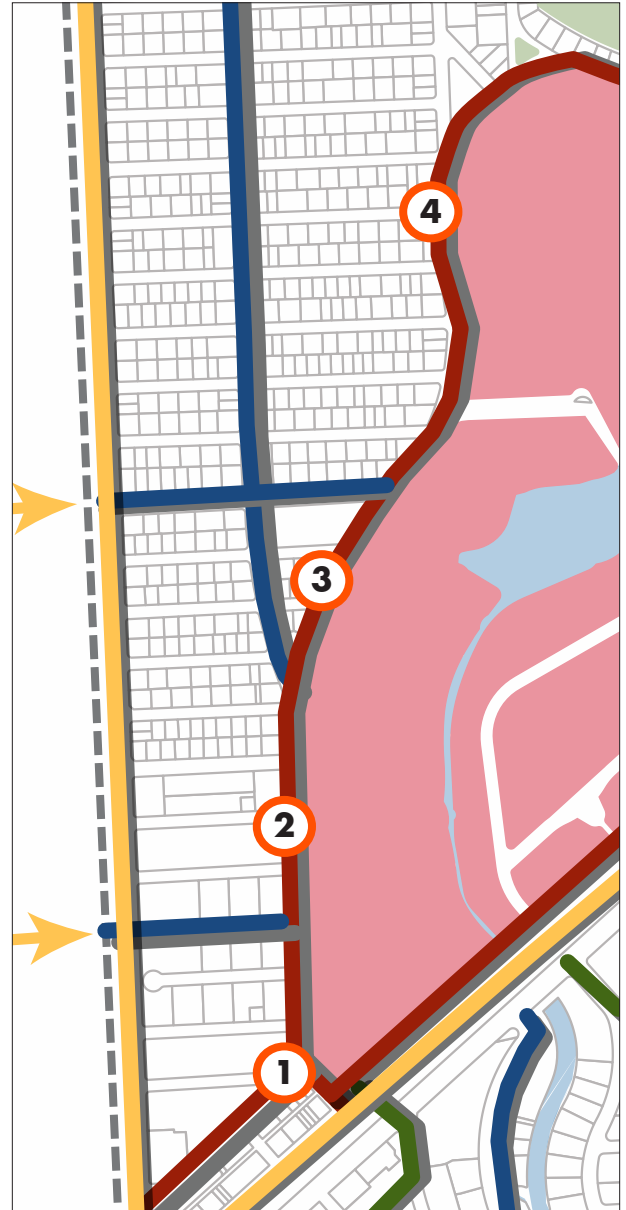
1. Install parking protected bike lane.
2. Add crosswalks at locations where none currently exist.
3. Create shared use path to connect with other shared use paths around the University.

San Amaro represents one of the main north south corridors adjacent to the University of Miami. It is widely used by students, faculty and visitors, both as an entrance into the university for visitors from the west, as well as a recreational loop for the resident student population.

San Amaro between Miller Drive and Ponce de Leon Boulevard benefits from a wide right-of-way dimension that allows for great flexibility in accommodating bicyclists and pedestrians. The current boulevard configuration contains mature trees in the median, with wide travel lanes to either side.

One of the most challenging stretches along San Amaro is the block between Ponce de Leon Boulevard and Levante Avenue. These two intersections are part of a rush hour route that backs up starting at the intersection of South Alhambra Circle and US1. It is an important PM rush hour route for county commuters.

Intersections that currently do not have any crosswalks are: Scodella Avenue, Liguria Avenue, Mataro Avenue, Delgado Avenue, Alhambra Circle, Consolata Avenue, Zuleta Avenue, while intersections that should be completed on both sides of the street are: Brescia Avenue, and Albenga Avenue.



2. RECREATIONAL ROUTE San Amaro should be reconfigured to allocate more space to bicyclists and pedestrians.

15. SAN AMARO DRIVE BETWEEN PONCE DE LEON BOULEVARD & CAMPO SANO AVENUE



1. INTERSECTION The intersection of Levante and San Amaro is one of the widest and least defined for pedestrians and cyclists. No crosswalks exist here.



3. MISSING CROSSWALKS Many intersections, like this one at Alhambra Circle, provide very little pedestrian accommodations.



2. AMPLE PAVEMENT AREA The street is currently over designed for the volume of traffic that this street gets. Reallocating this space for bicycle and pedestrian space should be a priority.



4. SHARED-USE PATH The University has already started investing in better bicycle and pedestrian infrastructure. Continuing this path around the University on San Amaro and Campo Sano should be an obvious long term project for the university.



1. INTERSECTION REDESIGN Many intersections along San Amaro have wide curb radii.

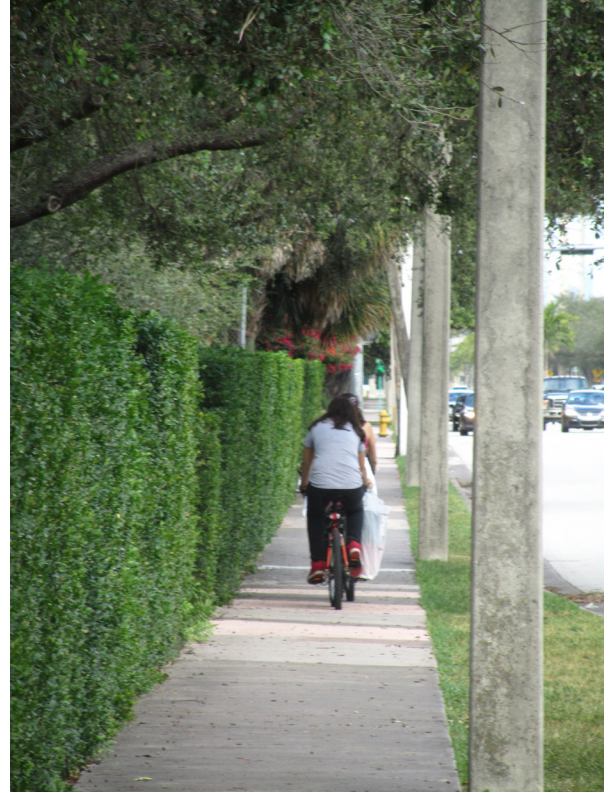
16. PONCE DE LEON BOULEVARD BETWEEN SW 57 AVENUE & LEJEUNE ROAD

PRELIMINARY OBSERVATIONS

1. Ponce & San Amaro intersection hostile to pedestrians and cyclists.
2. Narrow sidewalk from San Amaro to Granada on north side of street
3. No sidewalk on south side of Ponce
4. Alhambra Circle intersection hostile to pedestrians and cyclists.
5. Ponce is a high speed/high volume road.

RECOMMENDATIONS:

1. Widen sidewalk on north side of Ponce between San Amaro and Ponce.
2. Add Sidewalk on south side of Ponce, between San Amaro and LeJeune.
3. Add bicycle and pedestrian crosswalks at every intersection and at mid block locations.
4. Long term: redesign the corridor as a complete street, with street trees and narrow lanes.



2. NARROW SIDEWALK The sidewalk along Ponce from San Amaro to Granada should be widened from its current 5' configuration by at least 10'. This side of the street would also benefit from the addition of street trees.

Ponce de Leon Boulevard represents one of the main corridors surrounding the university, running parallel to the US1 and the M-Path. It is heavily used by students, faculty and visitors, and is a major commuting corridor in the Miami-Dade County.

Ensuring a safe and convenient crossing for cyclists across Ponce to San Amaro will be key to regional network connectivity. For travel around the University, the north sidewalk between San Amaro and South Alhambra Circle is heavily used and should be widened as much as possible. The south side of Ponce currently lacks a sidewalk, though it too is used by pedestrians and cyclists.



4. INCOMPLETE STREET Ponce de Leon is a great candidate for a complete streets makeover, with narrowed lanes, wide sidewalks, and a shade-tree lined median. The current palm trees are inappropriate as shade trees, while the sidewalks are non-existent on one side, and narrow on the other.

16. PONCE DE LEON BOULEVARD BETWEEN SW 57 AVENUE & LEJEUNE ROAD



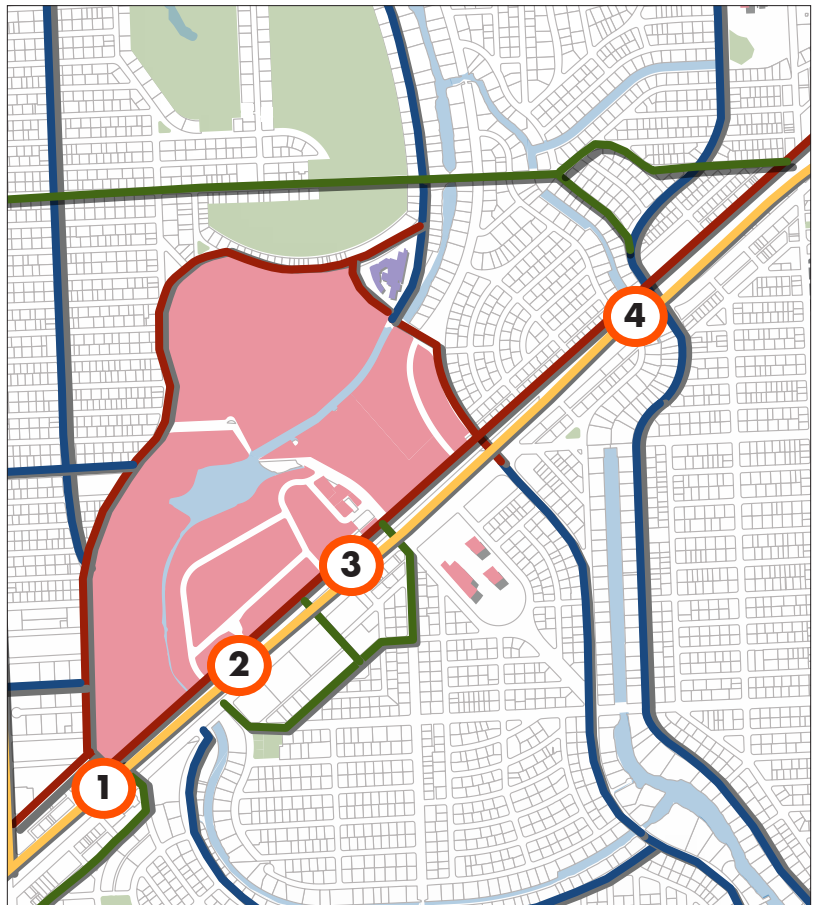
1. INTERSECTION REDESIGN The crosswalk across Ponce from San Amaro to the M-Path is very faded.



1. INTERSECTION This intersection has entirely too much pavement area to be a safe pedestrian crossing.



3. No SIDEWALK Pedestrians routinely cross Ponce without the benefit of a crosswalk or a sidewalk on the other side of the street.



17. BLUE ROAD BETWEEN SW 57 AVENUE AND LEJEUNE ROAD

PRELIMINARY OBSERVATIONS:

1. Limited bike/ped connections at roundabout
2. Narrow lanes
3. No sidewalks
4. Heavy volume, low speed

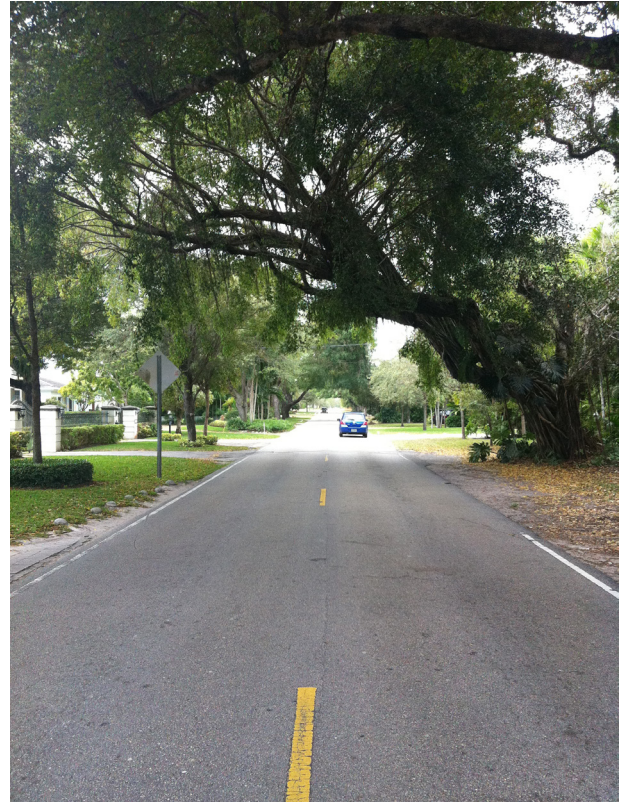
Recommendations:

1. Add sidewalks to both sides of the street.
2. Make a signed bike route.

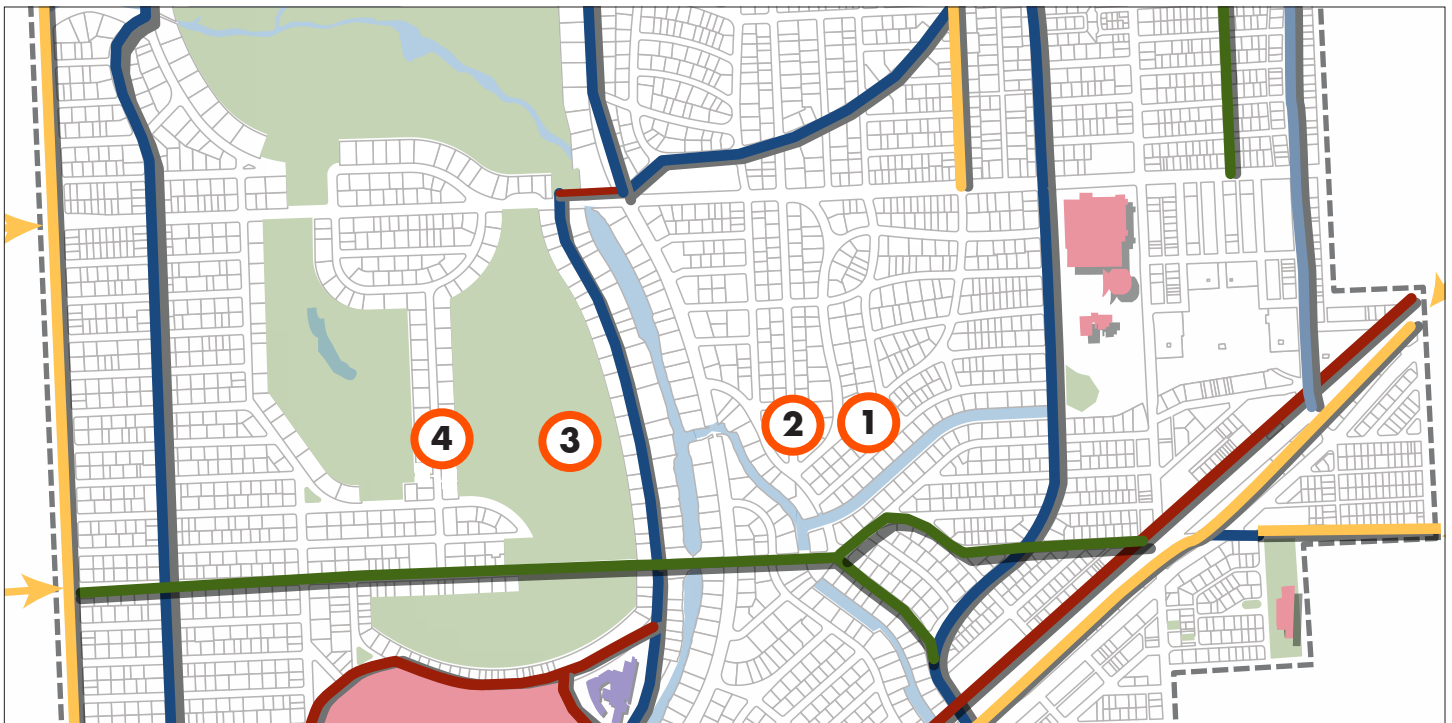
Blue Road is a major east/west entrance into Coral Gables from South Miami. It is a narrow two-lane road with no sidewalks.

