



# CITY OF MIAMI BEACH BICYCLE MASTER PLAN

DRAFT

JANUARY 2015

STREET PLANS

# ACKNOWLEDGEMENTS

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## SETTING A VISION

More people are riding bikes and walking around Miami Beach than ever before. From the advent of Decobike, to having one of the most robust bicycle scenes in South Florida active transportation plays a key role in the life of Beach residents and visitors. As the data in the following pages shows, a third of people on Miami Beach at any one time are riding, walking or taking transit - a statistic that requires a robust policy change.

Every great plan has a strong vision behind it, along with the consensus of staff, elected officials, and residents. Key to implementing this plan will be 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.

This document, and the process that created it, mark a shift in the priorities of city leaders and staff toward a balanced transportation network. One that elevates human based modes - bicycling, walking and taking transit - as viable forms of transportation for a majority of city residents.

To that end this report starts with a statement of vision and guiding principals (Chapter 1), followed by a discussion of our planning process (Chapter 2), and a street level analysis that shows how key intersections and roadways can be redesigned to prioritize bicyclists and pedestrians (Chapter 3), all of which will be reinforced by street design standards for all modes (Chapter 4), Policies (Chapter 5), and Implementation Strategies (Chapter 6) which will be drafted in the months that follow.

# SETTING GOALS

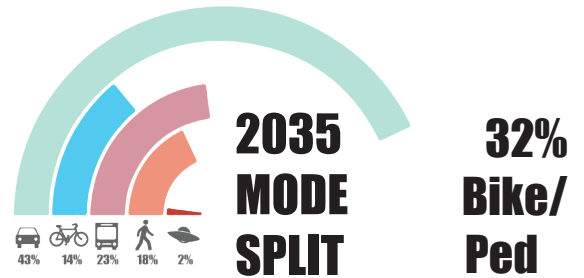
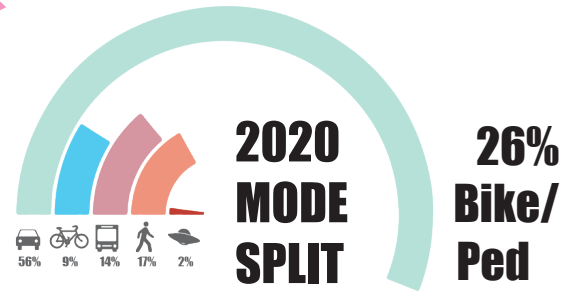
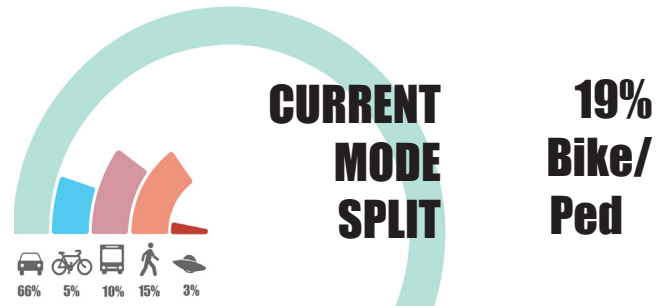
The plan in these pages seeks as its main goal the will lead to a greater number of people biking and walking around Miami Beach.

Through research shared on the adjacent page , we have estimated Miami Beach’s travel mode split. These numbers show how residents and tourists today travel around Miami Beach right now. Approximately **45%** of city residents and tourists currently walk, bike or use transit as their primary means of transportation. This is a substantial percentage of the population whose transportation needs are addressed by the policies and designs in this report.

The projects and implementation strategy shared within reflect the desire of the Mayor, City Commission, and City Manager and Staff to increase the proportion of city residents who walk and bike as their main form of transportation from 19% today **up to 26% in 2020, and 32% in 2035.**

To achieve these goals, we have made basic assumptions about the relationship of mode share to the bicycle and pedestrian network density, the potential development of a rail connection between mainland Miami and Miami Beach, and the continued increase countywide of non-motorized transportation.

These goals place Miami Beach at the forefront of 21 Century transportation planning in Miami-Dade County. These goals, and the projects contained herein, will propel Miami Beach into a national leadership position with regard to transportation.



# SETTING GOALS

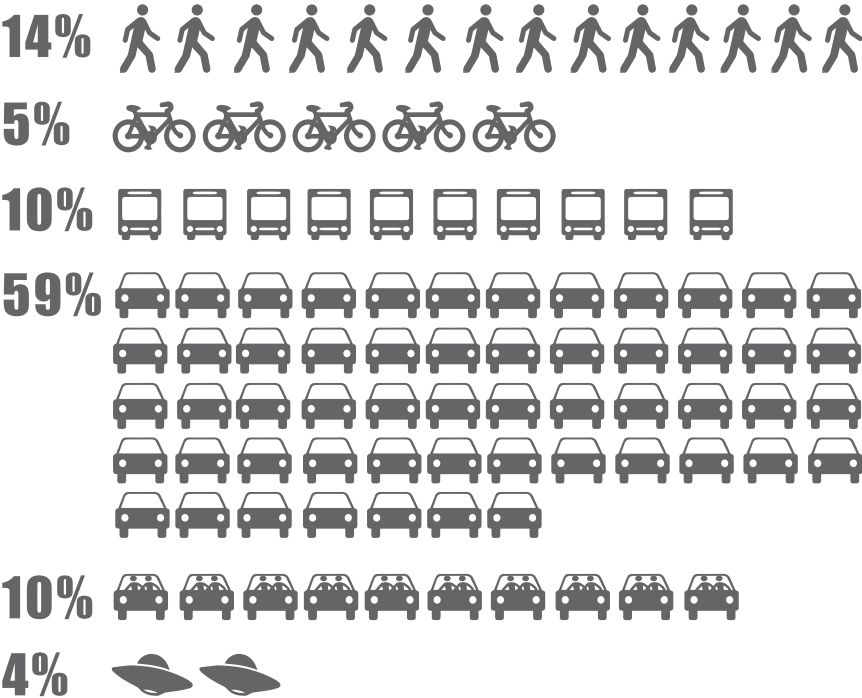
## CALCULATING BASELINE

We researched Miami-Dade Transit routes within the city, City sponsored circulators, the 2014 Miami Beach Community Satisfaction Survey, the 2008-2013 American Community Survey, 2010 Census data, and other related demographic studies to establish a baseline view of how people move around Miami Beach today.

Among other details, the data shown to the right, indicates:

- An estimated 122,000 people are on Miami Beach on any given day.
- **29% of residents do not use cars as their daily form of transportation.**
- **Over half of the population of South Beach is on foot at any given time.**
- When we factored in tourists, **45% of the daily population of Miami beach does not have a car.** A good reason to invest in better infrastructure.
- **36% of the population on any given day is taking transit.**

These facts should come as no surprise to Miami Beach residents or visitors. Elected officials, staff, and regional stakeholders view this data as a clear mandate to prioritize pedestrians and bicyclists in the design of city streets.



Total Population:	87,779*
Total Area:	8.7 Sq Mi.
Est. Annual Tourists: †	12.6 Million
Est Daily Tourists : †	34,500
Total Daily Population:	122,279

Number of Tourists who rented cars:	30% (X,XXX)
Estimated Number of no-car tourists:	68% (x,xxx)

Modes of Transportation to Work: †	
Total working population	48,761
Car/Truck/Van (Drove alone)**	59% (28,969)
Walk	14% (6,724)
Public Transit	10% (4,837)
Bicycle	5% (2,452)
Other	4% (1,941)
Worked at Home	8% (3,838)

TOTAL Working and Tourist Pop:	83,261
TOTAL Non-Car Population (local and visitors):	37,473 (45%)

\* 2010 U.S. Census  
 † Estimated number of visitors spending at least 1 night - Greater Miami Convention & Visitors Bureau "2010 Greater Miami and Beaches Visitor Industry Overview"  
 † 2009-2013 American Community Survey, "Means of Transportation to Work by Age"  
 \*\* According to the 2009 - 2013 American Community Survey, 14% (4,063) of those traveling by Car, Truck or Van carpoled.

# PUBLIC INPUT

## WHAT WE HEARD

Improvements most frequently mentioned in residents' comments:

- Provide more bike parking
- Finish the beachwalk
- Lower speed limits
- Add more protected bicycle facilities
- Widen sidewalks
- Create connected routes

We also asked residents to show us the most dangerous (and scary) locations for folks to ride around Miami Beach. Here are some of the top contenders:

- Collins @ 63 Street
- Collins @ 41 Street
- Alton Road @ Julia Tuttle Causeway
- Alton Road @ North Michigan
- Dade Boulevard @ North Michigan
- West Avenue @
- Washington @ 9 Street
- 5 Street @ West Avenue
- MacArthur Causeway





## THE PLANNING PROCESS

The project team looked at the existing transportation network, including bikeways and transit ridership, and street volume to establish a baseline measurement of how people move around Miami Beach. (Pages X-X). We also talked to residents and neighborhood associations throughout the project to get the everyday view, while also riding around the city in a field test of streets in our handlebar survey (pages X-X).

The Planning Process revealed general themes that require attention at a city-wide level. Miami Beach has some of the best tree lined streets in Miami-Dade County and is one of the most compact, urban cities in the Country. Streets in Miami Beach are well traveled by bicyclists and pedestrians alike, but challenges abound, from missing street trees on many streets, to the lack of protected bicycle facilities.

The character and speeds on many residential streets are appropriate enough to prioritize bicycle traffic, while more intense interventions are saved for the main thoroughfares around the city. Throughout Miami Beach there are locations where the volume of bicyclists and pedestrians is so great that the street design in these areas should prioritize pedestrian and bicycle safety. In other locations the needs of moving commuters at rush hour times north and south must be carefully balanced against the needs of bicyclists, pedestrians, and neighborhood residents.

# PLANNING PROCESS

## PUBLIC INVOLVEMENT

Since the start of the Bike Miami Beach process there have been numerous meetings, workshops and opportunities for public input into the creation of the plan.

One major result of the project has been the creation of the Bike Miami Beach Website, a portal for all things bicycle on Miami Beach. We've used the website as a planning and input tool, but we also intend to leave it to city staff to continue the dialogue about bicycles on Miami Beach.

Three public meetings have been held so far (in 2012 and 2014) that have discussed the Miami Beach context and the latest street design techniques and methods. Residents crowded around maps of the city and were asked to identify challenging intersections, and notable destinations.

The project team has also met with numerous neighborhood associations, and conducted interviews with individuals who are civically engaged and active in the design of city streets. The overwhelming response has been positive in the direction of advancing street designs that provide low-stress, protected bicycle facilities, and more ample pedestrian accommodations.



Street Plans held a bicycle street design workshop in May 2014.



Street Plans conducted part of the Handlebar Survey along side residents during a Saturday morning ride.



## WEBSITE

The project website was launched in 2012 and is another way that the public can learn more about the project, view updates to the plan, and provide feedback into the creation of the plan. The website has functioned as the main source of information for the public on everything bicycling in Miami Beach. It has also functioned as an extension of the public process for those residents and visitors who have been unable to join us in person, with an online survey option, and an interactive map.

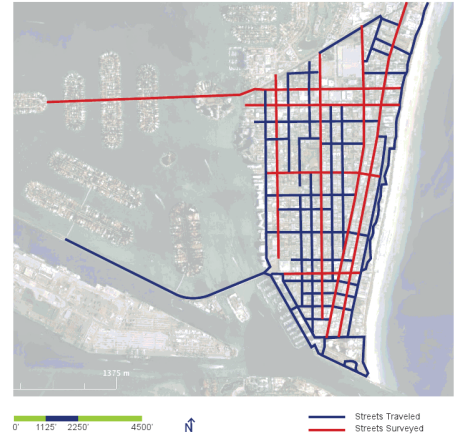
Central to the process of producing the master plan was a thorough analysis of the existing conditions as seen through the eyes of a cyclist and pedestrian. The aptly named 'handlebar survey' is a quantitative and qualitative analysis of streets around the city

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.

- Current bicycle demand
- The level of comfort and perceived safety felt while bicycling a wide variety of streets
- Existing street widths, types, and characteristics
- Bicycle network gaps
- Presence of signalized intersections
- Posted and actual vehicular speeds
- Land use characteristics
- Local and regional open space connections
- Public transportation options/bicycle integration
- Bicycle parking supply/demand
- Bicycle parking type, location, and quality
- Bicycle trip generators
- Existing bikeway infrastructure
- Interactions between all street users
- Safe/unsafe routes
- Wayfinding amenities

While a majority of the streets were covered in each neighborhood, only select "arterial" and "collector" streets went through the formal survey analysis process. Such thoroughfares typically contain land uses that generate the most bicycle trips, but are also known to be the most uncomfortable for bicycling. Based on the information collected, each of these streets are given an average "cycling experience" score. While not comprehensive, the Handlebar Survey certainly provides a representational snapshot of cycling in Miami Beach, and is Attachment A to this document.

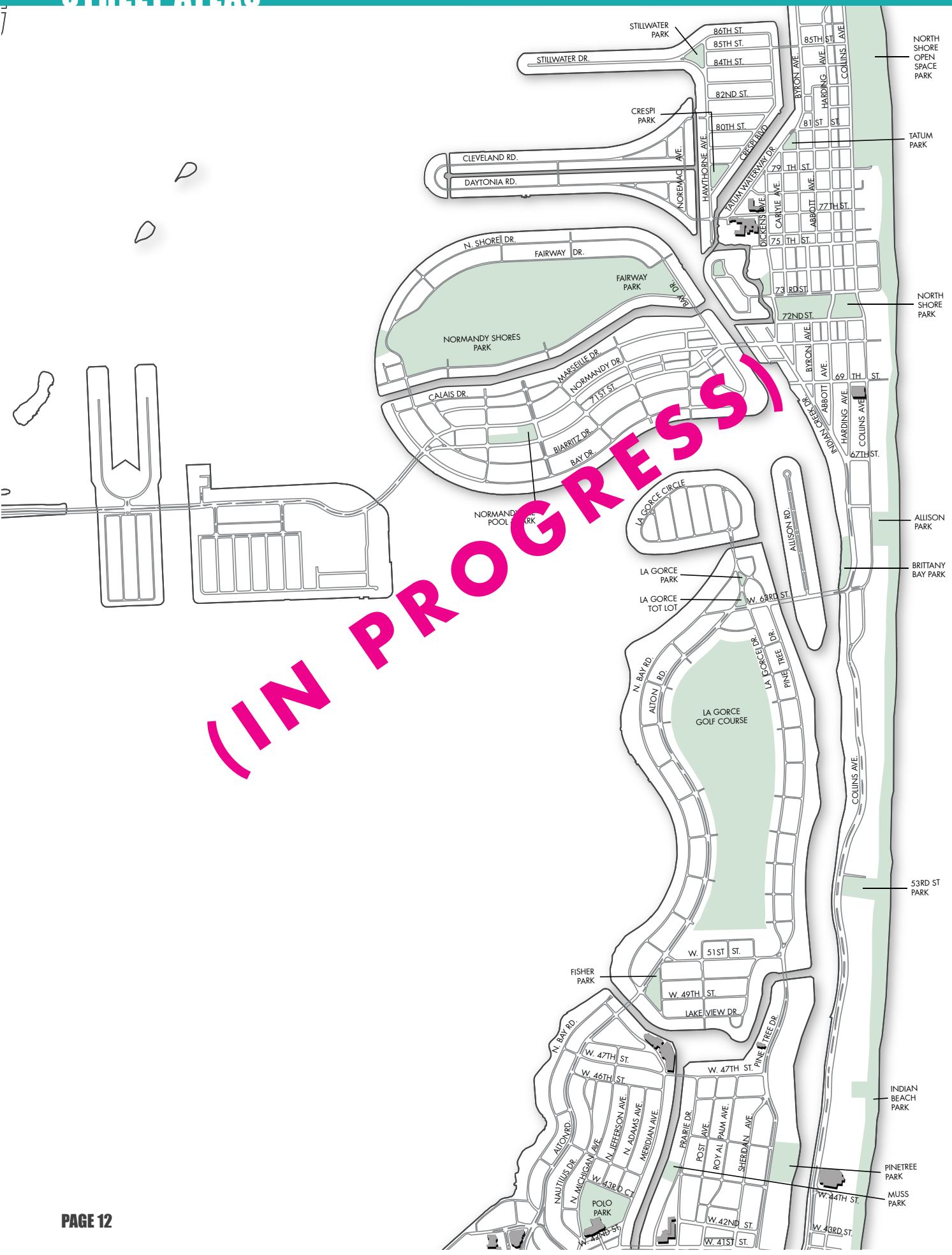
## The Handlebar Survey - Streets Surveyed -



### Existing Conditions Yes No N/A Collins Ave. Notes

Existing Conditions	Yes	No	N/A	Collins Ave. Notes
<b>LAND USE</b>				
Context: Urban	•			Dense mix of land uses.
Context: Suburban		•		
Commercial (retail, offices, etc.) uses		•		Mostly south of Espanola Way
Residential uses	•			Especially south of Fifth Street
Industrial uses		•		
Vertical Mixed-use	•			
Horizontal Mixed-use		•		
Bicycle trip generator(s) (parks, paths, bike shop, etc.)	•			Many destinations
<b>PUBLIC REALM</b>				
Are there continuous sidewalks?	•			Quite narrow
If yes, on both sides of the roadway?	•			
Are the sidewalks an adequate width and condition?		•		Especially south of Espanola Way
Are there street trees and/or attractive plantings?	•			Varies
Do adjacent buildings form a consistent street wall?	•			Varies
Are there many parking lots and/or driveway curb cuts?	•			Too many north of Espanola Way
Are there quality street furnishings and amenities?	•			Yes, where they fit on the sidewalk
Is there direct access to local/regional open space?	•			Lummus/Collins Park, Beach Walk
Are there plazas, pocket parks, playgrounds, etc.?	•			
<b>THE STREET</b>				
Is on-street parking available?	•			South of Espanola Way
Are there more than two lanes for through traffic?	•			North of Espanola Way
If yes, are the rightmost travel lanes wider?		•		
Are there consistent signalized intersections?	•			
Are there consistent turning lanes?	•			North of Espanola Way
Is the speed limit posted consistently?	•			
Is there vehicular congestion during peak travel hours?	•			Off peak too, south of Espanola
Are there curbs and gutters?	•			
Are there well-marked crosswalks at every intersection?	•			Mostly, a few still missing
Is the pavement in a good state of repair?	•			For the most part
Are there consistent conflict points between modes?	•			Bus stops are a challenge
Is bus or rail transit available?	•			Bus
If yes, does it adequately accommodate bicyclists?	•			Busse have bike racks, bus stops present challenge to cyclists
<b>BICYCLE INFRASTRUCTURE</b>				
Bike lanes (conventional, buffered, contra-flow, etc.)?	•			
Shared-use lane marking (sharrows)?	•			
Bicycle boulevards/neighborhood greenways?	•			
Cycle track/physically-separated lanes?	•			
Shared use paths?	•			
Paved shoulders?	•			
Quality, accessible bicycle racks (U-racks, etc.)?	•			Some, not nearly enough
Consistent bicycle route/wayfinding signs?	•			
Intersection treatments (Bike boxes, priority signals)?	•			

# STREET ATLAS



(IN PROGRESS!)