Traffic circles can be found between SW 57 Street and Granada. The narrow traffic lanes, together with the traffic circles, are significant traffic calming features. The volume of traffic on the street making on-street riding a challenge for some along this route. In addition, there is no sidewalk on either side of the street.

The intersections of University Drive and Granada are both important nodes connecting points south to the CBD. These intersections are pinch points at peak hour travel times.



1. NARROW LANES The 9' lanes on Blue Road are great for traffic calming, but the lack of pedestrian access is a problem.



18. PISANO AVENUE BETWEEN CAMPO SANO AVENUE AND GRANADA BOULEVARD

PRELIMINARY OBSERVATIONS

1. No sidewalk
2. Pisano bridge lacks safety
3. Carillo sidewalks end

Recommendations:

1. Redesignated as a two lane road, with a wide shared-use path south side of the street, and additional street trees on the north side of the street.

Currently conditions on Pisano for pedestrians and cyclists are dire. The heavily used Campo Sano sidewalk ends at Pisano behind Doctor's Hospital. The entrances to both the emergency room and Doctor's hospital parking garage are along this stretch, which has no curb and parallel parking on one side, and angled parking on the other.

Once past University Drive, pedestrians and cyclists are taken from a pedestrian bridge to the intersection of Pisano and Carillo where there is no sidewalk or clearly marked intersection.

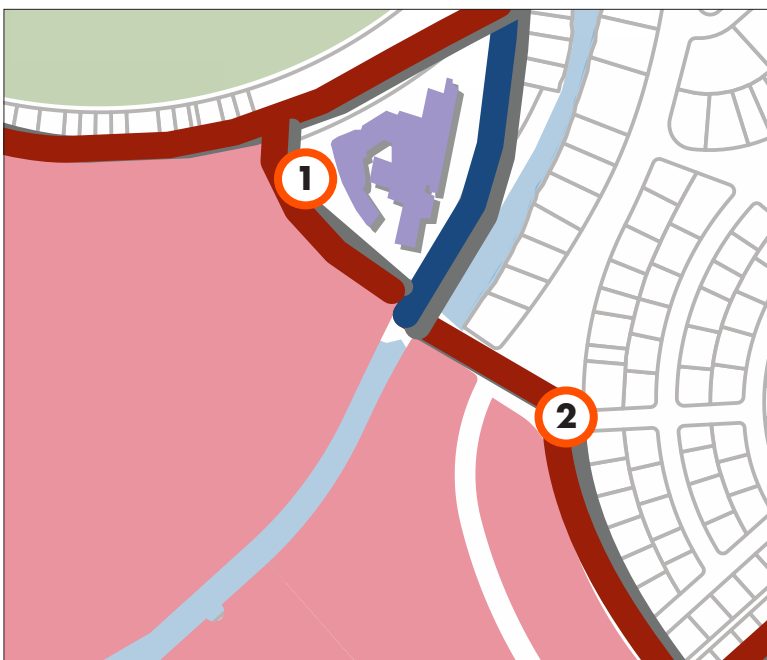
A parking protected lane can be installed here at relatively low cost. The elementary school in particular is a challenge in completing the circuit around campus.



2. INTERSECTION A sidewalk is missing at the intersection of Carillo and Pisano Avenue.



1. PISANO STREETScape Pedestrians are relegated to the broken pavement area adjacent to parallel parking as their main axis along the south side of Pisano.



19. MILLER DRIVE BETWEEN SW 57 AVENUE AND SAN AMARO DRIVE

PRELIMINARY OBSERVATIONS

1. Key regional connection to the west.
2. Key access to UM campus.

Recommendations:

1. Redesigned as a two lane road, with a wide shared-use path. Install traffic calming measures at intersection of Alhambra Circle and Bird Road.

The short segment of Miller Drive within Coral Gables, between SW 57 Avenue and San Amaro Drive forms a critical link into the University. Many members of the university community live within blocks of Miller and use it from SW 67 avenue to San Amaro as a route into UM.

This segment is heavily used by cyclists commuting to school, and is characterized by low volume and low speed car travel. There are sidewalks on both sides of the street, and angled parking on one side.

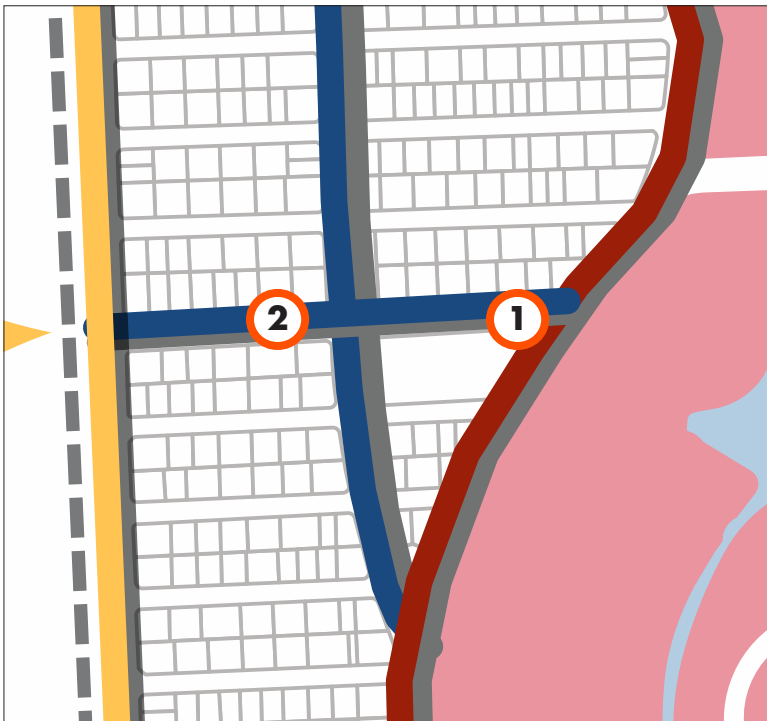
The newly redesigned Miller Drive intersection was a lost opportunity to provide traffic calming and a strong bicycle and pedestrian connection into campus.



1. LOST OPPORTUNITY The newly redesigned Miller Drive intersection was a lost opportunity to provide traffic calming and a strong bicycle and pedestrian connection into campus. The current configuration puts users at risk of turning cars that are not required to enter the circle, thus partially negating the intended traffic calming effect of the circle, which is to force all cars to stop and wait as they enter the circle. The Dutch Design Manual for Bicycle Traffic (CROW, 2007) states that the safest roundabout for pedestrians, bicycles, and vehicles is a single lane roundabout.



2. CONNECTING CAMPUS The Miller Drive axis into campus forms a main regional connection.



20. ALHAMBRA CIRCLE BETWEEN CORAL WAY AND SAN AMARO DRIVE

PRELIMINARY OBSERVATIONS:

1. Ability to connect to M-Path
2. No pedestrian accommodation adjacent to high school.
3. Low volume, low speed thoroughfare

Recommendations:

1. Install a bike lane from existing bike lane termination at Coral Way, to proposed shared path at San Amaro.
2. Install sidewalk between Coral Way and Bird Road.
3. Install a four-way stop at the intersection of Miller and Alhambra.

Alhambra Circle is one of the most picturesque streets in Coral Gables. It is a popular bicyclist route because of the speeds and traffic volumes. This route can get quite congested at peak times, though that does not deter most cyclists.

There are patches of sidewalks which should be connected, especially along the west side of the street between Coral Way and Bird Road. The intersection of Bird Road lacks crosswalks. South of US1 the roadway is constrained. A bike route treatment along this stretch might be appropriate.

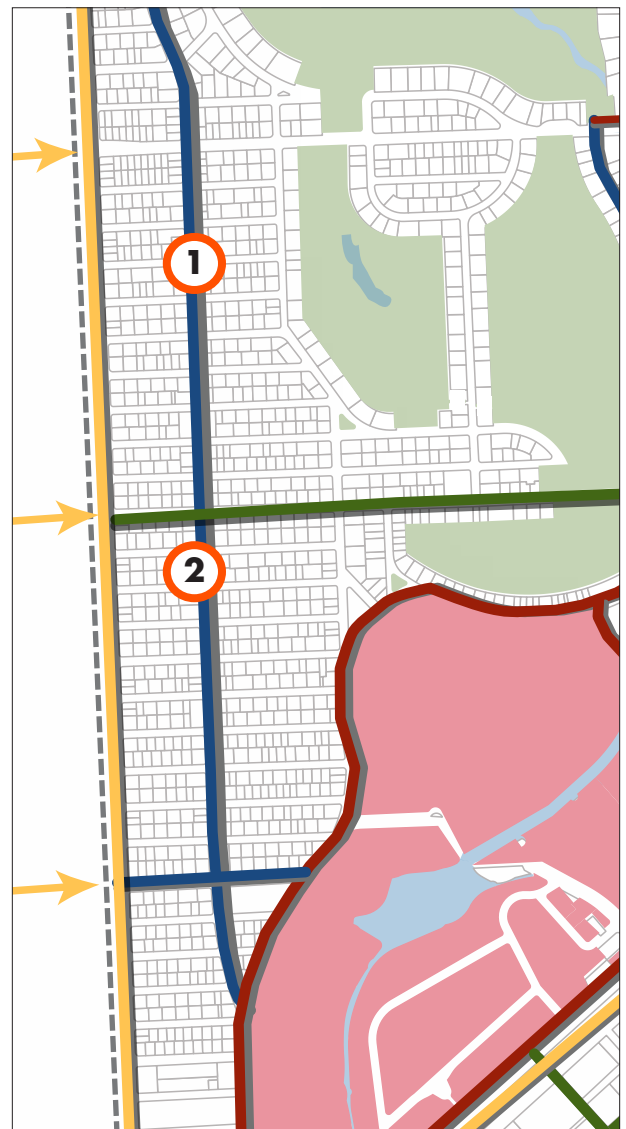
The intersection of Miller and Alhambra is a key access point into the UM area. Some form of traffic calming should be implemented here to ensure that cyclists have a way of crossing Miller safely; at the very least a four way stop.



1. POPULAR ROUTE While this segment of Alhambra does not have a bike facility, it is a popular route for runners and cyclists.



2. DETERIORATING ASPHALT The asphalt along much of the corridor is deteriorating and poses a life safety threat to bicyclists. Note also the damaged asphalt in photo #1 below.



22. SEGOVIA STREET BETWEEN SW 8 STREET AND BIRD ROAD

PRELIMINARY OBSERVATIONS:

1. Low Speed, low volume street
2. Park-like setting

RECOMMENDATIONS:

1. Close the gap between the Alhambra & Segovia bike lanes
2. Create a seamless connection through the Biltmore Way traffic Circle

Segovia Street is a low speed, low volume residential corridor. It was recently redesigned as a two-lane road with a bike lane, from Bird Road to Biltmore Way. It is one of the few corridors in Coral Gables that has a bike lane, and an example of the City's recent road diet projects for over-designed streets.

There are 5' sidewalks on both sides of the street, and the travel lanes are narrow. Most of the corridor is tree lined and almost connects with the existing bike lane on Alhambra Circle.

The Segovia Street/Biltmore Way Circle was the site of a 2010 crash between a cyclist and motorist. The connection between the bike lanes through the traffic circles must be rethought as the current connections are not clear. The existing lane should be extended to the bike lane at Alhambra Circle.

Small traffic circles at Madeira and Majorca help traffic calm this neighborhood street in the section without a bike lane. Installing signs and other pavement markings north of Alhambra Circle is a recommended short term solution for this segment.



2. NO TRANSITION. The transition between this bike lane and the street beyond is confusing for cyclists and motorists alike. Clarity through intersections is key to increasing bicycle lane use.



1. WEAK CONNECTIONS. The bike lane on Segovia Street suddenly stops before the Biltmore Way Circle.

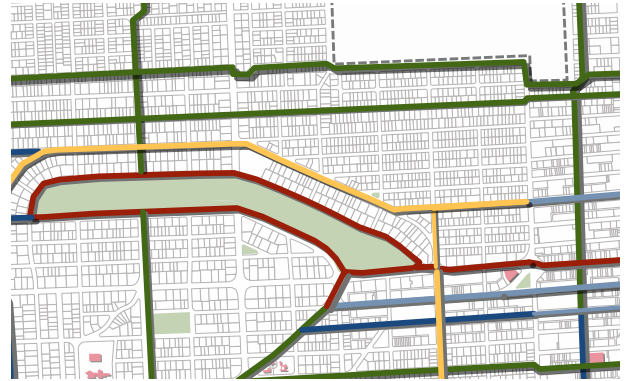
23. ALHAMBRA CIRCLE BETWEEN CORAL WAY AND LEJEUNE ROAD

PRELIMINARY OBSERVATIONS:

1. Low speed, low volume street
2. Park-like setting

RECOMMENDATIONS:

1. Close the gap between the Alhambra & Segovia bike lanes
2. Extend the Alhambra bike lane east toward Douglas Road. This section of Alhambra is very wide and can accommodate a protected lane. This section is also a neighborhood Renaissance project, and could be implemented
3. Repave existing sections of Alhambra that are cracking.



This segment of Alhambra Circle is one of the streets within the city that already has a bike lane. The road is made of one lane in either direction, with a bike lane in either direction flanking a wide, tree-lined parkway.

The route has potential to grow both south parallel to SW 57 Street, and east toward Douglas Road. The route is also very close to the Segovia bike lane. Closing the gap between these two existing lanes was mentioned as a priority by stakeholders, and should be a priority for the city to implement.



1. PARK The median of Alhambra has the potential to be a great amenity for local residents. Adding pedestrian furniture, such as benches, will help this function like park.



2. FADED MARKINGS The bike lane striping has deteriorated in some locations along with cracking pavement and poses a life safety risk to bicyclists.

The existing conditions analysis, public participation process, and literature review revealed an overarching vision for the Coral Gables Bicycle Pedestrian Master Plan. From the language in the City Comprehensive plan to the recommendations of groups like Bike/Walk Coral Gables, the vision for the plan is clear:

To foster the development of low stress, safe and convenient bicycle and pedestrian streets, that will encourage bicycling and walking, enhance the environment and improve public health and quality of life, making Coral Gables an attractive and healthy place to live, work and play.

The Goals below are organized into four broad categories with objectives within each goal necessary to achieve the vision: Engineering, Encouragement, Implementation, and Funding.

GOAL 1: ENGINEERING Provide a citywide network of safe, convenient and accessible bicycle and pedestrian facilities for all users.

Objective 1.1: Strive to develop a network of bicycle and pedestrian facilities that can serve major trip generators within the city and regionally, linking residential and employment centers, educational and health care centers, civic, and cultural and resources.

Objective 1.2: Strive to ensure that the citywide bicycle network addresses the needs of different types of users from experienced cyclists on arterial roadways to low stress routes on local roads.

Objective 1.3: Strive to establish a maintenance program and standards that ensure safe and usable bicycle and pedestrian facilities.

Objective 1.4: Strive to provide amenities facilities such as bicycle parking and storage, lighting, landscaping, signing, pavement marking & signalization to improve the utility and comfort of bicyclists and pedestrians.

Objective 1.5: Support the enforcement of regulations that ensure the safety, operation and proper use of the bicycle and pedestrian network.

GOAL 2: ENCOURAGEMENT Promote and encourage cycling and walking as viable forms of transportation, healthy forms of exercise, and as a positive benefit to the environment.

Objective 2.1: Establish a city sponsored education and marketing program highlighting the public health, economic development and environmental benefits of cycling and walking.

Objective 2.2: Encourage bicycle and pedestrian training and safety programs in conjunction with local institutions, organizations and bicycle and pedestrian interest groups.

Objective 2.3: Recognize and promote activities around regional and local events such as Gables Bike Day, National Bike Month (May), Bike-To- Work Week, and Walk-to-School Day.

Objective 2.4: Encourage employers to provide facilities for employees who bike to work (e.g., locker rooms, showers and bicycle parking) through coordination with South Florida Commuter Services.

GOAL 3: IMPLEMENTATION Promote long term implementation and evaluation of bicycle and pedestrian planning and development.

Objective 3.1: Establish permanent bicycle and pedestrian planning functions within the city government, including a Bicycle/Pedestrian Coordinator within the Public Works Department.

Objective 3.2: Provide a forum for bicycle and pedestrian planning and discussion through an official bicycle committee, to include the stakeholders responsible for this document, in addition to representation from Miami-Dade Parks, Recreation and Open Space Department, city parks and recreation staff, the University of Miami and other stakeholders.