# TRANSIT INTENSITY DIAGRAM

## TOP METROBUS STATIONS

LOCATION	DAILY RIDERS
Lincoln Rd. + Washington Ave.	3,113
Harding Ave. + 72nd St.	1,696
Indian Creek Dr. + 41st St.	1,533
Abbott Ave. + 69th St.	1,058
Collins Ave. and 69th St.	996
Washington Ave. and 5th St.	972

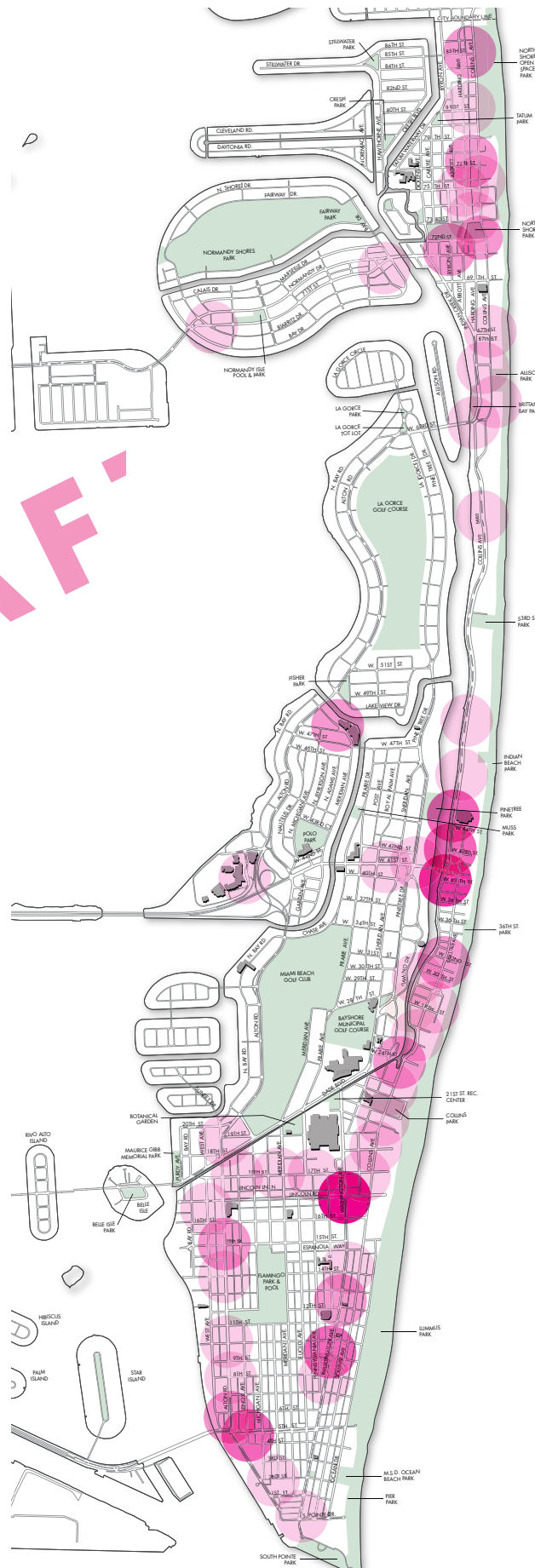
Understanding general transportation demographics in the city is important as it provides a baseline measurement to help city leaders improve transportation options. As it relates to bicycle and pedestrian planning, mapping transit usage patterns allows the project team to identify locations where we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

Paying special attention to areas of high transit use is a priority of this plan. Miami-Dade Transit bus stop ridership information for locations within the City of Miami Beach was synthesized into this transit intensity graph.

Average Weekday Transit Ridership	44,212 total rides
Metrobus <sup>‡</sup>	24,212
Trolley	20,000

<sup>‡</sup> September 2014 Miami-Dade County Transit "Ridership Technical Report"

## LEGEND: RIDERSHIP INTENSITY



AF

# EXISTING BICYCLE CONTEXT

24.5%



Davis, CA

8.5%



Palo Alto, CA

7.8%



Somerville, MA

7.6%



Mountain View, CA

6.6%



Missoula, MT

5.3%

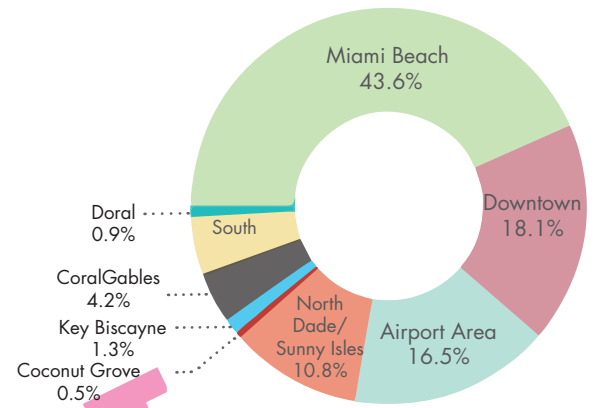


Miami Beach, FL

Miami Beach ranks # 6 city in the country for bicycle commuting among cities with a population between 65 -100,000, with 5.29% of its residents commuting to work.

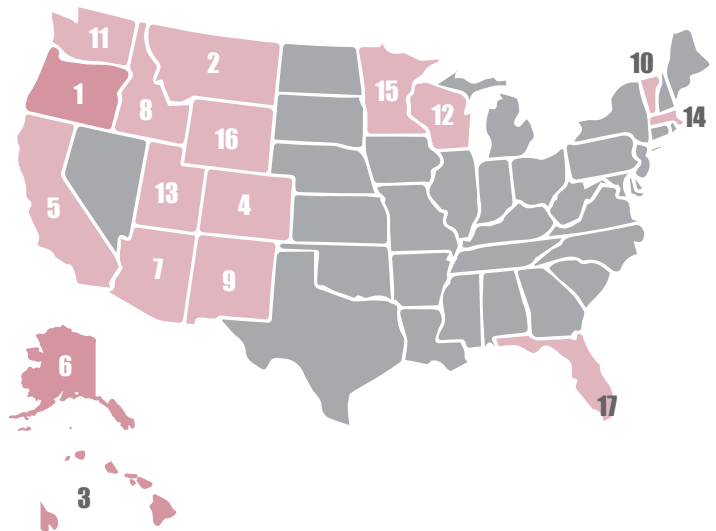
Florida ranks #17 in a 2013 analysis of bicycle commuting in American cities, but it also ranks worst in the country with regard to bicycle and pedestrian safety. A quick look at the crash data maps show that the majority of reported crashes happen on high speed and high capacity roads.

Infrastructure improvements to bicycle networks and pedestrian amenities like the ones proposed in this plan have the potential to reverse traffic congestion while improving quality of life for residents.



Distribution of Total Overnight  
\*\* Greater Miami Beaches Visitors Bureau

According to the Greater Miami and Beaches Visitors Bureau, over 40% of visitors who come to Miami stay in Miami Beach. Accommodating this population, which amounts to over 30,000 people per day, with well designed streets for walking and biking is a smart move from an economic perspective. GMBVB data shows that favorable impressions of Greater Miami have recently declined among domestic and international visitors alike, with roughly one fourth of visitors finding **transportation** to be a negative aspect of their trip.\*



The general prognosis for bicycling and walking in Miami Beach looks good. As you can see, there are currently over XX miles of bikeways in the city, and more to come. The large bicycle modeshare here in comparison to other parts of Miami-Dade County is encouraging, despite the ongoing challenges of outdated road design standards and general driver behavior. That being said, it is also telling that despite having higher rates of non-motorized transportation, the City did not have a proportionally higher incidence of bicycle/pedestrian crashes as compared to the rest of the county (See Page X-X for data). This is evidence of the theory of 'safety in numbers' at work.

## MIAMI BEACH QUICK FACTS

One of the City of Miami Beach's best assets is the existing network of bicycle lanes, pedestrian streets, and compact walkable urbanism. These assets make the city a great candidate for improvements to bicycle and pedestrian infrastructure and will form the basis of the bicycle master plan.

**TOTAL EXISTING BIKE NETWORK: 29.5 MILES**

**NUMBER OF BIKEWAY TYPES: 3**

**EXISTING BICYCLE LANES: 17 MILES**




**EXISTING BICYCLE ROUTE: 7.7 MILES**

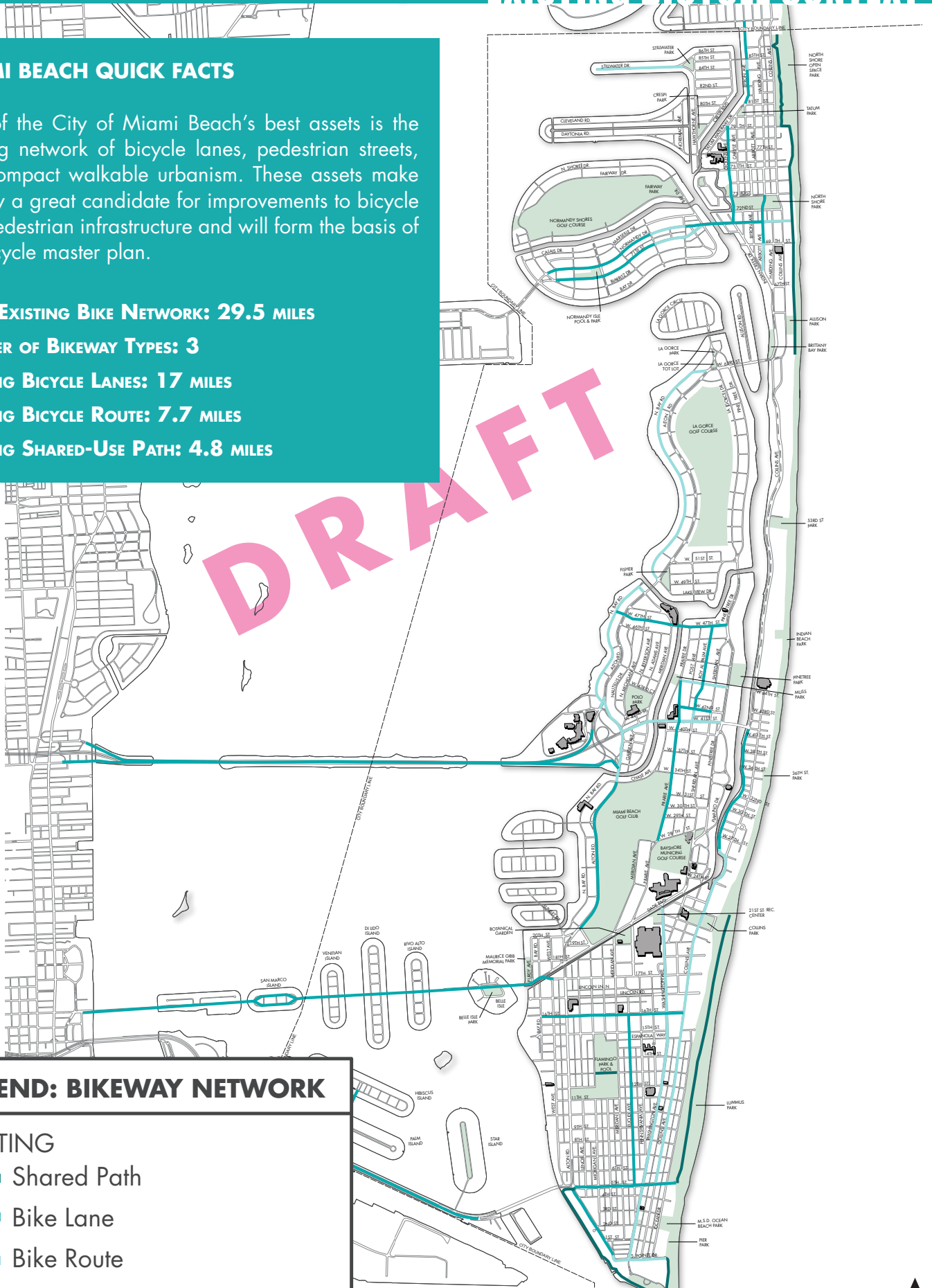
**EXISTING SHARED-USE PATH: 4.8 MILES**

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## LEGEND: BIKEWAY NETWORK

### EXISTING

-  Shared Path
-  Bike Lane
-  Bike Route



In order to become familiar with Miami-Dade County's bicycle planning history, and specifically as it relates to the City of Miami Beach, a review of more than 20 city, county, and state plans was conducted. This effort connects the current 2012 Atlantic Greenway Plan Update planning process with those from the past and is being undertaken to identify lessons learned and key strategies for successful implementation of the City's future master plan. This review begins with the oldest relevant plan: The 1997 Miami-Dade MPO Bicycle Master Plan. This document forms the basis for many subsequent plans and studies conducted over the past fifteen years.

The completion of this review will prevent redundancy, reduce chances of error in determining the placement of planned bikeway infrastructure, and help dovetail this current bicycle master plan process into those planning efforts already underway at the local, county and state level.

The column to the right contains the list of plans reviewed and the year they were completed. Following is a brief summary and analysis focusing on the most germane information pertaining to the ongoing development of the Miami Beach bicycle network.

## MIAMI-DADE TRANSPORTATION IMPROVEMENT PROGRAM (2012)

**Summary:** The Transportation Improvement Program (TIP) is the project funding policy document for Miami-Dade County transportation projects. Updated every five years, the TIP includes investment priority for all modes of travel, including bicycle facilities.

**Analysis:** Three bikeway projects in Miami Beach were included in the 2012 TIP. They include:

- Beach walk between 46th and 64th Streets
- Beach walk between southern edge of Lummus Park and South Pointe Drive
- 5th Street between Collins Avenue and West Avenue

## FDOT EVALUATION OF SHARE LANE MARKINGS IN MIAMI BEACH, FLORIDA (2012)

**Summary:** FDOT hired researchers from the University of North Carolina Highway Safety Research Center to evaluate how the applications of Shared Lane Markings (sharrows) performed in Miami Beach. More specifically, the researchers recorded hours of videotape to analyze bicyclists on Washington Avenue before and after the application of sharrows. The study results are not just locally significant, but important statewide, as Washington Avenue was the first thoroughfare in Florida to experiment with sharrows.

**Analysis:** In general, the research team found numerous positive results associated with the use of sharrows. Specifically, bicyclists rode approximately 10.5 inches further away from parked motor vehicles after sharrows were introduced, which means more riders were passing outside of the door zone. The spacing between motor vehicles in the travel lane and those parked also increased about 4.5 inches. This effectively gives cyclists more operating space. Finally, the percentage of bicyclists using the sidewalk decreased from about 55 to 45 percent. All of the findings associated with the evaluation were statistically significant.

## FDOT STATE ROUTE A1A BICYCLE MASTER PLAN (2011)

**Summary:** A 22-mile bicycle plan for the State Route A1A corridor. The route is contained entirely within the FDOT District 6 boundary, and includes the municipalities of Golden Beach, Sunny Isles Beach, unincorporated Miami-Dade County (through Haulover Park), Bal Harbour, Surfside, Miami



Beach and the City of Miami via the MacArthur Causeway. The Plan is essentially a segment-by-segment facility plan intended to connect the 6 municipalities through which SR A1A passes with bicycle facilities. The Plan's main components include:

- Design Standards
- Background Info
- Project Approach
- Project Segmentation
- Concept Plan for each segment
- Alternative Routes analysis
- Probable Cost Analysis
- Shared Lane Marking Implementation

**Analysis:** The SR A1A corridor plays an important role in the City of Miami Beach. It currently provides the main north-south connection for the entire eastern portion of the City. In South Beach, A1A's MacArthur Causeway also offers one of the three primary connections between Miami Beach and the City of Miami. Unfortunately, it is currently one of the more difficult thoroughfares on which to bike in the city. This Plan presents needed opportunities to enhance the corridor's bicycle-friendliness.

Given the wide range of right-of-way and land use characteristics, the Plan does well to connect the entire 22-mile corridor with bicycle facilities. In some areas, the implementation of a context-sensitive facility is clearly feasible and desirable, while in other areas it remains a challenge from an engineering, design, and user perspective. The Plan is very much conceived at the macro level and does not include details of the needed transitions between facility types/context that would need to be considered closely so that the corridor remains as continuously connected as possible.

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

**Summary:** The 25-year planning and policy document for Miami-Dade County transportation.

## **Plans, Studies & Documents Reviewed:**

- Miami-Dade Bicycle Pedestrian Safety Plan Update (2014)
- Complete Streets Manual (2014)
- 2040 Long Range Transportation Plan (2014)
- Downtown Miami Pedestrian Priority Zone (2014)
- Application of Innovative Bicycle Strategies (2013)
- Miami-Dade TIP (2012)
- FDOT Evaluation of Share Lane Markings in Miami Beach, Florida (2012)
- FDOT State Route A1A Bicycle Master Plan (2011)
- Miami Dade County – Long Range 2035 Transportation Plan (2009)
- Miami Beach - Atlantic Greenway Network Master Plan (2008)
- Miami-Dade MPO Mountain Biking / Unpaved Trails Inventory (2008)
- Miami-Dade MPO Bicyclist Count (2008)
- Miami-Dade MPO Bikeway Map (2008)
- Miami-Dade MPO Bicycle and Pedestrian Crash and Fatality Report (2008)
- Miami Beach – West Avenue Basis of Design Report (2007)
- Miami-Dade MPO Bicycle Facilities Plan (2007)
- Miami-Dade MPO Parks Master Plan (2007)
- Miami Beach – 16th Street Phase I Basis of Design Report (2007)
- Miami-Dade MPO Crash data (2006)
- Miami-Dade MPO Bicycle Safety Plan (2006)
- Miami-Dade MPO Long Range Transportation 2030 Plan (2004)
- Miami-Dade MPO Bikeway Priority Feasibility and Evaluation Study (2003)
- Miami Beach – Nautilus Neighborhood Basis of Design Report (2002)
- Miami-Dade MPO Bicycle Facilities 2025 Plan (2001)
- Miami-Dade MPO LRTP 2025 Bike Suitability Study (2001)
- Miami-Dade MPO Bicycle Facilities Plan (1997)

# LITERATURE REVIEW

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. On Miami Beach, priority projects include the completion of the beach walks and the development of a bicycle path along Dade Boulevard, which is currently under construction.