Objective 3.3: Establish mechanisms to ensure full public participation in developing citywide policies, plans and programs.

Objective 3.4: Encourage the development of bicycle and pedestrian plans in adjacent municipalities and the county that connect to and support city bicycle and pedestrian projects.

Objective 3.5: Establish policies that track and report systems use and progress in implementing projects.

Objective 3.6: Seek changes to zoning, land use, policy and roadway design to promote bicycle and pedestrian friendly infrastructure and development projects.

GOAL 4: FUNDING Strive to provide adequate funding resources for planning, developing and maintaining bicycle and pedestrian infrastructure.

Objective 4.1: Coordinate with ongoing Coral Gables Public Works projects to leverage bicycle and pedestrian investment using public resources.

Objective 4.2: Seek eligible federal and state grants for bicycle and pedestrian planning and development.

Objective 4.3: Coordinate with adjacent municipalities and the county to leverage bicycle and pedestrian investment using public and private resources.

Objective 4.4: Research financing options for bicycle and pedestrian facilities.

Objective 4.5: Strive to provide equity in funding for bicycle and pedestrian projects.

PART 4: RECOMMENDATIONS

The Coral Gables Bicycle/Pedestrian Plan includes more than 27 miles of new or improved bikeways, sidewalks and crosswalks. At present, the City of Coral Gables Bicycle network includes 10.2 miles of Bicycle Lanes, Shared Use Paths, and Greenways. Thus, this plan recommends a comprehensive expansion and diversification of facilities to expand the demographic of residents who bicycle. In total, four different bikeway types are included. They include: Bicycle Routes, Bicycle Lanes, Shared Use Paths/Greenway, and Protected Bike Lanes.

The methodology of choosing routes was based on a combination of stakeholder input, existing conditions analysis, and other criteria mentioned in the pages that follow. The overarching theme of the plan is to seek low cost, easy to implement, yet continuous routes. Roadway reconstruction was avoided, except as it dovetailed with a previously planned projects.

While the Plan offers very specific recommendations for the location of these bikeway facility types, each bikeway recommendation should be considered flexible if the opportunity arises to further improve the recommended facility type. Thus, those routes in this Plan are recommended, but in no way can predict the political support, public sentiment, and roadway design practices and standards that often evolve over time.

This section breaks down the improvements by bicycle facility type and by route segment. In addition to bicycle route suggestions, this section provides a variety of other policy and infrastructure related recommendations, from sidewalks and crosswalks to bicycle parking and policy suggestions.

A general description of each bikeway type, including length, location, relevant dimensional details, as well as dimensional information for selected routes can be found in the following pages.

BICYCLE/PEDESTRIAN MASTER PLAN SUMMARY

Total Bikeway Network: 36.1 miles

Bikeway Types: 4

Total new bikeway miles: 34

BICYCLE BOULEVARDS:

Miles: 9 miles

Percentage of Planned Network: 26%

BICYCLE LANES:

Total miles: 15 miles

Percentage of Planned Network: 45%

SHARED USE PATHS:

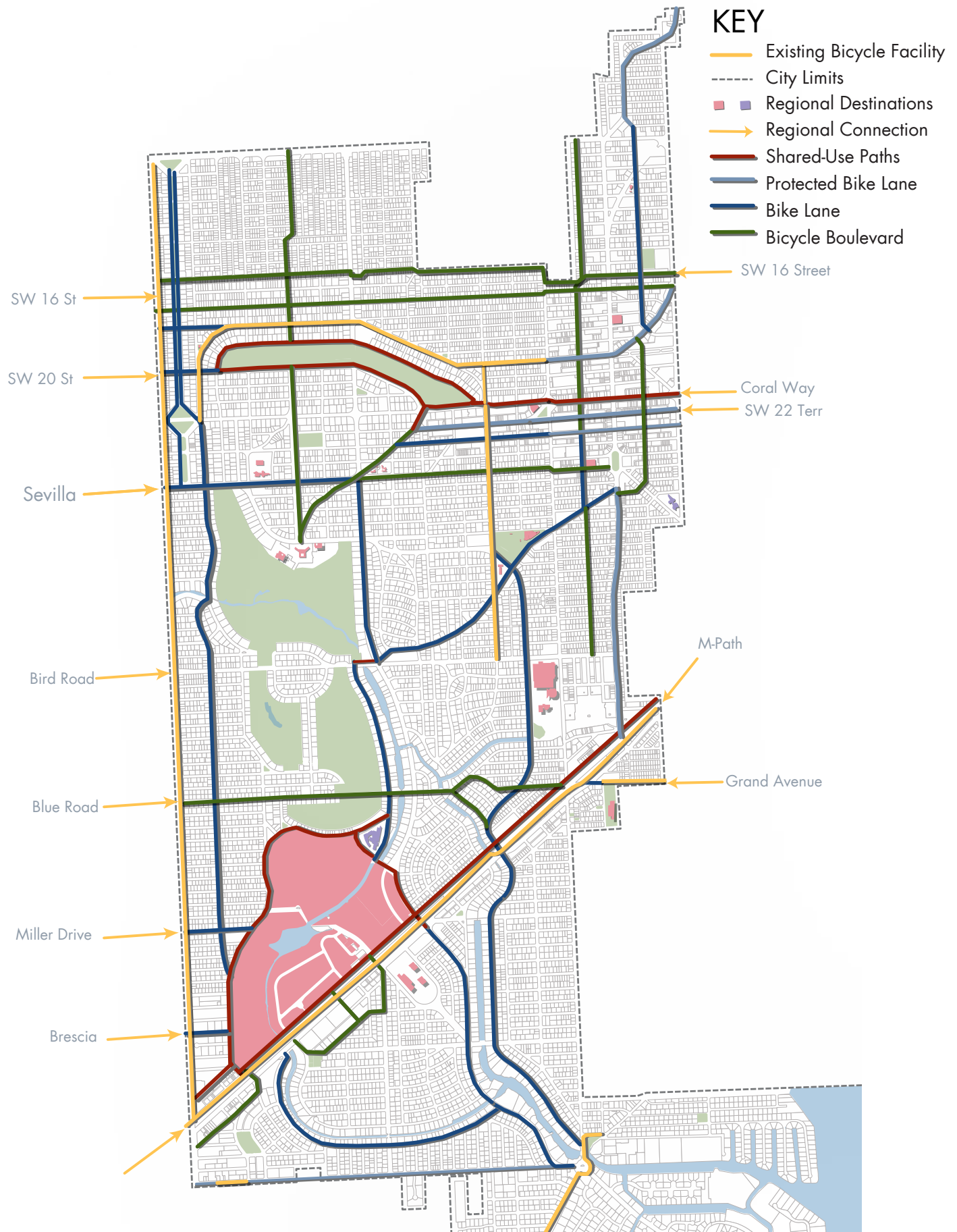
Total miles: 6 miles

Percentage of Planned Network: 18%

PROTECTED BIKE LANE:

Total miles: 4 miles

Percentage of Planned Network: 11%



Achieving the goals listed in Part 3 takes a balanced approach to matching the right route with the right bicycle facility. Establishing criteria with regard to location, cost, and user type is central to the methodology of choosing routes and making recommendations.

Among the factors that went into developing these criteria were the existing conditions analysis and stakeholder input. The evaluation criteria listed below were broadly divided into four parameters: Existing Conditions, New Connections, Route Type, and Potential Cost. The implementation chart can be found on Page 91.

Existing Conditions

- Ability to link to the M-Path
- Ability to link to Old Cutler trail
- Ability to make regional connection (Miami/ West Miami/ South Miami)
- Ability to link to an existing bike lane (Segovia/ Alhambra)

New Connections

- School / library / cultural buildings link
- Connection to transit
- Connection to Central Business District
- Connection to South Miami CBD
- Connection to University of Miami
- Connection to Hospital
- Closing gaps in existing network

Potential Cost

- Corridor width
- Additional pavement needed (if any)
- Previously planned project (Renaissance)

Route Type

- NGO/non profit preferred route
- Street Type (retail, residential, recreational)
- Frequency of stress points
- Frequency of arterial crossings
- Functional Classification

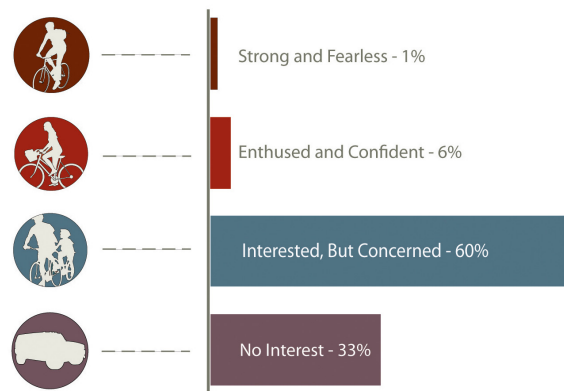


Connecting to local trails is a priority of the plan.



Taking advantage of the renaissance repaving project will help stretch the city's dollar as they implement bicycle projects.

Part of the challenge in planning bicycle facilities for a region is to design and build bicycle facilities that people will use. Understanding the types of riders in the region, and the type of facilities that people feel comfortable and safe using will help implement a practical plan. Research suggests that most people can fit into four broad categories when it comes to their relationship to bicycling (and subsequent preferences for bicycle facility type). For those users who are interested in bicycling (approximately 65% of people) a general description of each type along with typical bicycle facilities appropriate for each are described below.



To help communicate the need to accommodate the most vulnerable users, Street Plans helps stakeholders visualize Roger Geller's oft-cited framework for bicycle planning and design.

TYPE 1: STRONG AND FEARLESS

- Experienced riders who bike regularly;
- More likely to use bicycles to complete longer trips;
- Commuters, racers, messengers, recreational cyclist;
- Prefer route that provides direct access to destination;
- Comfortable sharing roadway with vehicular traffic;
- More aware of traffic rules as they relate to bicycles;
- More likely to prefer wide outside curb lanes ;
- **PREFERRED FACILITY TYPE:** roadway shoulder, travel lane

TYPE 2: ENTHUSED AND CONFIDENT

- Skilled bicyclist who bike with varying regularity;
- More likely to use bicycling to complete a part of a trip (e.g. origin to bus stop and bus);
- Prefer low-speed, low traffic routes;
- Likely to use sidewalks;
- Prefer separation from vehicular traffic;
- **PREFERRED FACILITY TYPE:** designated on- or off- road bicycle facilities depending on speed and volume.

TYPE 3: INTERESTED BUT CONCERNED

- Beginner bicyclist; may not have bicycled for a long time;
- Would bicycle more with low stress routes that may not provide direct access;
- Likely to use sidewalks, prefer separation from cars;
- **PREFERRED FACILITY TYPE:** off- road bicycle facilities (shared path, protected bike lane)

BICYCLE FACILITY CRITERIA

Choosing the right type of bicycle facility for a given route involves understanding the volume, speed and street type as well as a consideration of the desired rider demographic. Here are general guidelines for the design and placement of bicycle routes.*

For Streets Below 25 mph and 7 - 10,000 adt

Bicycle Boulevard
Bike Lane
Off-road Greenway

For Streets Between 25 mph and 35 mph, 10 - 18,000 adt

Bike Lane
Off-road Greenway
Shared use path

For Streets Between 35 mph and above, over 20,000 adt

Off-road Greenway
Shared use path
Protected bike lane

On streets over 35 mph and 20,000 adt, protected facilities are recommended as these are safety thresholds. The average bicyclists feel the greatest safety and comfort while driving on the road where traffic travels under 40 mph.

* <http://nacto.org/cities-for-cycling/design-guide/>

BICYCLE FACILITY TYPES

On the following pages is a brief synopsis of the types of bicycle facilities that will be included in the master plan. Each type is further illustrated in Task 4: Recommendations, with accompanying maps that illustrate where each is included. Together with the criteria listed on pages XX, these types will form the basis of the plan.

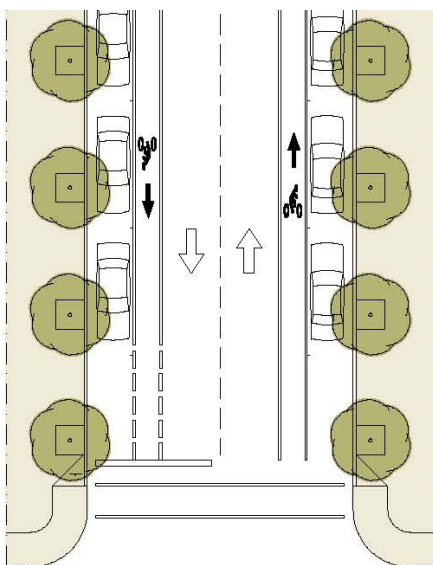
BICYCLE BOULEVARD: A Thoroughfare with shared Vehicular Lanes that give movement priority to bicyclists.

BICYCLE BOX: a section of pavement aimed at preventing bicycle/car collisions at intersections, particularly between drivers turning right and cyclists traveling through an intersection within an existing Bicycle Lane. To improve its visibility, a Bicycle Box is often colored and includes a standard white bicycle pavement marking.

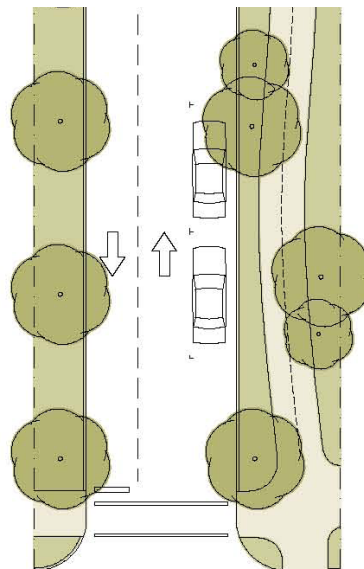
BICYCLE LANE: a lane reserved for bicycle travel within a Thoroughfare, marked by a painted line.

BICYCLE ROUTE: a route marked with signage to be amenable to bicycling. A Bicycle Route may just be a set of coordinated signage, but it may also include other types of Bicycle facilities over its trajectory.

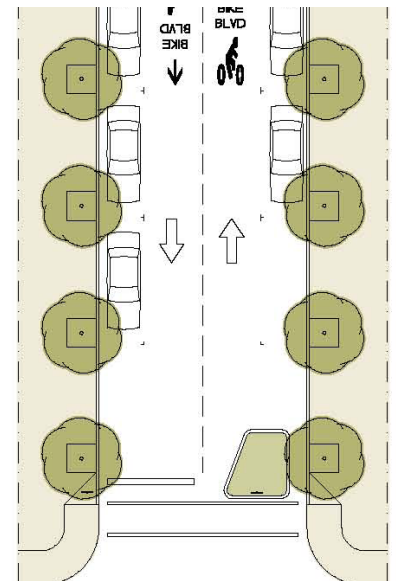
Bikeway: a continuously designated segment of right-of-way that provides exclusive, preferential, or equal priority for bicycle travel. It includes the Bikeway facility (lane, path, etc. and any curbs, markings and/or protective barriers.



Bicycle Lane



Shared Use Path



Bicycle Boulevard

CONTRA-FLOW BICYCLE LANE: a designated Bicycle Lane marked to allow bicyclists to travel against the flow of traffic.

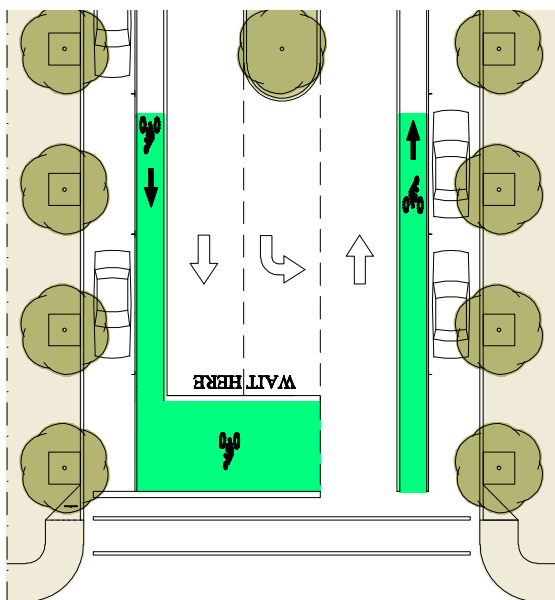
GREENWAY: An on-or off-street corridor designed for recreational bicyclist and pedestrian use.

PHYSICALLY-SEPARATED BICYCLE LANE: a Bicycle Lane separated from the motor vehicle travel lanes by Curbs, railings, plantings, parked cars, and/or grade separation, etc. (Syn: cycle track, sidepath)

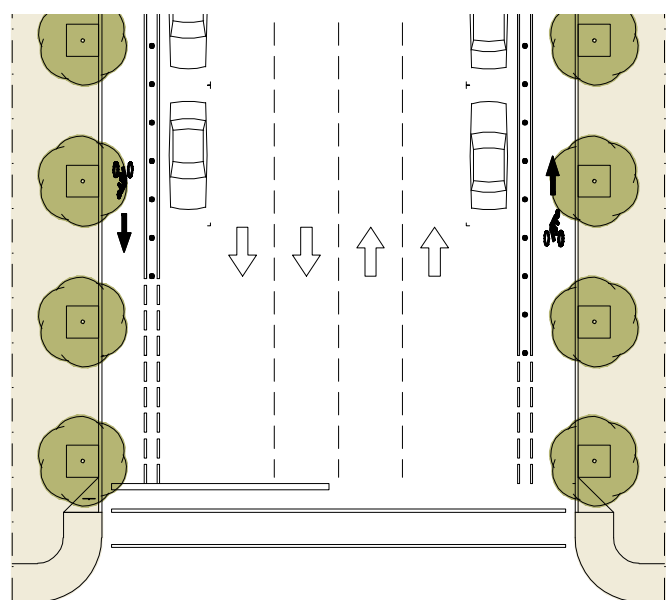
ROAD DIET: A road treatment that removes either on-street parking, or travel lanes, reduces travel lane width, adds bike lanes, or widens sidewalk.

SHARED USE LANE MARKING: a pavement marking applied to a Thoroughfare too narrow to accommodate Bicycle Lanes and/or with vehicular target speeds slow enough to allow cyclists to move safely with motor vehicles. (Syn: Sharrow)

SHARED -USE PATH: a two-way physically separated facility from motor vehicular traffic with an open space or barrier (AASHTO, 1999). Shared-use paths should always be designed to include pedestrians even if the primary anticipated users are bicyclists.



Bicycle Box



Parking Protected Bicycle Lane

BICYCLE NETWORK STREET TYPES: BIKE BOULEVARD

The signed bike boulevard is a facility type that encompasses a variety of permutations including the sharrow, greenway, and bicycle boulevard. It is intended for low speed, low volume streets where bicyclists are given the priority, and traffic is diverted or calmed in some way.

Bicycle boulevards are typically found on residential streets and should be kept to streets that are under 4,000 ADT in volume and under 30 mph. They typically include pavement markings, speed humps, branded directional signs, and traffic calming measures. Many of these elements are also applicable to other bicycle facilities.



Peg-a-tracking like this should be continued through intersections to provide connectivity on bicycle routes.



Route signs can provide more than just directional information. They may give users time-to-destination data as well.



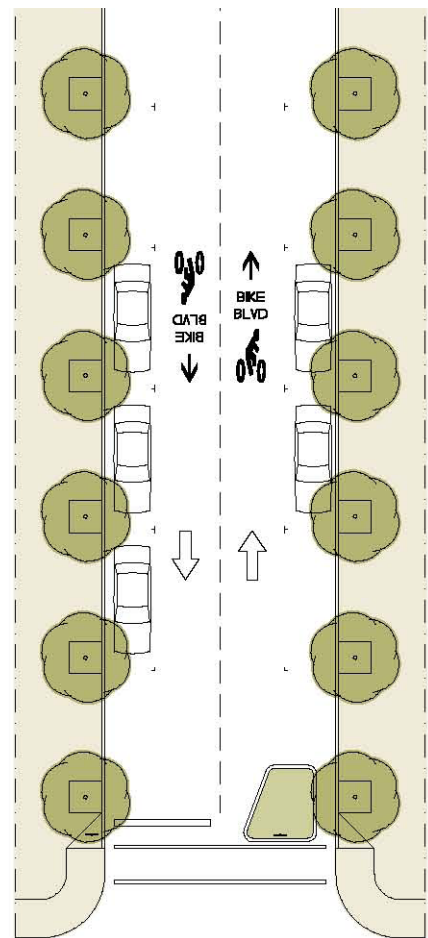
Pavement markings are an inexpensive way to alert drivers of the need to share the road.



Branding a route is important in building support for a route.

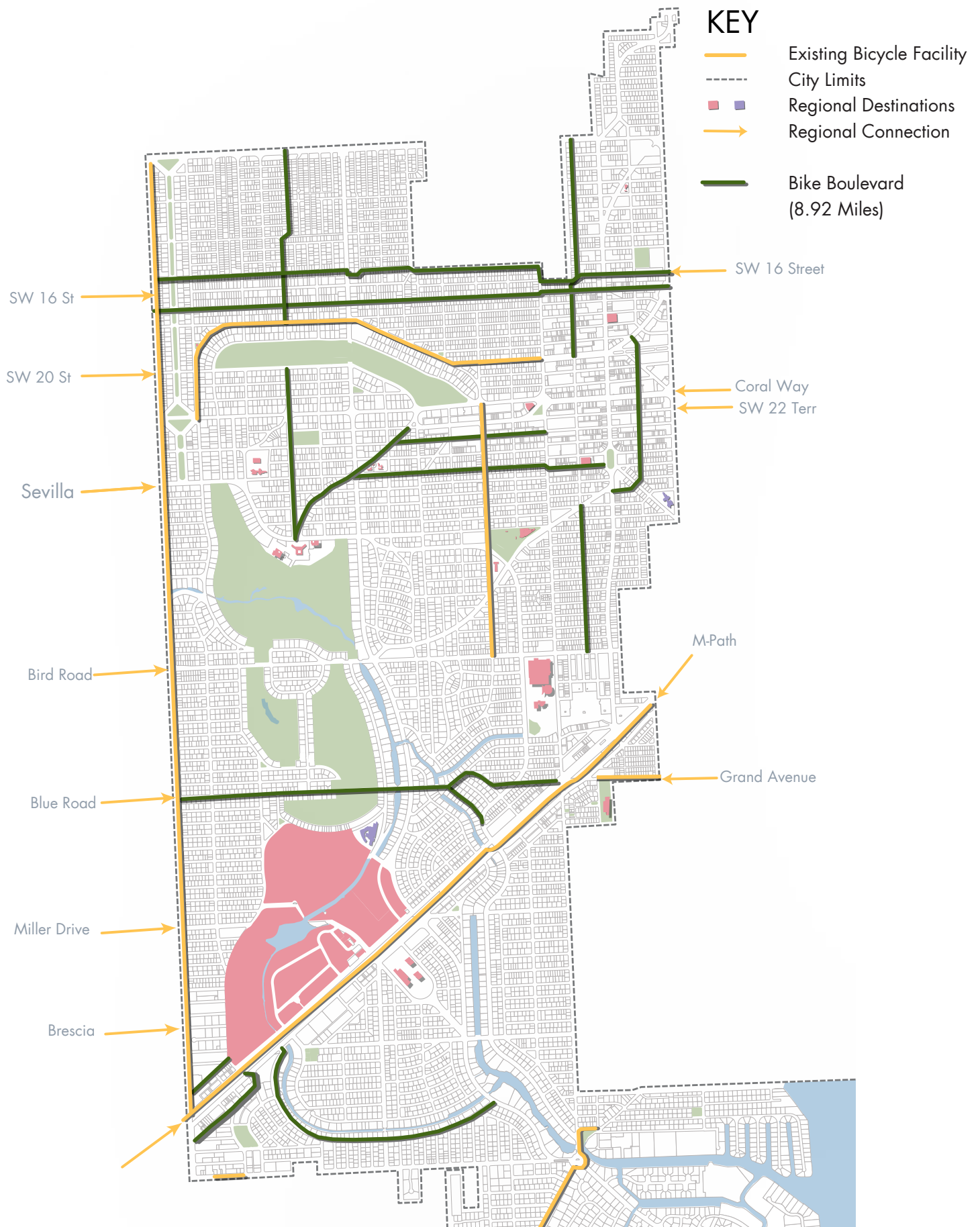


Some signs might include a map, like this one from Austin, Texas.



Sharrows are typically centered 4' from the edge of curb or parking. Other signs and markings should be placed according to MUTCD.

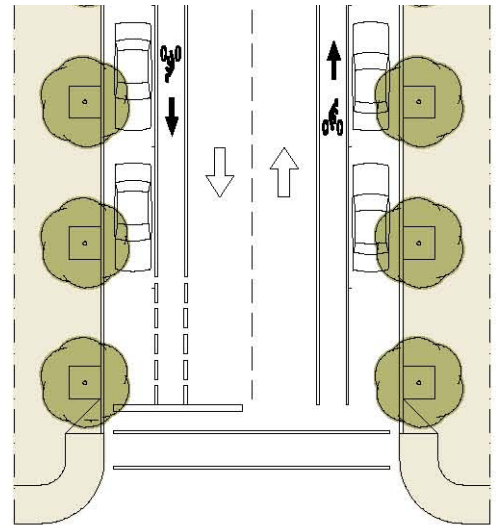
BICYCLE NETWORK STREET TYPES: BIKE BOULEVARD



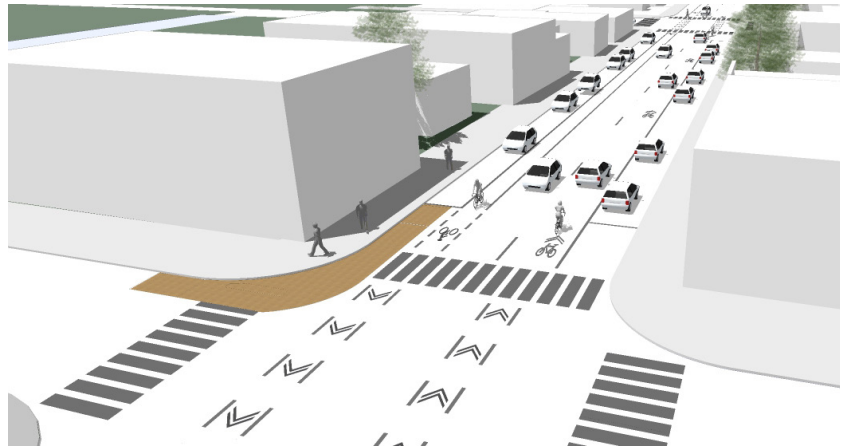
BICYCLE NETWORK STREET TYPES: BIKE LANE

The bike lane is the most commonly used bicycle facility. It has gained wide popularity over the past decades, and is now routinely included in roadway projects, even in cases where a bike lane is inappropriate. The typical bike lane is four feet wide minimum, and can include a painted buffer where roadway conditions allow.

The plan envisions bike lanes on roads that have less than 15,000 ADT and that have posted speeds less than 40 mph. The vast majority of the bike lanes in the plan are created without widening the roadway.



Bike lanes are typical features of great urban streets.



Peg-a-tracking should be used at intersections to continue the bike lane through the intersection

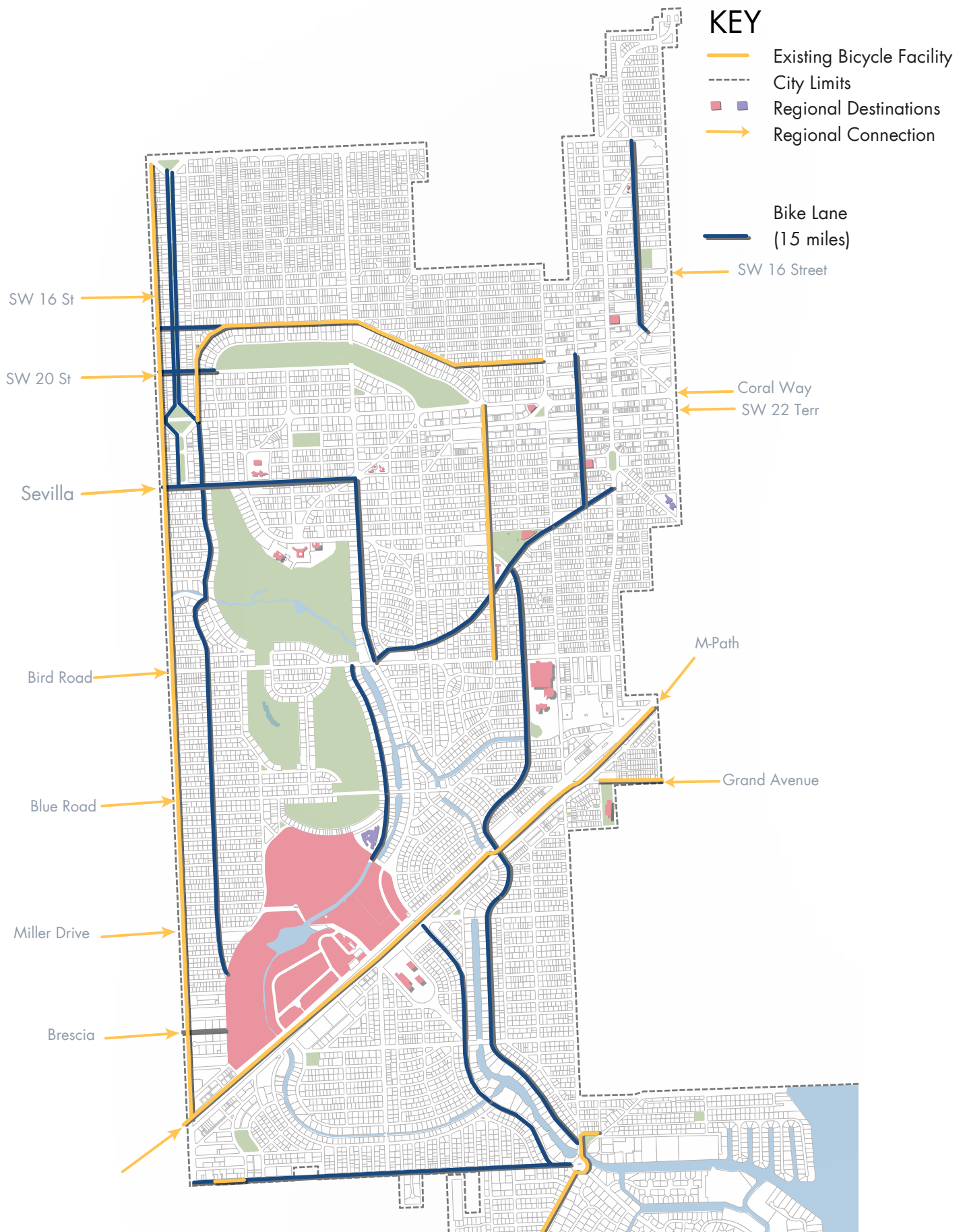


University Drive can fit a bike lane without widening the road.



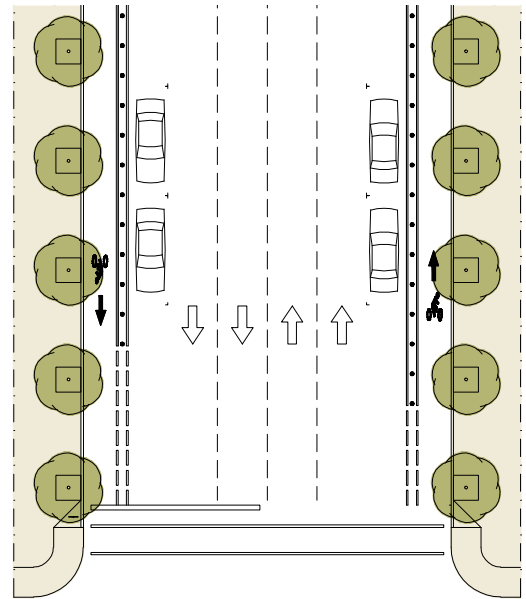
Riviera may need some additional pavement at pinch points.