The intermodal portion of the plan provides few details, but underscores the importance of investing in bicycle and walking as forms of transportation. Indeed, Florida, and specifically the Miami region, is one of the least safe places to walk or bicycle and is in need of expanding safe, attractive, and connected facilities.

## MIAMI-DADE MPO: MOUNTAIN BIKING / UNPAVED TRAILS MAP (2008)

**Summary:** A single map depicting all unpaved trails in Miami-Dade County.

**Analysis:** The Miami-Dade MPO produced a useful map that displays all unpaved trails and routes designed specifically for, or well-suited to off-road biking enthusiasts. Mountain biking is largely a recreational activity that piques the interest of many riders in south Florida for which the map will prove useful. However, within the City of Miami Beach, there currently are no unpaved trails available for such use.

## 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. Eight counts were taken in Miami Beach. They include:

- Venetian Causeway near Rivo Alto Island
- Washington Avenue & 16 Street intersection
- Collins Avenue near 16 Street
- 5th Street near Meridian Avenue
- Ocean Drive & 10 Street intersection
- Alton Road near 16 Street
- West Avenue near 16 Street
- 71 Street Bridge near Bay Drive

The results reveal that a vast majority of bicyclists in the City of Miami Beach are adult males who don't wear helmets. This has clear implications for future safety countermeasure and education efforts, especially as it relates to creating conditions that attract a more diverse demographic to ride bicycles. Particularly high activity areas included the Venetian Causeway, Washington Avenue, and Ocean Drive.

The systematized data collection method used and count locations now offer a baseline for future bicycle counts in the City that can monitor behavior and activity trends. Use of such counts will provide insight into how improved facilities affect use patterns.

## MIAMI-DADE MPO BIKEWAY MAP (2008)

**Summary:** A map displaying all existing bicycle paths, trails, lanes, wide curb lanes and shoulders intended for bicycle use, as well as those under construction.

**Analysis:** The map displays a range of bikeway facilities and routes across Miami-Dade County. The map does not include several new bikeways constructed in Miami Beach since 2008, including the now approved use of sharrows, which can now be found on several Miami Beach streets. Overall, the map is relatively rough and displays a small and discontinuous regional bikeway system.

## MIAMI BEACH ATLANTIC GREENWAY MASTER PLAN (2008)

**Summary:** Adopted in December of 2008, the

Atlantic Greenway Master Plan (AGN) is the guiding planning documenting for the development of bicycle facilities in Miami Beach. This existing planning effort is an update of the AGN Plan.

The AGN Plan includes an inventory of all existing conditions in the City; provided an analysis of the conditions found; created a master plan of bikeway improvements; and outlines an implementation plan.

**Analysis:** In 2012, Atkins Global was asked to review the strengths and weaknesses of the existing AGN Plan. The strengths of the AGN Plan include the level of existing conditions collection and analysis work. Indeed, the Plan paints a clear picture of the opportunities and need to create a complete and connected citywide bikeway system. However, the AGN Plan fell noticeably short on a lot of best practice measures. The Atkins memo covers many of these, the a lack of accepted bikeway and intersection treatment facilities; lack of integration with other existing transit options; lack of meaningful public participation; and adding a project feasibility analysis are but a few elements that should be included in the AGN Plan Update.

## MIAMI-DADE MPO: PARKS MASTER PLAN (2007)

**Summary:** A 50-year master plan encompassing the full extent of the County's public realm: greenways, streets, natural areas, parks, cultural areas, and waterway trails.

**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. Clearly, Miami-Dade County and the City of Miami Beach must work with FDOT "to move beyond vehicular performance based street design and instead design streets that are defined by their role in the community." In bringing this point to light, the Plan underscores the importance for all residents to have immediate access to bicycling facilities: for recreation, health and utility.

## MIAMI-DADE MPO: BICYCLE CRASH DATA – 2005-2007

**Summary:** A map displaying reported crash data for 2005, 2006, and 2007.

**Analysis:** Miami Beach bicycle crashes are concentrated in South and North Beach, areas where bicycle activity is higher than in Mid Beach. The map reveals that a vast majority of crashes are occurring at intersections, especially along the FDOT and County roads where motor vehicle speeds are the highest and the street design the least hospitable to people walking or bicycling.

Crashes are likely underreported, as is the case in most official pedestrian or bicycle crash statistics. Bicycle crashes in particular, tend to be minor and caused by the bicyclist, and therefore are often not reported. However, when and where bicycles crashes occur with motor vehicles, there is an increased risk of serious injury or death. In general the general trend line shows a diminishing number of crashes in the city. Instituting a more robust online crash mapping and analysis program, such as [www.crashstat.org](http://www.crashstat.org), would help provide more reliable data and offer clear areas to direct limited dollars for safety improvements.

## MIAMI BEACH – 16TH STREET PHASE I BASIS OF DESIGN REPORT (2007)

**Summary:** This Basis of Design Report (BODR) provides conceptual design plans for permanent right-of-way and infrastructure improvements along 16th Street, from Bay Road to Collins Avenue. The improvements outlined in the BODR are the result of significant and ongoing input from the City's technical staff, Program Manager, Flamingo Park residents and the consultant team. GO Bond neighborhood projects utilizing the BODR process include: streetscape, bicycle and pedestrian improvements, traffic calming, stormwater upgrades, water and sewer upgrades and street resurfacing.

**Analysis:** The significant infrastructure improvements outlined in the 16th Street BODR have yet to be realized, save for the striping of 5' bicycle lanes. While the bicycle lanes are well used and serve as an important east-west connector running parallel to Lincoln Road, there remain operational challenges for bicyclists at intersections. Additionally, people driving

frequently double park, which forces bicyclists out into the vehicular lanes. The residents of Flamingo Park continue to advocate for further changes to make the recommendations in the BODR more pedestrian and bicycle-friendly. To date, walking along 16th Street can still be challenging, as sidewalks are narrow, private landscaping encroaches on the sidewalk, and street signs and street light posts further reduce the effective width of the sidewalk. These concerns are legitimate and should be removed so that bicycling and walking are as safe and inviting as possible.

## MIAMI-DADE MPO BICYCLE SAFETY PLAN (2006)

**Summary:** This plan is built from crash data analysis (GIS, 1996-2002), and illuminates possible safety countermeasures, which include education, enforcement, and engineering/design methods.

**Analysis:** In general, the bicycle crash trend line is decreasing throughout the whole county. As it relates to Miami Beach, the largest clusters of accidents were occurring in the neighborhoods of South Beach and North Beach (high 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 or walking.

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 Beach or within Miami-Dade County. Additionally, developing bicycle boulevards or "neighborhood greenways" are nationally recognized as an excellent 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 particular areas in the City of Miami Beach, 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.

## MIAMI MPO CRASH DATA (2000 – 2006)

**Summary:** A recording of all traffic (motor vehicle, pedestrian and bicycle) injuries and fatalities. General trend is that there are fewer crashes throughout the County.

**Analysis:** The trends bode well, but there are still about the same number of bicyclist fatalities overall, despite the decrease in accidents. In general, those neighborhoods with higher ridership levels experience higher crash rates, which is to be expected and not necessarily an indication of other neighborhoods being safer for bicycling.

## MIAMI-DADE MPO LONG RANGE TRANSPORTATION 2030 PLAN (2004)

**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 freight.

**Analysis:** The plan still places a primary emphasis on pure mobility and not accessibility. As it relates to bicycles, the plan calls for expanding bicycle lanes and greenways, many of which were identified in previous studies. The plan doesn't assign specific funding stream or priority to any of the proposed projects.

## MIAMI BEACH – NAUTILUS NEIGHBORHOOD BASIS OF DESIGN REPORT (2002)

**Summary:** A Basis of Design Report (BODR) provides conceptual design plans for permanent right-of-way and infrastructure improvements. The improvements outlined in the Nautilus BODR are the result of significant input from the City's technical staff, Program Manager, residents of Nautilus and the consultant team. GO Bond neighborhood projects utilizing the BODR process include: streetscape, traffic calming, bicycle and pedestrian improvements, stormwater upgrades, water and sewer upgrades and street resurfacing.

**Analysis:** Significant infrastructure improvements have been made in the Nautilus neighborhood since the BODR was approved in 2002. As it relates to bicycling, the report called for a designated 4' wide bicycle lane along 47th Street, from Pine Tree Drive

to Prairie Avenue, and on Prairie Avenue from 47th Street south to 41st Street (Arthur Godfrey Road). Additional bicycle lanes and shared use lane markings have also further improved bicycle mobility in the neighborhood. Neighborhood streets were also narrowed, intersection radii reduced to 15', which effectively reduces the speed of motor vehicles and makes bicycling and walking more comfortable.

### MIAMI-DADE MPO: BICYCLE FACILITIES PLAN (2001)

**Summary:** A comprehensive bicycle facility plan for Miami-Dade County. The plan uses quantitative analysis tools (Bicycle Level of Service) to determine the conditions and suitability of the existing arterial and collector thoroughfare network for bicycling. Of the 1,500 roadway miles analyzed, only 8.6 percent of roadway miles were at an acceptable level of service for bicycling (score of "C" or better). Moreover, over 90 percent of the roadway miles received an unacceptable LOS score of "D" or worse, with approximately 58 percent of all segments receiving an LOS score of "E" and 5.7 percent a LOS of "F" rating. Almost the entire network identified in Miami Beach received a "D" or an "F." As of 2001, The County had less than 12 miles of on-road bicycle lanes that met FDOT criteria, and only recently began implementing more bicycle facility/lane miles.