BICYCLE NETWORK STREET TYPES: BIKE LANE



BICYCLE NETWORK STREET TYPES: PROTECTED BIKE LANE

Protected bike lanes are bicycle facilities that are physically separate from car traffic, either by means of a protected buffer area, pavement islands, curbs, or parking. These facilities can range from 5' for a one-way parking protected bike lane, to 12' for two-way protected lanes. What differentiates a protected bike lane from a shared-use path is that the path is at the sidewalk level and meant to be shared with pedestrians. Sidewalk level bike lanes, called cycle tracks, are a popular bicycle facility, but given the current demand for bicycle facilities, the city should focus on low-hanging options that achieve similar goals. Protected bike lanes were located on routes that served the CBD and University, and where space could be reallocated for bicycle transportation without spending money on roadway reconstruction.



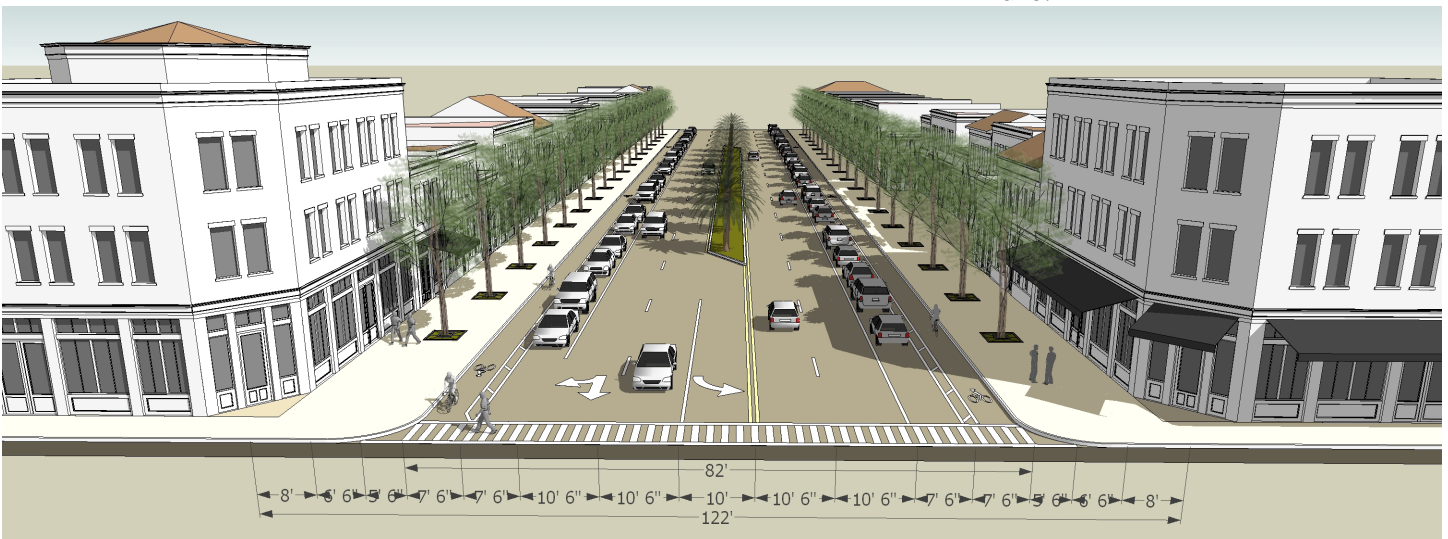
Two-way parking protected bike lane in New York



Two-way parking protected bike lane in New York

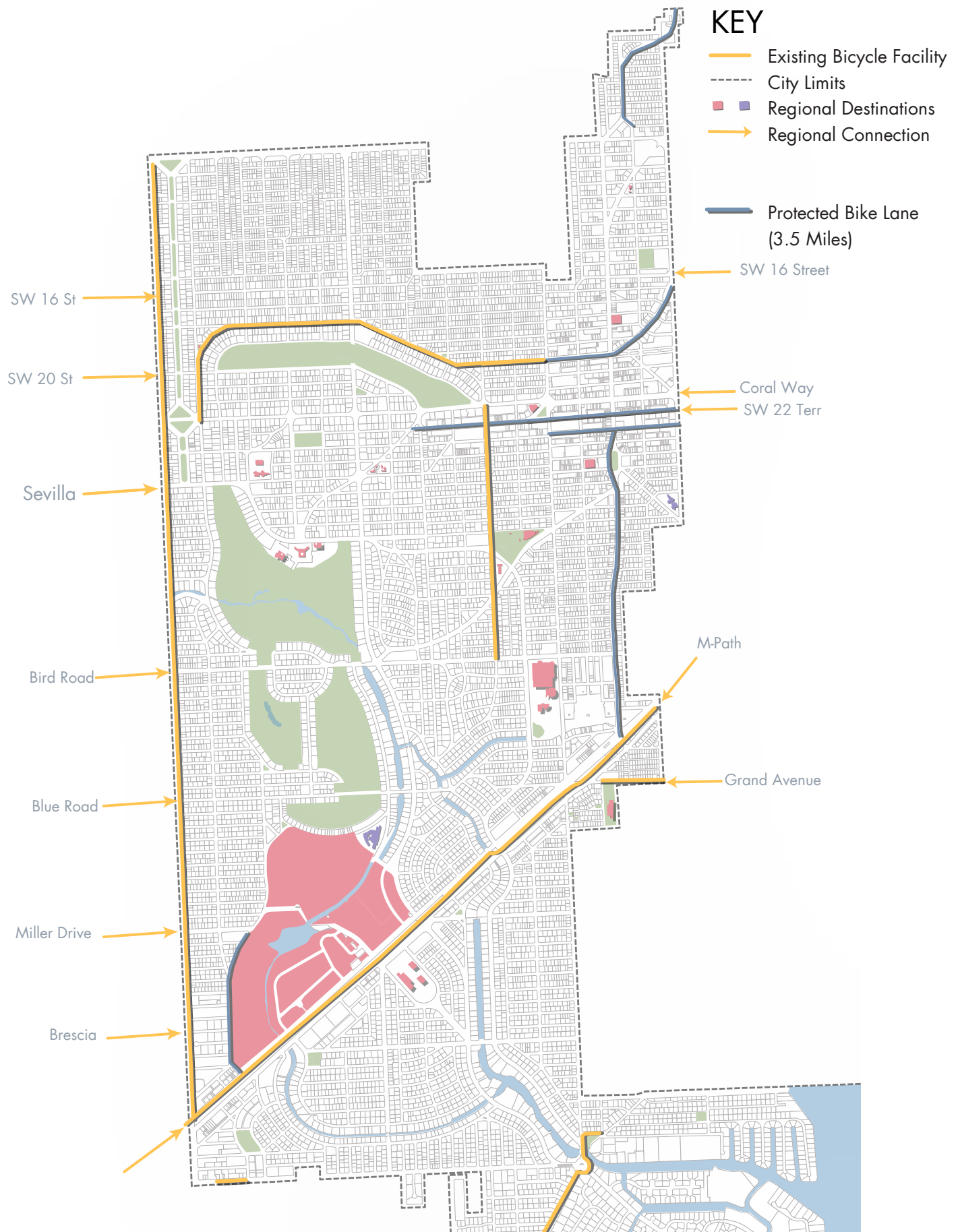


Ponce de Leon Boulevard is a prime candidate for a parking protected lane.



This version of Miracle Mile demonstrates the parking protected bike lane concept. While the master plan envisions a sidewalk level shared-use path on Miracle Mile, this drawing shows that a protected bike lane can also be implemented. Protected and shared use facilities are appropriate for the land use, density and need to connect to points east and west along the corridor.

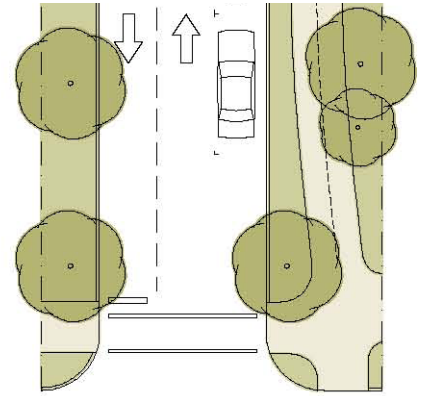
BICYCLE NETWORK STREET TYPES: PROTECTED BIKE LANE



BICYCLE NETWORK STREET TYPES: SHARED-USE PATH

'Shared use path' describes a class of bicycle facilities that is physically separate from the roadway. It is meant to be a shared facility that both bicyclists and pedestrians can use, and should be a minimum of 12'.

The main locations envisioned as shared-use paths in the master plan are along Greenway Drive (around the Coral Gables Golf course) and around the University of Miami. Some segments, like the stretch of San Amaro between Ponce and Miller Drive, can be made into a parking protected lane in the short term, while a longer term reconstruction as a shared-use path is planned.



UM Loop The sidewalk around UM along a portion of San Amaro, has already been upgraded to 10' wide.



GREENWAY DRIVE A shared use path should be installed along the Coral Gables Golf Course.

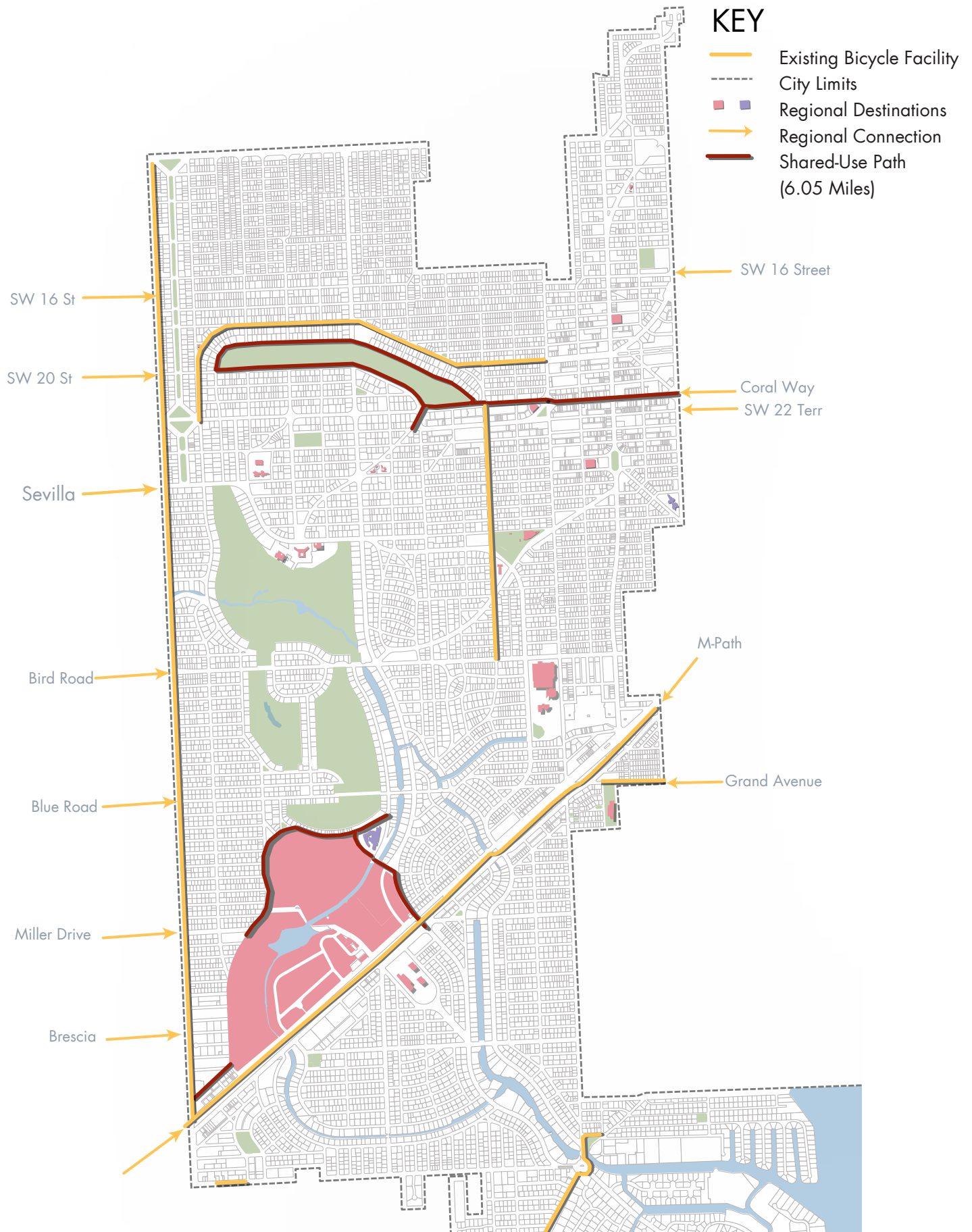


TYPICAL The typical shared-use path is 12' wide and can be paved with asphalt, concrete or higher quality pavers.



A shared-use path like the one shown above on Miracle Mile would be easy to accomplish given the upcoming reconstruction of Miracle Mile. It will also mean big business for shops along the Mile. Data from around the country shows that businesses adjacent to shared or protected paths benefit from at least a 30% increase in revenue in comparison to businesses without these facilities.

BICYCLE NETWORK STREET TYPES: SHARED-USE PATH



SIDEWALKS

Sidewalks are a basic pedestrian amenity in urban conditions, but are not always necessary on low speed residential streets.

While an ideal pedestrian plan would envision a full build out of sidewalks on all streets, the current cost of such an initiative, and political hesitation, make this an unrealistic scenario. In order to address basic needs, this study recommends the construction of sidewalks in:

- Missing locations in the urban core,
- Locations of basic transit service,
- Major arterials
- Civic, cultural, and health care facilities
- Locations where sidewalks already exist.

These locations, at a minimum, should have sidewalk access of some type. Transit locations in particular should be well served by pedestrian infrastructure. Every transit rider is at some point in their trip a pedestrian. Maps showing existing sidewalks inventory can be found in Appendix C.

CROSSWALKS

Crosswalks around the city are missing or inadequate. Major intersections, like Ponce and LeJeune and Bird and University lack crosswalks on all four sides of the street. As a general rule, any location within two blocks



2. SIDEWALK Riviera adjacent to the high school should have a sidewalk on the school side of the street.



3. PEDESTRIAN ISLAND The DeSoto Circle is a major landmark in the city, but is inaccessible. Travel around the circle should be made clear for cyclists and pedestrians. The center plaza should have more pedestrian accommodations. An upcoming capital improvement project for this circle should be reviewed with an eye toward improved pedestrian connections.



1. CROSSWALKS Many intersections, like this one at Alhambra Circle, provide very little pedestrian accommodations.

SIDEWALK & CROSSWALK IMPROVEMENTS



of a transit stop, and intersections with traffic lights should include improved pedestrian crosswalks.

CROSSWALK IMPROVEMENTS

De Soto Fountain
Cocoplum Circle
LeJeune/Coral Way
LeJeune/Riviera
Anderson Road/Coral Way/Greenway Drive
Bird Road/Granada/University
US1/Alhambra Circle
US1/Stanford Drive
US1/Riviera
US1/Granada
Ponce/San Amaro
Alhambra/San Amaro

4. SIDEWALK & CROSSWALK The intersection of University Drive and Bird Road lacks any pedestrian connection, despite a bus stop on the south side of Bird (where there is no sidewalk either).



5. SIDEWALK This stretch of Pisano is heavily used by runners as it forms a complete loop around the University. The lack of any sidewalk is a serious ADA concern. This has been included in the first phase of implementation.



6. SIDEWALK Many locations around the city have incomplete sidewalks, like this one on University. Connecting these where it makes sense to do so was a primary strategy of this plan.

SIDEWALK & CROSSWALK IMPROVEMENTS



7. HOSPITAL Critical facilities like hospitals schools should be served by sidewalks. This location next to Doctors Hospital also has a bus stop, and was the recent subject of an infrastructure project.



Ensure that bicycle lanes continue through intersections with peg-a-tracking.

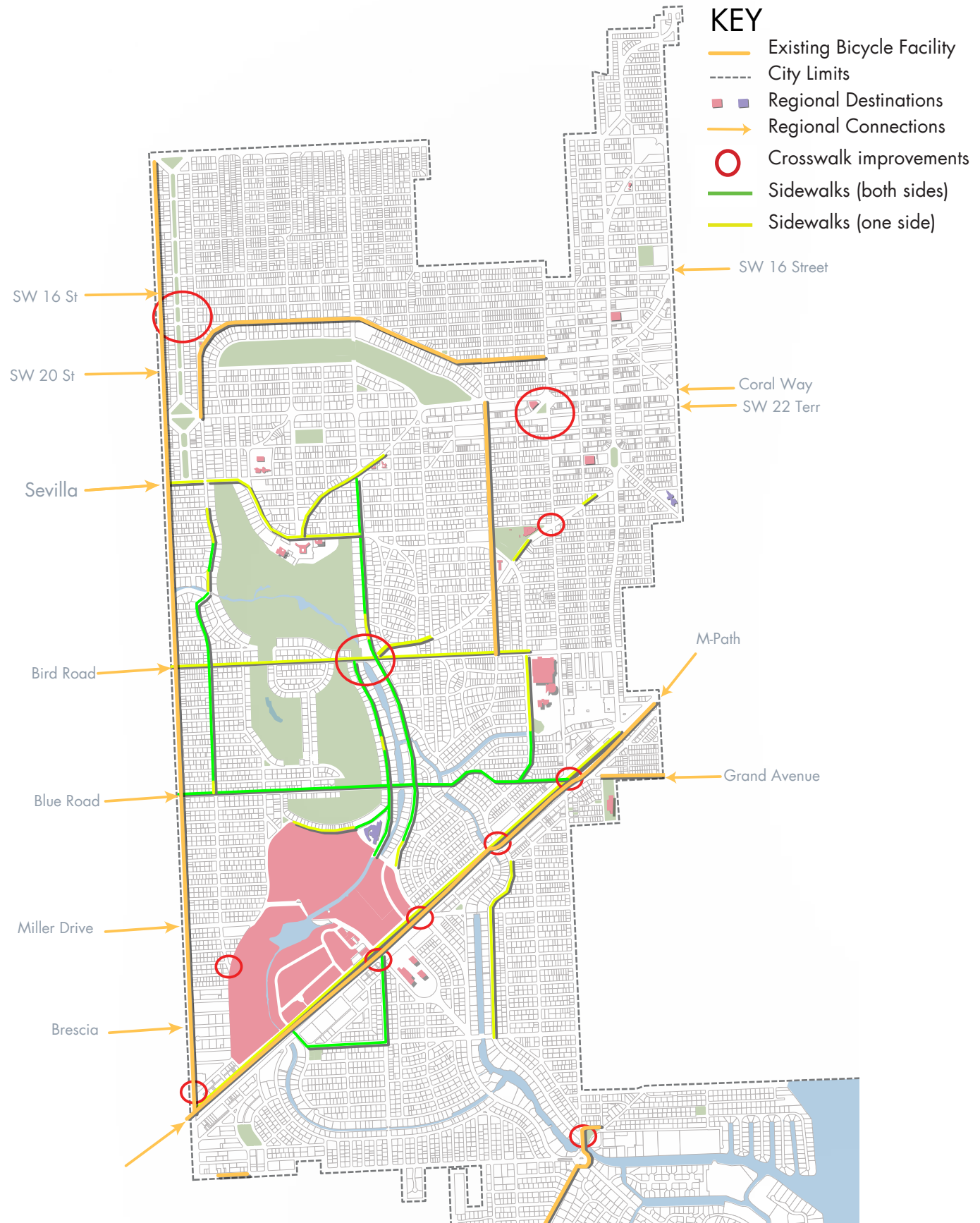


8. MAIN STREET A main arterial like Bird Road should have sidewalks on both sides of the street.



9. URBAN CORE Locations in the urban core, like this one on University, should have a basic sidewalk.

SIDEWALK & CROSSWALK IMPROVEMENTS*



*This is not a comprehensive map of locations in need of sidewalk facilities or intersection improvements, but a map identifying critical needs on significant routes and intersection that need greater study for bicyclists and pedestrians.

While bikeways are the most visible element within a bicycle network, cyclists must also have safe and convenient places to store their bicycles. Providing bicycle parking and other “end-of-trip” facilities is critically important to supporting bicycling as a viable mode of transportation. Solutions range from the basic bicycle rack to semi-enclosed bicycle shelters, to full bicycle “stations” that include bicycle storage and repair facilities, showers, lockers, changing rooms, rentals, and even café/social gathering spaces.

No matter the type, bicycle parking is commonly excluded or insufficiently addressed in the planning, urban design, and development processes. As a result, accessible, attractive, and safe parking options for both short and long-term use are often under- or oversupplied, and poorly sited.

The Bicycle Parking suggestions on the following pages are intended to provide staff with general locations and types of parking need.

TYPES OF BIKE PARKING

While countless bicycle parking designs and configurations exist, there are only two basic types—short- and long-term bicycle parking—that include six basic sub-types. Short-term parking facilities consist of bicycle racks, self-service bicycle sharing systems, and temporary event “valet” parking. Long-term parking facilities include semi-enclosed bicycle shelters, fully enclosed bicycle lockers, and fully enclosed bicycle stations/storage rooms.

Matching each of these types and the available configurations to the right context is not difficult, but requires an understanding of the following:

- intended bicycle user group
- length for which bicycles are likely to be parked
- type(s) of trips to be accommodated (long/short term)
- proposed location and the surrounding land uses local climate considerations (rain, snow, etc.)
- ability of the proposed facility to provide orderly, safe, and attractive bicycle parking
- basic performance standards and parking site guidelines

The majority of bicycle parking facilities are intended for short-term use, generally less than two hours. Short-term bicycle parking is generally associated with commercial/retail, civic, and/or recreational land uses, where short trips are common. As a result, proximity to destination is prioritized over protection from weather and guaranteed security.

BICYCLE RACKS

Bicycle racks allow for the temporary storage of bicycles in a safe and organized manner. While a great variety of designs and configurations are available, the most effective are those which are easy to identify, efficient in their ability to accommodate the intended amount of bicycles, allow for easy bicycle maneuverability in and out of the designated bicycle parking space, and enable the bicycle to be secured properly.

Two simple and recommended forms that meet these standards are the inverted “U” Rack and the “Post and Ring.” Each rack may be implemented singularly—one rack provides two bicycle parking spaces—or configured in groups where demand exists. One such application, the on-street bicycle corral, makes use of several racks to replace a motor vehicle parking space where bicycle parking demand is high and sidewalk space is either limited or duly accommodates high volumes of pedestrian traffic. Depending on the configuration, a single motor vehicle parking space may yield between six and 12 bicycle parking spaces.

While “Inverted U” and “Post and Ring” racks both offer excellent short-term bicycle parking solutions for most bicyclists, Coral Gables should designate a version of the Inverted “U” rack to become the standard city bicycle rack. Selecting a single rack design type will improve user recognition and also streamline the City’s purchasing and implementation process.

GENERAL STANDARDS

All bicycle racks should:

- support frame of bicycle in two locations
- allow frame and one wheel to be locked to the rack element when both wheels are left on the bike
- allow the frame and both wheels to be locked to the rack if the bicyclist decides to remove the front wheel
- allow use of cable, chain, & U-shaped locks
- be securely anchored to the ground
- be usable by bicycles with bottle cages, panniers, etc.
- be usable by a variety of sizes and types (children's bikes, step-through frames, etc.)
- keep both wheels on the ground

In addition, all bicycle racks should not be capably compromised by hand tools, especially those that are easily concealed such as wire cutters, screw drivers, etc. Bicycle racks and the bicycles secured to them should not create a tripping hazard or barrier for pedestrians and the visually impaired. Finally, all outdoor bicycle racks and any related facilities should be well-lit and visible at night

BICYCLE SHARING SYSTEMS

Bicycle Sharing Systems provide an easy-to-use and inexpensive form of public transportation. Each "station" includes multiple bicycles that can be rented from an electronic kiosk designed for visibility and ease of use. Stations are typically located within the public sidewalk, but may also replace an existing on-street parking space where sidewalk space is at a premium. Like the bicycle station concept, bike share systems are ideal for the most urban environments, such as central business districts and high-density mixed-use neighborhoods. American cities such as Denver, Washington DC, and Minneapolis have successfully implemented bicycle sharing system thus far. While it is conceivable that Coral Gables could provide a small bicycle sharing system, it is recommended that the City first focus on improving the bicycle network as well as education and encouragement efforts.



Bicycle parking locations like this one on the UM campus show how much of a need adequate bike parking is in the City.



The Decobike bike share system was launched on Miami Beach in 2009. It has since grown in popularity and will soon be coming to the City of Miami.

LONG-TERM BICYCLE PARKING

Long-term bicycle parking facilities are intended for use that generally exceeds two hours. Long-term bicycle parking is associated with residential, workplace, and transit-related land uses where parking for long durations is common. As a result, proximity to destination is a lower priority than protection from the elements and guaranteed security.

BICYCLE SHELTERS

Bicycle shelters provide highly visible, semi-enclosed protection from the elements. Bicycle shelters should be placed at highly frequented bicycle destinations where users tend to park for short and long-term periods. Such places include, but are not limited to, employment centers, transit stops, fitness gyms, civic buildings, parks, schools, and other educational institutions.

Bicycle shelters provide an opportunity to display safety information, a map of the regional and local bicycle network, and/or any other relevant bicycle or local information. Bicycle shelters should be easily identifiable, well lit at night, and sufficiently protect bicycles from the elements.

The City of Coral Gables may consider pursuing the implementation of bicycle shelters in strategic locations. Doing so will raise the profile of bicycling and provide a parking amenity that provides shelter for longer parking stints. Additionally, Coral Gables' climate makes the provision of bicycle shelters particularly relevant.

BICYCLE LOCKERS

Bicycle lockers not only offer additional security and protection from the elements, but also provide an appropriate solution for long-term bicycle parking needs. Bicycle lockers should be placed conspicuously at transit stops, well-used Park 'n Ride locations, civic buildings, large residential apartment buildings, office towers, and within higher educational institutions. While such facilities offer a higher level of security and comfort, they must be made of high quality materials and be well maintained to ensure that use continues without compromise.



Directional signs help create a network.



Directional signs help create a network.



Directional signs help create a network.

BICYCLE STATIONS

Bicycle stations are intended to serve as a regional hub for metropolitan bicycling activity. They may offer a wide variety of services, such as secure and attended parking facilities; bicycle rentals; showers, lockers and changing facilities; repair services or facilities; and cafe/social space. The combination of these facilities provides the highest level of bicycle parking service for both medium and long-term use, and elevates the visibility and viability of bicycling across the region. Bicycle stations are most appropriate in the urban core, central business district locations, and at transit hubs where bicycle commuters and tourists may maximize the services offered. Cities such as Chicago, IL, Seattle, WA, Berkeley, CA and Long Beach, CA all provide working models. Due to existing land use patterns, density, and lack of built bicycle infrastructure within the City of Coral Gables, it will be a few years before this type of facility is needed, but given the time frame required to develop such a facility, the city would be smart to begin to identify possible locations and partners for construction and operation.

SIGNS

If a bicycle parking facility is unable to be sited visibly in front of the destination it serves, or another conspicuous location, then attractive signs should be provided at all primary entrances to direct bicyclists to the nearest bicycle parking location.



Bicycle stations like this one are best served by urban areas. As downtown Coral Gables increases its residential population, a facility like this one will make sense.



Directional signs help create a network.

GENERAL BICYCLE PARKING LOCATION STANDARDS

The location of bicycle parking and other end-of-trip facilities can be crucial to their resulting success. Similar to motorists, bicyclists desire to park as close and as conveniently to their destination(s) as possible. However, the degree of proximity may vary by the type of facility being provided and the type of trip/user it is intended to serve.

Short-term parking facilities, like bicycle racks and shelters, should be located as close as possible to the destination(s) they serve. Specifically, bicycle racks for short-term parking should be located within 30 feet of the entrance(s) they serve. If impossible, racks should be no more than a 30-second walk, approximately 120 feet, away or at least as close as the nearest automobile parking space. This is especially important for streets served by concentrations of retail where any prolonged effort to find adequate bicycle parking is as frustrating for the bicyclist as circling the block is for the motorist.

Long-term parking, such as bicycle lockers, should also be as convenient as possible. Shower, changing rooms, and locker facilities need not be located inside the destination they serve, but should provide enough proximity and convenience so that commuting by bicycle is as easy as possible. Indeed, many employers unable to provide such facilities often contract with nearby fitness gyms to rent out space for their bicycling employees.

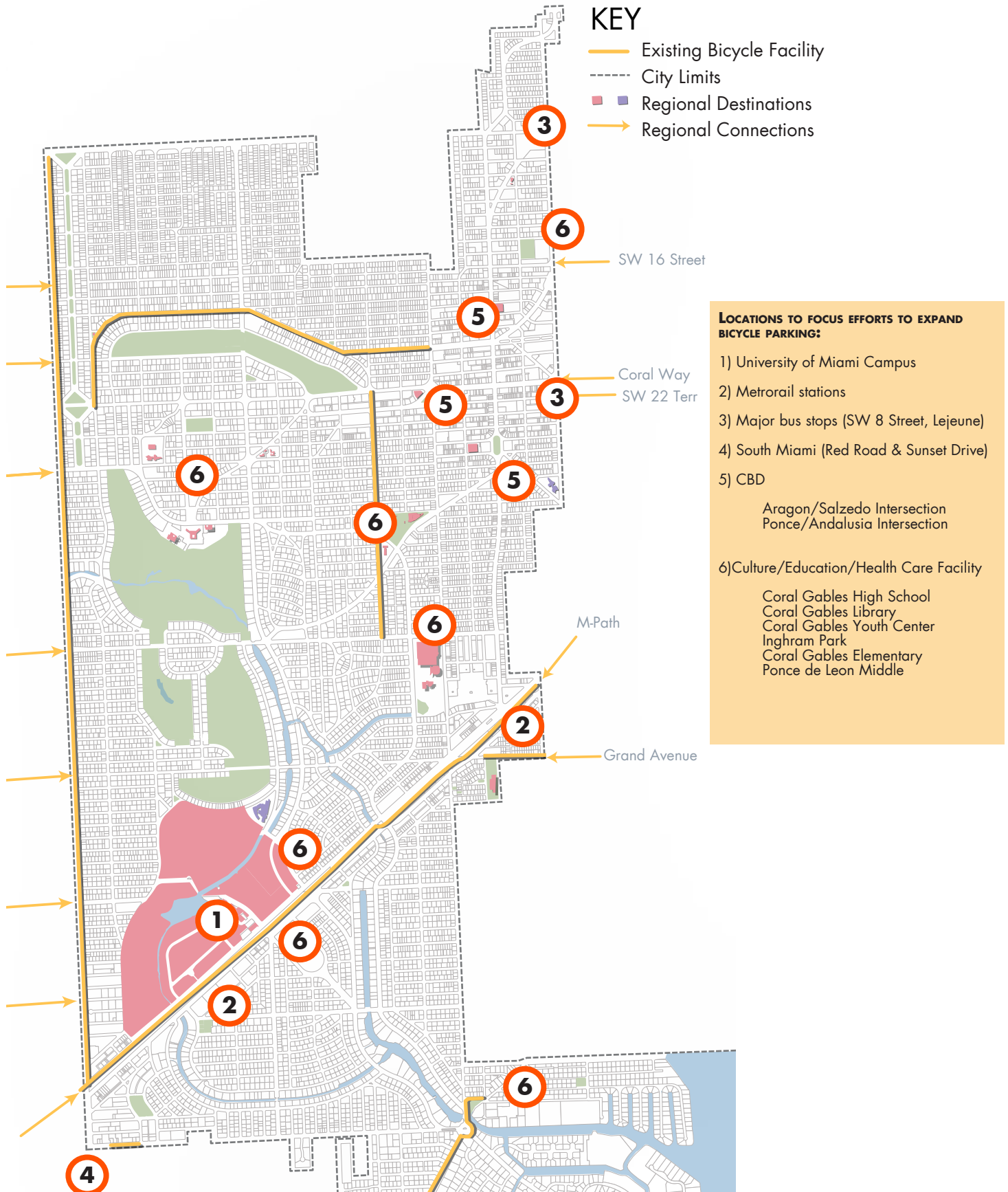
Bicycle racks should be clearly visible from the approach to a destination's most actively used entrance. If located along a sidewalk, within the public right-of-way, bicycle parking should be visible from the street for which the sidewalk serves. Additionally, entire urban blocks should not be served by a large, single bicycle rack cluster. Rather, it is preferable to place several smaller rack clusters, or even single bicycle racks in multiple, convenient locations.