**Analysis:** The plan is a robust quantitative survey of existing conditions within the County's bicycle network, but says nothing about the actual qualitative experience. It also ignores the role of land use and urban form in determining the relative bike-friendliness of a thoroughfare. Developed more than 10-years ago, it's time for this plan to be updated with new information and best practices.

### MIAMI-DADE MPO: BICYCLE FACILITIES PLAN (1997)

**Summary:** In the early 1990s, the Intermodal Surface Transportation Efficiency Act (ISTEA) and Clean Air Act (CAA) gave incentives to MPOs for promoting the expansion of bicycle facilities. This resulted in a renewed interest in bicycling, which spurred the creation of many plans, such as the Miami-Dade 1997 Bicycle Facilities Plan.

**Analysis:** The 1997 plan was largely a physical needs-based document used to determine future routes, infrastructure needs, and the existing condi-

tions for bicycling within the County, including the City of Miami Beach. The latter was done using a quantitative and objective Roadway Condition Index (RCI). The index found that more than 60% of roadways were unsuitable for safe bicycling in the County. Interestingly, a similar LOS analysis in 2001 indicated that 90% of roadways were unsuitable for such use. The RCI and the subsequent LOS metrics, while intended to correctly identify unsafe conditions and promote bicycle-friendly streets, often do the opposite. For example, as the plan mentions, the RCI promoted wide curb lanes and turn lanes for "more automobile capacity." This directly conflicts with the same RCI notion that lower ADT equals a more bike-friendly street.

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

**Summary:** A graph displaying reported countywide injury and fatality numbers from 1990 - 2008.

**Analysis:** While this MPO document does not break out the crash trend lines in Miami Beach, the county as a whole is becoming a safer place to walk and bicycle. Bike crashes did increase slightly over 2007, but fatalities continued to decline, and are now at an all-time low.

### APPLICATION OF INNOVATIVE STRATEGIES TO IMPROVE BICYCLE SAFETY AND MOBILITY (2012)

**Summary:** Also known as "Application of Innovative Strategies to Improve Bicycle Safety and Mobility". The study was intended to develop innovative solutions to bicycle transportation access, safety, and capacity problems including recommendations of the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and recent experience with bicycle transportation experts from the Netherlands.

**Analysis:** The report includes a variety of bicycle solutions that correspond with national and international best practices. Where ever possible, this report corroborates many of the same techniques being used in the Miami Beach Street Design Guide.

In addition, the report analyzes dozens of specific intersections and corridors and makes specific recommendations. In Miami Beach it calls for:

# LITERATURE REVIEW

- A connection on the MacArthur Causeway between end of bike lane and bike lane on 5 Street/Alton South.
- A colored or advisory bike land on Pine Tree between Dade Boulevard and 51 Street, and a bicycle boulevard north of 51 Street. The report also includes the following volume data for Pine Tree and La Gorce:

Pine Tree Dr, S of 37th St - 16,200 vpd LOS D

Pine Tree Dr, S of 51st St - 11,000 vpd LOS C

Pine Tree Dr, S of 55th St - 5,100 vpd LOS C

La Gorce Dr, N of 57th St - 4,800 vpd LOS C

## MIAMI-DADE COMPLETE STREETS MANUAL (2014)

**Summary:** A manual documenting complete streets ideas and reviewing select case studies.

**Analysis:** This is the first complete streets manual produced for Miami-Dade County. While the idea is very positive, the execution of the report leaves too many questions unanswered. The document provides for a very limited view of complete streets, and relies on many of same conventional strategies that prioritize car travel over other modes. Examples include wide shoulders for bicyclists to “share the road”, and a 12’ travel lane standard. The document also lacks adequate graphics to explain the concepts.

## 2040 MIAMI-DADE LONGE RANGE TRANSPORTATION PLAN (2014)

**Summary:** The LRTP is a federally mandated policy document that provides a minimum time horizon of 20 years. The LRTP is a comprehensive transportation infrastructure plan that includes, at a minimum, highway and transit infrastructure improvements. The Miami-Dade LRTP includes highway, transit, freight, and non-motorized components.

**Analysis:** The plan currently lacks any mention of mode share targets or goals. Projects are listed, but no overall transportation goal is made. Mention is made of nonmotorized and public transportation, but no attempt is made to prioritize these modes in a verifiable way. The report discusses the performance monitoring program envisioned by the

last transportation reauthorization program, MAP-21. This involves the identification of metrics, performance targets for those metrics, and the measurement of the transportation system performance against the metrics. This model has not yet been implemented. Among the projects listed that relate to Miami Beach are:

- Dade Boulevard Path (priority II) - from Meridian to the Atlantic Trail
- Atlantic Trail (priority IV) - Boardwalk replacement between 23 Street and 46 Street)
- Pine Tree / La Gorce (priority IV)

## DOWNTOWN MIAMI PEDESTRIAN PRIORITY ZONE PLAN ORDINANCE AND STANDARDS (2014)

**Summary:** The City of Miami drafted a Pedestrian Zone Plan for Downtown Miami that implemented ten policies and standards to prioritize pedestrians above all other modes.

**Analysis:** The plan calls for both infrastructure based and policy based solutions to enhance pedestrian safety and comfort. No right on red policies, tight curb radii, and narrow travel lanes are among the elements included in the plan. Many of the same elements will be included in the policy and street design sections of the report.

## MIAMI-DADE BICYCLE PEDESTRIAN SAFETY PLAN UPDATE (2014)

**Summary:** In 2014 Miami-Dade County updated the 2006 Bicycle Safety Program Plan and developed a Pedestrian Safety Program Plan. The purpose of the Plan is to evaluate and recommend safety countermeasures to improve the conditions for walking and bicycling.

**Analysis:** The plan calls for both infrastructure based and policy based solutions to enhance pedestrian safety and comfort. No right on red policies, tight curb radii, and narrow travel lanes are among the elements included in the plan. Many of the same elements will be included in the policy and street design sections of the report

# LITERATURE REVIEW: ATLANTIC GREENWAY NETWORK PLAN

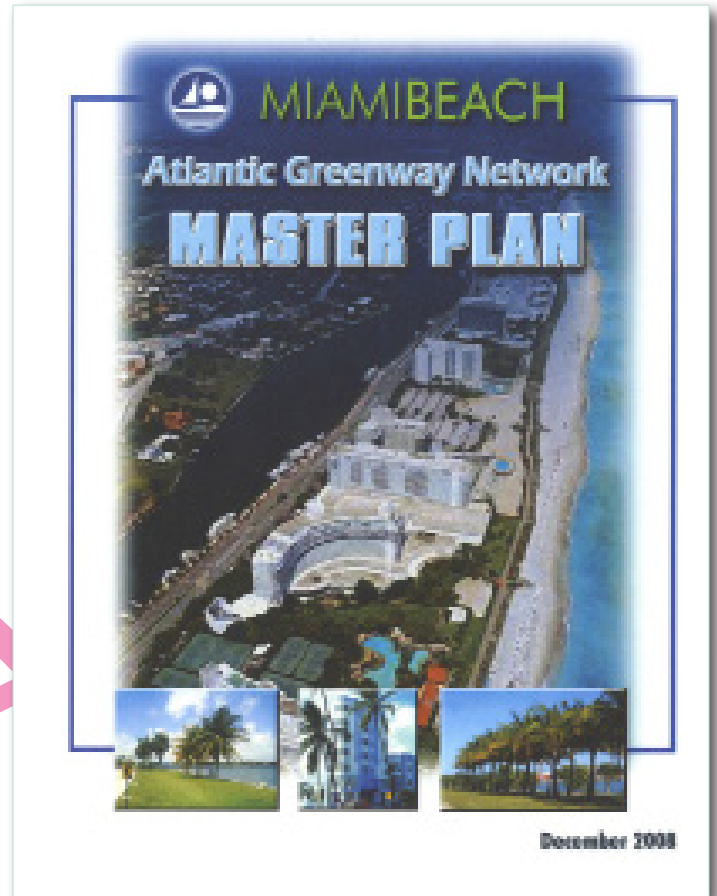
## MIAMI BEACH ATLANTIC GREENWAY MASTER PLAN (2008)

**Summary:** Adopted in December of 2008, the Atlantic Greenway Master Plan (AGN) is the guiding planning documenting for the development of bicycle facilities in Miami Beach.