In general, safe bicycle rack locations should:

- Maximize visibility and minimize opportunities for vandalism by being located in locations within easy view of pedestrian traffic, windows, doors, and/or well-lit areas
- Protect bicycles from inclement weather, as long as the facilities meet or exceed visibility, spacing, and performance standards
- Locate bicycles a safe distance away from automobiles parked on-street, in lots, or in structures so that bicycles will not be damaged by opening doors or errant driving behavior
- Do not obstruct pedestrian traffic in any way
- Place the rack(s) between the primary road/path used by bicyclists and the entrance to the destination(s) they serve
- Not be located on or near stairs, walls, berms, or within handicap accessible ramps
- Provide enough space for bicycles of all types to maximize the bicycle parking capacity of a given facility



Parking meters are a *de facto* bicycle rack throughout much of the CBD.



Beyond engineering a network of safe and bikeways with attractive bicycle parking options, education, encouragement, enforcement, and evaluation efforts must play a critical role in making Coral Gables more bicycle-friendly. If this is to be accomplished, working partnerships between local, county and state entities must be formed, and supported by other non-profit organizations and like-minded civic groups. Expanding the appeal of cycling in the city will require numerous strategies including, organizing bicycling skills courses, launching motorist and bicyclist safety campaigns, promoting the benefits of bicycling, supporting local bicycle-centric events, utilizing social media and web-based advocacy communication tools, enforcing existing motor vehicle-bicyclist laws, and maintaining traditional communication strategies that position bicycling as a viable option for most residents.

When marketing, education, encouragement, and enforcement campaigns are crafted, great care should be taken to appeal to cyclists and non-cyclists alike. Too often such campaigns unintentionally reinforce the widely held belief that bicycling is, and will always be, a marginal activity reserved for children and athletic, risk-adverse men. By contrast, truly successful efforts position cycling as a normal mode of transportation that does not require expensive bicycles, extreme travel patterns, and/or spandex outfits. These bicycle stereotypes will appeal to a very limited number of cyclists and will not aid in the development of a healthy cycling community.

While the City should take the lead on local bicycle safety issues, most education, encouragement, and enforcement campaigns require regional cooperation. The City should partner with the County and MPO whenever possible.

Actions for advancing education, encouragement, enforcement, and evaluation efforts are outlined below. In all cases of printed material, the city should ensure that all printed and web bicycle education materials are accessible to those who do not speak English as a first language.

EDUCATION

In general, bicycle education campaigns should aim to increase commuting, errands, socializing, utility, and exercising trips by decreasing the perceived and actual risk of bicycling.

ACTION #1: EDUCATE MOTORISTS AND BICYCLISTS ABOUT RIGHTS AND RESPONSIBILITIES.

Utilize the proposed Coral Gables Bicycle Initiatives webpage to provide bicyclist and motorist safety information. Additional publications, brochures, public service announcements (PSAs), and social media resources should be used to connect the general public to bicycle and motorist safety information.

ACTION #2: EDUCATE RESIDENTS ABOUT NEW FACILITY TYPES.

Use all of the methods listed in Action #1 to educate Gables motorists and bicyclists about new bikeway network facility and countermeasure types as they are implemented. These include, but are not limited to shared use lane markings, paths, bicycle lanes, bicycle signal detections systems, etc.



ACTION #3: EXPAND SAFE ROUTES TO SCHOOLS PARTNERSHIPS.

Pursue funding to expand Safe Routes to School programs throughout the city. Provide municipal support to help schools dovetail their Safe Routes to School efforts with any other existing school- and City-related safety programs, including, but limited not to, bicycle rodeos, helmet giveaways, and bicycle safety training.

ACTION #4: ENCOURAGE CITY EMPLOYEES/RESIDENTS TO BECOME LEAGUE OF AMERICAN BICYCLISTS LEAGUE CERTIFIED INSTRUCTOR (LCI) ON AN ANNUAL BASIS.

Encourage at least 3 employees and police officers to LCI training. Work with growing number of LCIs, the Coral Gables Police Department, and bicycle advocacy organizations to host public bicycle skills courses.

ACTION #5: RELAY LOCAL BICYCLE INFORMATION, SAFETY TIPS, AND NEWS THROUGH OFFICIAL CITY COMMUNICATION CHANNELS.

Periodically convey bicycle-related news, such as the striping of a new bicycle lane or the confirmation of a newly certified LCI via the City's Facebook page, City Edition newsletter, and the proposed Coral Gables Bicycle Initiatives website.

ACTION #6: FUND EDUCATION INITIATIVES.

Work with Miami-Dade County and FDOT and other local, regional, and national organizations to identify and obtain funding for bicycle education programs.

ENCOURAGEMENT

ACTION #1: ESTABLISH BIKE-TO-WORK WEEK ACTIVITIES.

Partner with employers, the MPO, and other organizations to host commuter contests, group rides, and incentives for bicycle commuting during Bike-to-Work Week. Use the proposed Coral Gables Bicycle Initiatives website to promote these activities.

ACTION #2: RAISE THE PROFILE OF NATIONAL BIKE MONTH.

Sponsor, support, promote and/or collaborate with municipalities, businesses, and non-profit organizations to promote group rides and events during the month of May, which is National Bike Month.

ACTION #3: PROMOTE BICYCLE COMMUTING.

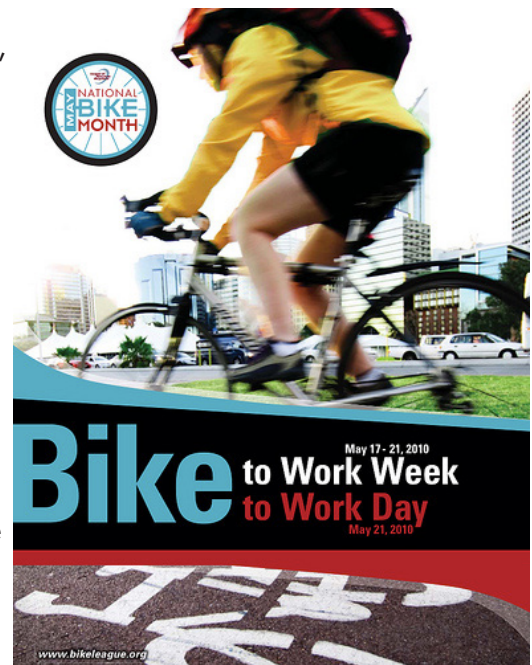
Work with employers, to develop programs, incentives, and end-of-trip facilities that encourage employees to bicycle. Use the proposed Coral Gables Bicycle Initiatives website to encourage bicycle commuters to connect with each other so that they may ride to work/transit together.

ACTION #4: CREATE WEBSITE FOR BICYCLE AND PEDESTRIAN INITIATIVES.

Create a web interface for bicycle initiatives in Coral Gables. The website should include the City's current bike lane information and add safety, education, encouragement, enforcement, and bikeway network information. This website should serve as the home for all past and current plans, maps, and other bicycle related documents.

ACTION #5: ADD BICYCLING INFORMATION TO THE EXISTING CITY WEBSITE

Update the City's existing webpage with bicycle pedestrian information. This should include the latest regional bikeway information (paths, multi-modal travel, etc.) and other information.



ACTION #6: SPONSOR MONTHLY FAMILY RECREATIONAL RIDES.

Work with Bike/Walk Coral Gables, Coral Gables Police Department, and any/all local advocacy organizations to organize a seasonal, monthly recreational ride.

ACTION #7: PROVIDE ADEQUATE PUBLIC BICYCLE PARKING AT CITY-SPONSORED EVENTS.

Provide temporary bicycle parking valet stations at large City-sponsored events if held in locations where bicycle parking facilities are not within the immediate vicinity.

ACTION #8: CREATE AND UPDATE BIKEWAY MAP.

As the on-street bikeway network is built out, create and maintain a map displaying all on- and off-street bikeways. This map should include basic traffic safety information, the location of significant destinations, and be distributed in portable print and online formats. Update and re-distribute the map on an annual basis.

ACTION #9: IMPROVE WAYFINDING AND VISIBILITY.

The strategic location of route signs will do much to improve the visibility of the city's bicycle / pedestrian network. Such signs should be sited in highly conspicuous downtown and neighborhood center locations, as well as at transit stops, bicycle parking shelters, and bicycle shops. Network signs should provide clear information regarding the location of bikeways and destinations as well as providing walking/cycling times to various destinations (e.g. City Hall to Youth Center – 15 min walk / 5 min bike ride)

ACTION #10: FUND ENCOURAGEMENT INITIATIVES.

Work with Miami-Dade County and FDOT and other local, regional, and national organizations to identify and obtain funding for bicycle encouragement programs and initiatives.

ACTION #11: EXPAND BICYCLE PARKING OPTIONS

Expand bicycle parking options by amending the City code so that new or fully renovated buildings over 50,000 square feet and parking garages are required to provide covered and well-lit bicycle parking and showers for employees.

ACTION #12: IMPLEMENT ACCESSIBLE PEDESTRIAN SIGNALS (APS)

Improve accessibility in areas when work is performed at a location. In the sidewalk and street crossing environment, include accessible pedestrian signals, markings and signage that follow ADA Accessibility Guidelines. These minimum technical standards would require APS at all newly constructed or reconstructed intersections where visual pedestrian signals are installed.

ENFORCEMENT

To create a bicycle-friendly city, law enforcement departments must address the safety concerns of those who choose to drive and those who choose to bicycle. This responsibility logically falls upon the local Coral Gables Police Department.

ACTION #1: INCREASE ENFORCEMENT OF UNLAWFUL BICYCLIST & MOTORIST BEHAVIOR.

The Coral Gables Police Department should focus on enforcing laws that reduce bicycle/motor vehicle crashes and increase mutual respect between all roadway users.

ACTION #2: TRAIN OFFICERS ANNUALLY ABOUT TRAFFIC LAWS.

Police officers who serve(d) in the Bicycle Patrol Unit, or who are well-



versed in traffic law as it pertains to bicycle safety, should lead an annual workshop to cover best practices in bicycle and motor vehicle law enforcement. Such workshops should cover the three-foot law, the 'dynamics' of the door-zone and right-hook collision-conflicts (where motorists turn right and bicyclists are traveling straight through an intersection), and methods for reducing conflicts between bicyclists and motorists.

ACTION #3: IMPROVE TRAFFIC SAFETY AND EDUCATION OUTREACH MATERIAL.

The Coral Gables Police Department should work with other related City departments to develop an informational card or traffic law safety pamphlet to distribute with issued warnings for all bicycle, and bicycle-motor vehicle infractions.



ACTION #4: PUT MORE OFFICERS ON MORE BIKES

To sensitize officers to the joys and challenges of bicycling, work with the Coral Gables Police Department to expand the number of police officers serving on the Bicycle Patrol Unit.

ACTION #5: MAP PROBLEM AREAS.

The Coral Gables Police Department should identify the most common conflicts between people bicycling and people driving to create strategies for enforcement and design alternatives that mitigate these conflicts. The City should utilize the proposed Coral Gables Bicycle Initiatives website to publish annual crash statistics so the public is aware of the most problematic roadway segments and intersections.

ACTION #6: TARGET THE FOLLOWING UNSAFE MOTORIST BEHAVIOR:

- Turning without using turn signals
- Overtaking bicyclists without at least 3' clearance
- Parking / traveling in bicycle facility
- Opening doors in the path of bicyclists, "dooring"
- Rolling through stop signs
- Harassing or assaulting bicyclists
- Driving under the influence of drugs or alcohol
- Speeding

ACTION #7: TARGET THE FOLLOWING UNSAFE BICYCLIST BEHAVIOR.

- Ignoring traffic control devices
- Bicycling against the flow of traffic
- Bicycling without lights at night
- Minors bicycling without helmets
- Failing to yield to pedestrians
- Riding more than 2 abreast
- Bicycling while under the influence of drugs or alcohol



ACTION #8: CREATE BICYCLIST-MOTORIST INCIDENT REPORTING PROGRAM.

The Coral Gables Police Department should work with the state and county officials to create a protocol for bicyclists and motorists to report aggressive or otherwise unsafe behavior.

ACTION #9: FUND ENFORCEMENT INITIATIVES.
Work with Miami-Dade County and FDOT and other local, regional, and national organizations to identify and obtain funding for bicycle encouragement programs and initiatives.

EVALUATION

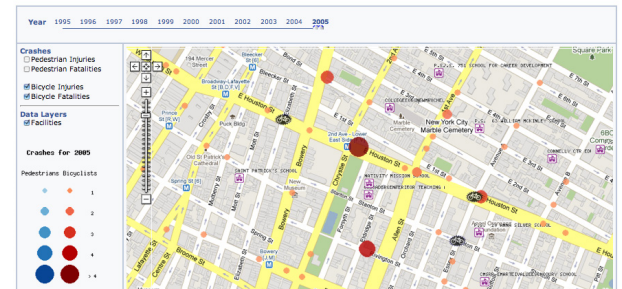
The collection, evaluation, and publishing of bicycle related data should play an integral role in furthering the community's awareness of the City's effort to improve bicycle conditions. These bicycle master plan evaluation recommendations are intended to enable the City of Coral Gables to measure its implementation successes.

CrashStat 2.0

Welcome to CrashStat 2.0!

When Transportation Alternatives launched Crashstat.org in 2004, it immediately became an indispensable resource for advocates, neighborhood groups and healthcare professionals. When Transportation Alternatives launched Crashstat.org in 2004, it immediately became an indispensable resource for advocates, neighborhood groups and healthcare professionals. When Transportation Alternatives launched Crashstat.org in 2004, it immediately became an indispensable resource for advocates, neighborhood groups and healthcare professionals.

Instructions for Using this Map



ACTION #1: PUBLISH A PUBLIC MAP DISPLAYING ALL EXISTING/ PROPOSED BIKEWAY NETWORK.
Taking a regular inventory of bikeway type, length, and segment location for all current and planned infrastructure projects so that the City and the general public can track the implementation process. The bikeways map should be updated annually and be available for print and download on the proposed Coral Gables Bicycle Initiatives web page.

ACTION #2: MAP ANNUAL BICYCLIST AND PEDESTRIAN CRASH STATISTICS.

The number of reported bicycle crashes should be compared against the number of average daily bicyclists counted annually. The crash rate percentage derived from this equation should then be tracked over time to determine bicycle ridership levels and its effect on safety trends. The results should be published on the proposed Coral Gables Bicycle Initiatives website.

ACTION #3: DEVELOP A USER-GENERATED, WEB-BASED CRASH MAP PROGRAM.

Bicycle crashes are generally underreported. Because reported crashes represent only those situations in which the police are called and the perpetrators or victims provide information, many incidents—especially bicycle-on-bicycle crashes and hit-and-runs—go unreported. The implementation of a simple web program allowing bicyclists to upload their own information regarding crashes would help create more robust data set that could be compared and contrasted with official police data.

ACTION #4: CONDUCT BICYCLIST/PEDESTRIAN COUNTS.

Bicyclist counts should be taken at up to 10 locations throughout the city every other year to measure any increases or decreases in bicycling. Each count should take place at approximately the same location, time of day and year, and under similar weather conditions. These counts should include observations about bicyclist behavior and travel patterns.

ACTION #5: CONDUCT BICYCLIST COUNTS BEFORE & AFTER IMPLEMENTATION OF BIKEWAYS.
Prior to the implementation of any new bikeway, pre-implementation counts should measure the number of riders and compare against post-implementation counts.

ACTION #6: EVALUATE WHERE BICYCLE FACILITY MAINTENANCE IS NEEDED.

Coordinate with City, County and State departments to ensure the inclusion of bicycle and pedestrian infrastructure within capital improvement and public works projects. Integrate restriping, pothole filling, sign replacing, etc. into capital improvement / maintenance plans.



PART 5: RECOMMENDATIONS

The implementation plan outlines near and long term recommendations for guiding bicycle/pedestrian investments in Coral Gables. The Master Plan is broken out into the following phases:

SALZEDO/ UNIVERSITY /RIVIERA ROUTE

RIVIERA /ALHAMBRA/SEVILLA /GALIANO ROUTE

PUBLIC WORKS PROJECTS - Ongoing public works projects in design or review within the next three years including relevant Neighborhood Renaissance projects.

ONGOING - The following projects phases should be implemented as funding arises, to include Sidewalks and intersections.

A close relationship will have to be maintained with the Florida Department of Transportation and Miami-Dade County in the pursuit of the plan's implementation, as competing jurisdictional interests may prove detrimental to the realization of some projects.

Bikeways should be included, where appropriate, in all roadway projects. Striping bicycle lanes where there is already an existing roadway width to do so is the basis for implementing Phase 1. This master plan takes the approach that the most inexpensive and easiest to implement routes should be included within Phase 1.

RENAISSANCE REPAVING PROJECTS

As mentioned, the Renaissance Repaving Project and other Renaissance reconstruction projects give the city a huge financial advantage toward implementing this plan at a very low cost. Of the approximately 55 lane miles of City streets that are to be resurfaced, this project takes advantage of 5.11 miles (9%).

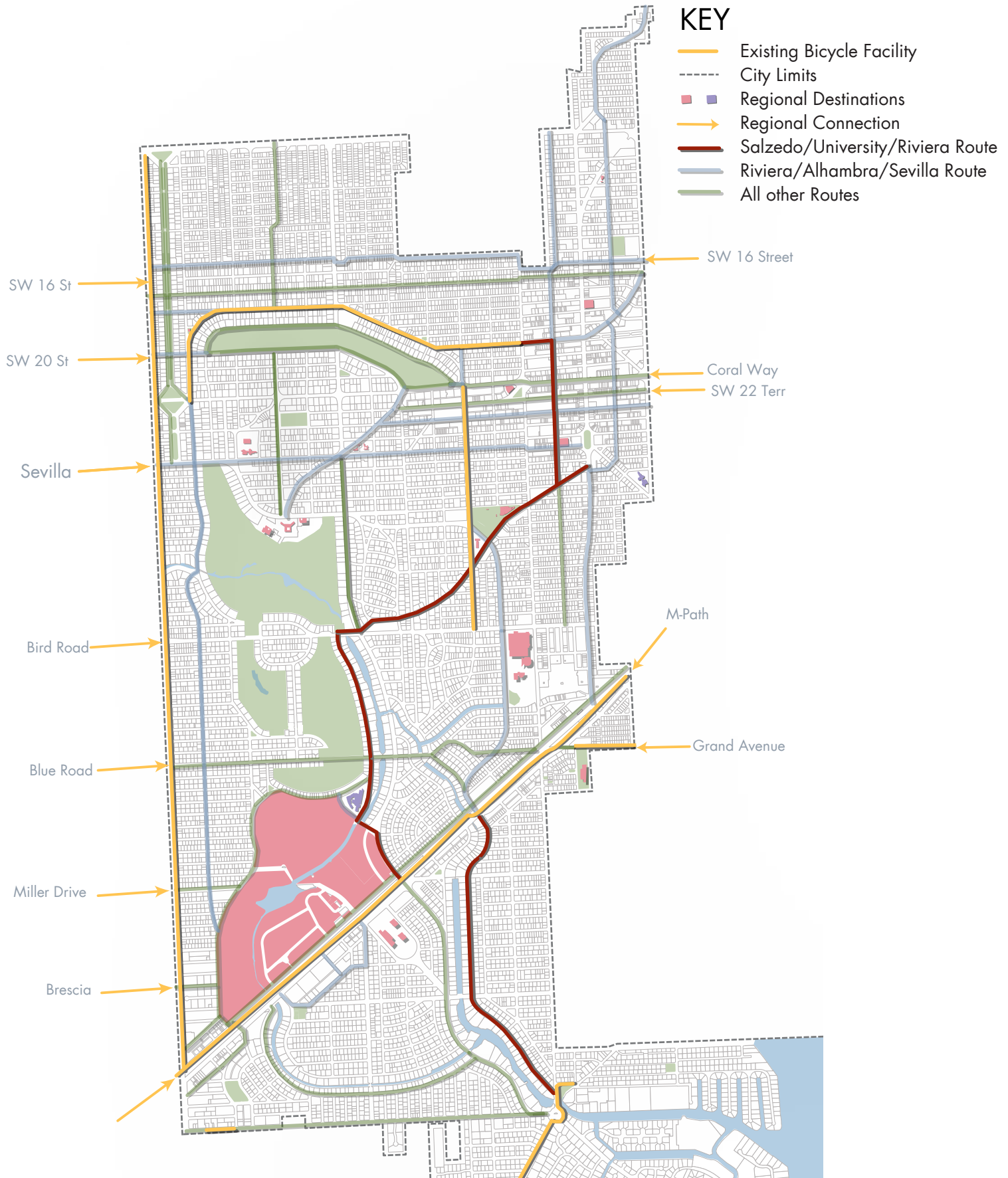
This study seeks to dovetail with these projects as much as possible to further reduce cost and get the maximum mobility benefit.

The project phasing list that follows is based on the results of this report, and take into account current estimates for construction from FDOT.

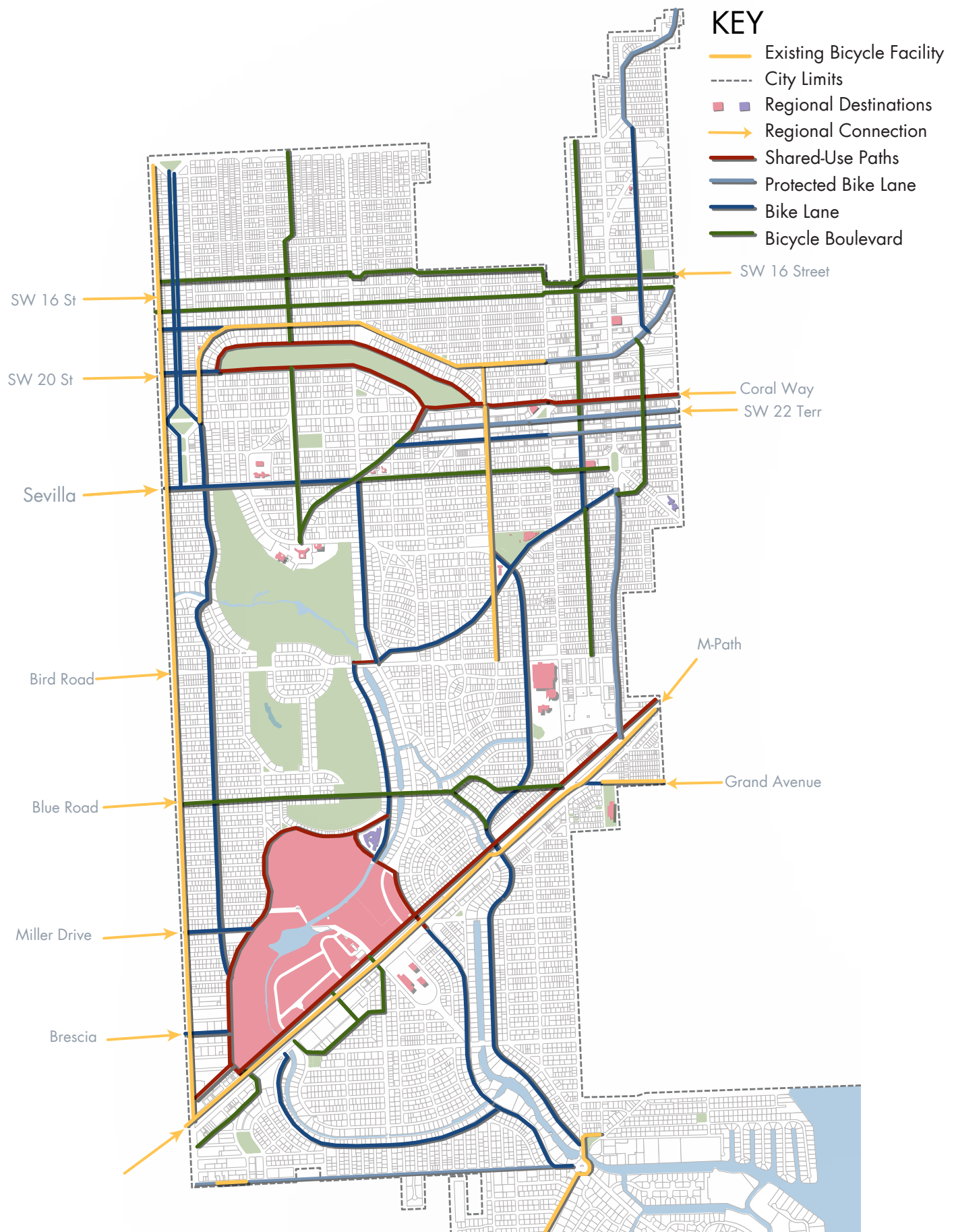
ASSUMPTIONS

Within the phases described above, the project team identified implementation project types depending on the level of investment required to implement the project.

- A. NO PAVEMENT WIDENING
(RENAISSANCE REPAVING PROJECT)
Bike Lane, Protected Bike Lane where no new pavement is required = approx. \$7,500.00/mile
- B. NO PAVEMENT WIDENING
Bike Lane, Protected Bike Lane where no new pavement is required = approx. \$15,000.00/mile
- C. MINOR WIDENING NECESSARY (<3')
Bike lane where some additional pavement required = \$90,000/mile
- D. SHARED PATH (12') = \$450,000/mile
- E. SIDEWALK(5') = \$175,000/mile (one side)
- F. SIGNED BICYCLE BOULEVARD ROUTE (BIKE ROUTE)
Sharrow/signage = \$5,000/mile



BICYCLE/PEDESTRIAN MASTER PLAN



IMPLEMENTATION LIST

SALZEDO/ UNIVERSITY /RIVIERA ROUTE	FACILITY TYPE	MILES	COST
ALHAMBRA (b/n LeJeune & Salzedo)*	A. Protected Bike Lane	.13 miles	\$1,500
SALZEDO (b/n Valencia & Alhambra)	F. Bike Boulevard	.3 miles	\$1,500
SALZEDO (b/n University & Valencia)*	A. Bike Lane	.3 miles	\$3,000
UNIVERSITY (b/n Ponce & Bird)*	C. Bike Lane	1.2 miles	\$108,000
UNIVERSITY (b/n Bird & Blue)	C. Bike Lane	.52 miles	\$46,800
UNIVERSITY (b/n Blue & Pisano)	C. Bike Lane	.28 miles	\$25,200
GRANADA (b/n Pisano & US1)	D. Shared Use Path	.3 miles	\$52,500
RIVIERA (b/n US1 & LeJeune)	C. Bike Lane	1.369 miles	\$123,210
TOTAL SALZEDO/ UNIVERSITY /RIVIERA ROUTE INVESTMENT		4.4 Miles	\$361,710
RIVIERA /ALHAMBRA/SEVILLA /GALIANO ROUTE			
SEGOVIA (b/n BILTMORE WAY & ALHAMBRA)	C. Bike Lane	.13 miles	\$11,700
RIVIERA (b/n University & US1)	C. Bike Lane	1.2 miles	\$108,000
RIVIERA (b/n Segovia & University)	F. Bike Boulevard	.10 miles	\$500
MILAN /MENDOZA (b/n Red Road & Galiano)	F. Bike Boulevard	2.03 miles	\$10,000
PONCE (b/n Bird & M-Path)	B. Protected Bike Lane	.64 miles	\$6,400
ALHAMBRA CIRCLE (b/n 24 St & San Amaro)	C. Bike Lane	2.23 miles	\$200,700
Mariposa Ave (b/n	F. Bike Boulevard	.46 miles	\$2,300
GALIANO (b/n Ponce & Alhambra)	F. Bike Route	.72 miles	\$3,600
GALIANO (b/n Alhambra & 8 St)	B. Bike Lane	.86 miles	\$12,900
SEVILLA (b/n 57 Ave & San Domingo)	B. Bike Lane	.32 miles	\$3,200
SEVILLA (b/n San Domingo & Ponce)	C. Bike Lane	.43 miles	\$4,300
DeSoto (b/n Sevilla & Coral Way)	C. Bike Lane	.37 miles	\$3,700
SALZEDO (b/n Alhambra & 8 St)	F. Bike Route	.77 miles	\$4,000
TOTAL RIVIERA /ALHAMBRA/SEVILLA /GALIANO ROUTE INVESTMENT		10.26 Miles	\$371,300
ONGOING PUBLIC WORKS PROJECTS			
MIRACLE MILE	D. Shared-use path	.75 miles	TBD
ALHAMBRA (b/n Salzedo & Douglas)*	A. Protected Bike Lane	.59 miles	\$8,900
BILTMORE WAY (b/n ANDERSON ROAD & LEJEUNE)	D. Shared-use Path	.50 miles	TBD
ANDALUSIA (b/n LEJEUNE & DOUGLAS)*	B. Protected Bike Lane	.50 miles	\$5,000
GALIANO (b/n Ponce & Alhambra)*	F. Bike Boulevard	.72 miles	\$3,600
COUNTRY CLUB PRADO (b/n Coral Way & 8 St)*	A. Bike Lane	1.03 miles	\$10,000
PONCE (b/n University & Bird)*	A. Protected Bike Lane	.64 miles	\$6,400
TOTAL ongoing public works projects		4.73 Miles	TBD

* PROJECTS MARKED WITH AN ASTERISK ARE NEIGHBORHOOD RENAISSANCE PROJECTS

IMPLEMENTATION LIST

ONGOING PROJECTS, PHASING TBD			
SUNSET DRIVE (B/N RED ROAD & COCOPLUM CIR)	C. Bike Lane	1.5 miles	\$135,000
GRANADA (b/n Sevilla & Bird)	C. Bike Lane	.75 miles	\$67,500
GRANADA (South of US1)	F. Bike Boulevard	1.1 miles	\$5,500
GREENWAY DRIVE (AROUND CG GOLF COURSE)	D. Shared-use path	2.31 miles	\$1,039,500
BLUE ROAD (B/N RED ROAD & LEJEUENE)	F. Bike Boulevard	1.52 miles	\$7,600
ALHAMBRA (b/n US1 & Sunset Drive)	F. Bike Boulevard	.59 miles	\$8,900
VALENCIA (B/N DeSOTO & LEJEUENE)	F. Bike Boulevard	.61 miles	\$3,050
VALENCIA (B/N LEJEUENE & DOUGLAS)	A. Protected Bike Lane	.51 miles	\$5,100
SAN AMARO (B/N MILLER & PONCE)	B. Protected Bike Lane	1 mile	\$450,000
CAMPO SANO (B/N SAN AMARO & UNIVERSITY)	D. Shared-Use Path	0.47 miles	\$211,500
PISANO (b/n Campo Sano & Granada)	D. Shared Use Path	0.28 miles	\$126,000
GRANADA (b/n Pisano & US1)	D. Shared Use Path	1.15 miles	\$517,500
MILLER (B/N Red Road & San Amaro)	D. Shared Use Path	0.25 miles	\$112,500
LEVANTE (B/N Red Road & San Amaro)	D. Shared Use Path	0.18 miles	\$81,000
BRESCIA (B/N Red Road & San Amaro)	D. Shared Use Path	0.16 miles	\$72,000
PONCE DE LEON (B/N Red Road & Douglas)	Complete Street	2.64 miles	TBD
TOTAL ONGOING INVESTMENT		13.87 Miles	\$2,325,150
SIDEWALK & INTERSECTION REPAIR PROJECTS			
Bird Road (b/n Red Road & Riviera)	Sidewalk (south Side)	1.53 miles	TBD
UNIVERSITY DRIVE (B/N SALZEDO & PONCE)	Sidewalk (north side)	.15 miles	TBD
UNIVERSITY DRIVE (B/N TOELDO & BIRD RD)	Sidewalk (north side)	TBD	TBD
RIVIERA DRIVE (B/N BIRD & BLUE ROAD)	Sidewalk (both sides)	TBD	TBD
ALHAMBRA CIRCLE	Sidewalk (north side)	TBD	TBD
GRAND AVENUE	Intersection redesign	0.113 miles	TBD
Sidewalk & Intersection		6.76 Miles	TBD
TOTAL BICYCLE FACILITY INVESTMENT		34 Miles	TBD
TOTAL PEDESTRIAN INVESTMENT		6.76 Miles	TBD