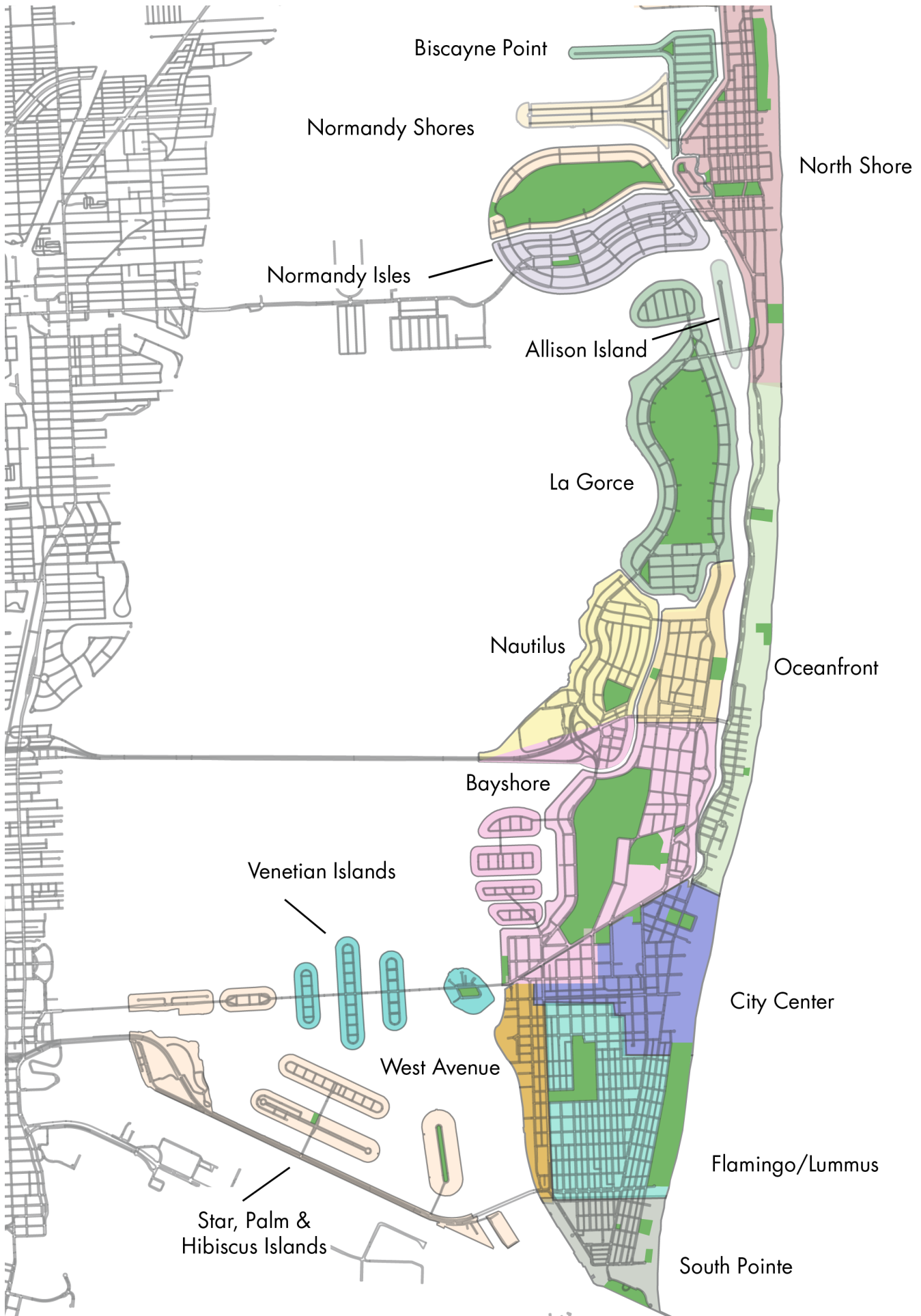
The AGN Plan includes an inventory of all existing conditions in the City; provided an analysis of the conditions found; created a master plan of bikeway improvements; and outlines an implementation plan.

**Analysis:** The strengths of the AGN Plan include the level of existing conditions collection and analysis work. Indeed, the Plan paints a clear picture of the opportunities and need to create a complete and connected citywide bikeway system. However, the AGN Plan fell noticeably short on a lot of best practice measures. In addition, it does not promote the creation of additional green areas within the City of Miami Beach. Among the major points from this document are:

- Overall the inventory seems acceptable for this type of study and general connectivity objectives are good. The report lacks conclusions based on the inventory for transit, impacts on roadway cross sections, connectivity, vehicular and bike parking, safety, utility impacts, specific cost and traffic counts.
  - The AGN does not provide substantial definition or description of the proposed 'greenway' physical requirements or minimum standards.
  - The AGN does not significantly address separate treatments for bikes and pedestrians.
  - The report does not explain the objectives for each trail in the AGN nor does it ask basic questions including:
    - Why is it being proposed?
    - Why this location?
    - Why is it a bike lane as opposed to path or a route?
- It is difficult to validate a plan with the Community without reasonable conclusions on why certain decisions were made.
- Issues such as bike parking, trailheads, bike lockers, minimum standards for adjacent development which will respond to future



- enhanced bike facilities are not addressed.
- AGN does not provide typical cross sections reflective of the majority of segments to determine feasibility and cost impacts.
- The Master Plan does not appear to propose any innovative approaches or facilities.
- The report highlights drainage Canals and Waterways, but does not include a map highlighting the current waterways and drainage canals or discuss whether they could be revamped to be part of the "greenway" network that the City envisions as part of the plan.
- While the report is meant to present the recommended projects to create and enhance greenways, only one project (West Avenue and 17th Street), recommends (in the long-term) the purchase of the corner lot and create a gateway/green space park. No other actual greenways are envisioned by the plan.
- There are no recommendations on using multimodal transportation in order to encourage pedestrian flow in addition to bike flow.





# ABOUT THE RECOMMENDATIONS

The Bicycle Network Plan in the pages that follow includes over 30 different intersections and roadway segments calibrated using the Street Design Standards. The plan provides for significantly improved bicycle and pedestrian safety and access, and addresses connectivity neighborhood by neighborhood. As such, this chapter is organized first by overall section of the beach (North, Mid, South), and then by specific neighborhoods within each.

Criteria are defined for major streets and connections, and proposals shown that are described with typical plans, sections, and intersection conditions. Specific locations for bicycle parking, crash data, and a street atlas that links the work in this volume to the Street Design Guide are also included for each area.

## NORTH BEACH

### NORTH SHORE

Byron Avenue  
72 Street  
73 Street  
Harding

### Normandy Isles Normandy Shores

## MIDDLE BEACH

### BAYSHORE

Alton Road @ 27 Street  
North Bay Road  
Royal Palm Avenue  
Meridian Avenue  
Dade Boulevard @ Meridian  
Dade Boulevard @ 19 Street  
19 Street  
20 Street  
Purdy

### LA GORCE

Alton Road @ 63 Street  
63 Street  
Pine Tree Drive  
La Gorce Drive  
51 street  
Pine Tree / La Gorce @51 Street  
Pine Tree / La Gorce @ 63 Street

### NAUTILUS

Alton Road  
Intersection @ 195/Alton

### OCEANFRONT

Collins  
Beachwalk

## SOUTH BEACH

### WEST AVENUE

INTERSECTION @ 16 Street

### FLAMINGO PARK/ LUMMUS

Euclid Avenue  
Euclid @ 16 Street  
Pennsylvania  
Washington  
16 Street  
11 Street  
10 Street  
Meridian  
5 Street

### City Center South Pointe

### NORTH BEACH

### NORTH SHORE

Byron Avenue  
72 Street  
73 Street  
Harding

### Normandy Isles Normandy Shores

# CRITERIA AND APPROACH

Achieving these mode split goals will mean designing and building bicycle facilities that people will use. Understanding the types of facilities that people feel comfortable and safe using will help implement a practical plan. Research suggests that most people fit into four broad categories when it comes to their relationship to bicycling (and subsequent preferences for bicycle facility type).

A general description of each type along with typical bicycle facilities appropriate for each are described below and in the pages that follow. Our approach seeks to appeal to the Type 3 riders on major roads with protected facilities, in addition to the traditional approaches that place on-street facilities for Type 1 and 2 riders.

## TYPE 1: STRONG AND FEARLESS

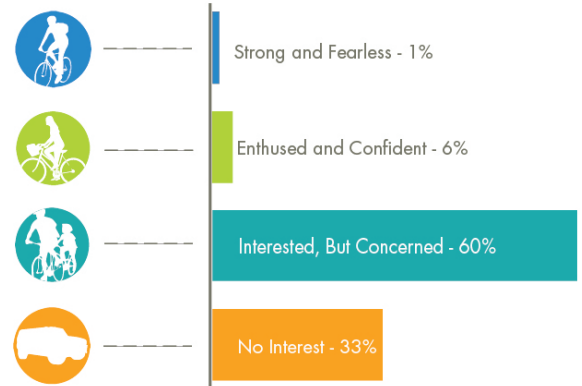
- Experienced riders who bike regularly;
- More likely to use bicycles to complete longer trips;
- Commuters, racers, messengers, recreational cyclist;
- Prefer route that provides direct access to destination;
- Comfortable sharing roadway with vehicular traffic;
- More aware of traffic rules as they 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)



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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.

## 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-street 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/>

**DRAFT**

# BICYCLE PLANNING TOOLKIT

## BICYCLE PLANING TOOLKIT

On the following pages is a brief synopsis of some of the types of bicycle facilities that are included in this section. Each type will be fully illustrated in the Street Design Section of the report (currently under production). Together with the criteria listed on page 28, these types form the basis of the plan.

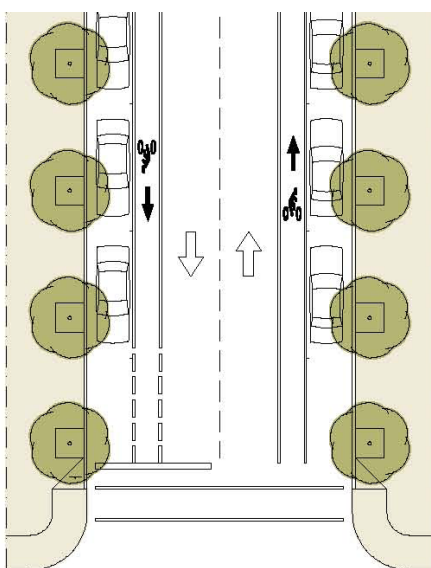
**BICYCLE BOULEVARD:** A Thoroughfare with shared Vehicular Lanes that give movement priority to bicyclists.

**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.

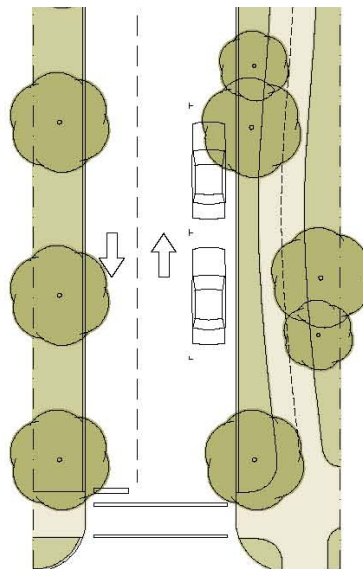
**BICYCLE LANE:** a lane reserved for bicycle travel within a Thoroughfare, marked by a painted line.

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

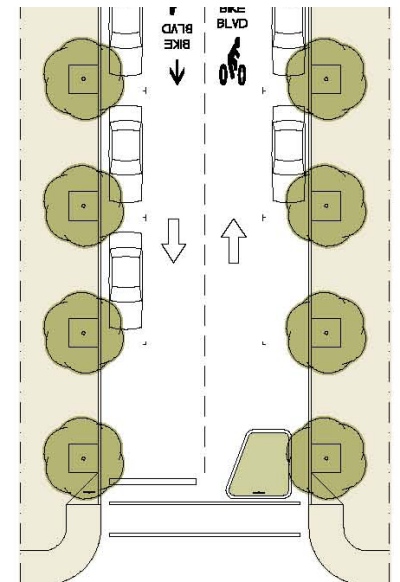
**Bikeway:** a continuously designated segment of right-of-way that provides exclusive, preferential, or equal priority for bicycle travel. It includes the Bikeway facility (lane, path, etc. and any curbs, markings and/or protective barriers.



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.

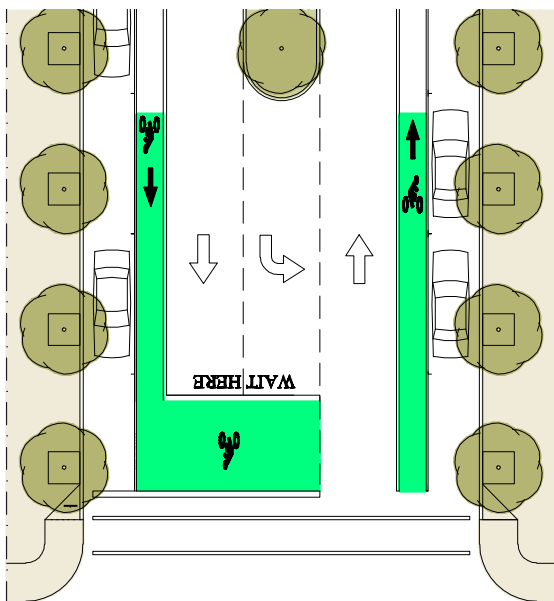
**PHYSICALLY-SEPARATED BICYCLE LANE:** a Bicycle Lane separated from the motor vehicle travel lanes by Curbs, railings, plantings, parked cars, and/or grade separation, etc. (Syn: cycle track, sidepath)

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

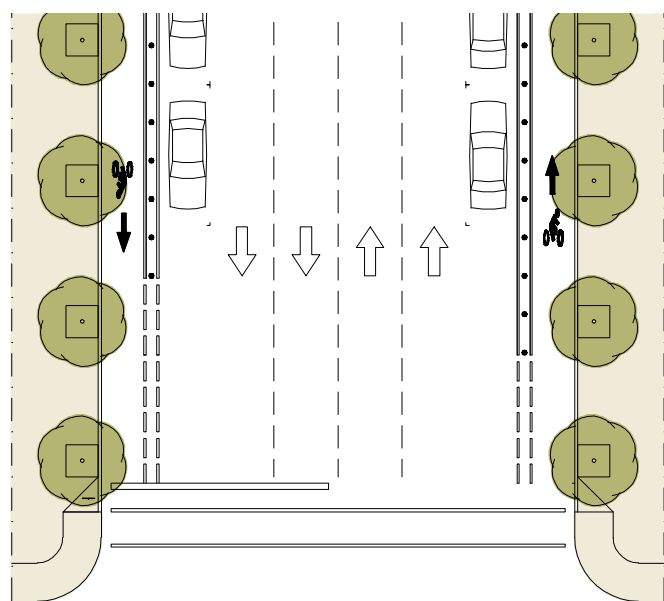
**SHARED USE LANE MARKING:** a pavement marking applied to a Thoroughfare too narrow to accommodate Bicycle Lanes and/or with vehicular target speeds slow enough to allow cyclists to move safely with motor vehicles. (Syn: Sharrow)

**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.

DRAFT



Bicycle Box



Parking Protected Bicycle Lane

# CITYWIDE BICYCLE NETWORK PLAN

## PRELIMINARY PHASING BY MODESHARE

The master plan is described in two scenarios that each build on previous efforts and try to improve bicycle access incrementally with the goal of increasing bicycle and pedestrian modeshare.

The first acknowledges the existing bicycle network and provides short term improvements to fill in the gaps (within the first five years), and the second shows a longer term view of improvements to the network as funding and conditions permit.

The goal in choosing street types for both has been to improve the quality and safety of the overall bicycle network, and to create a low-stress system that appeals to the vast majority of people. Criteria and evaluation metrics will be provided in a subsequent draft.

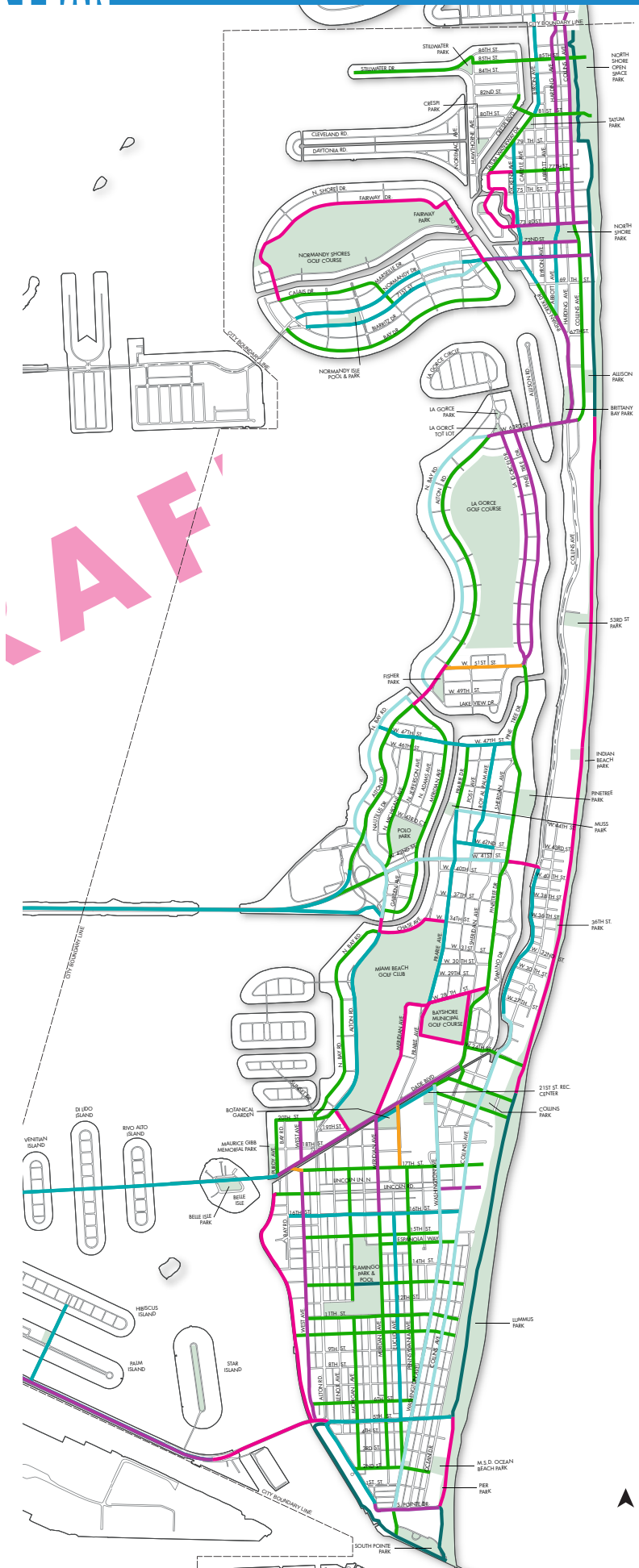
These maps cannot predict changes in political climate, costs, or other factors that may impact the order in which these projects are done. Decision makers should allow for a more aggressive implementation strategy than what is shown on these maps if conditions allow.

**23** PROTECTED BICYCLE LANE MILES

**4%** 5-YEAR BICYCLE MODESHIFT

**10** BICYCLE FACILITY TYPES

LEGEND: BIKEWAY NETWORK	
EXISTING	PROPOSED
Shared Path	Shared Path
Bike Lane	Protected Bike Lane
Bike Route	Bike Lane
	Neighborhood Greenway



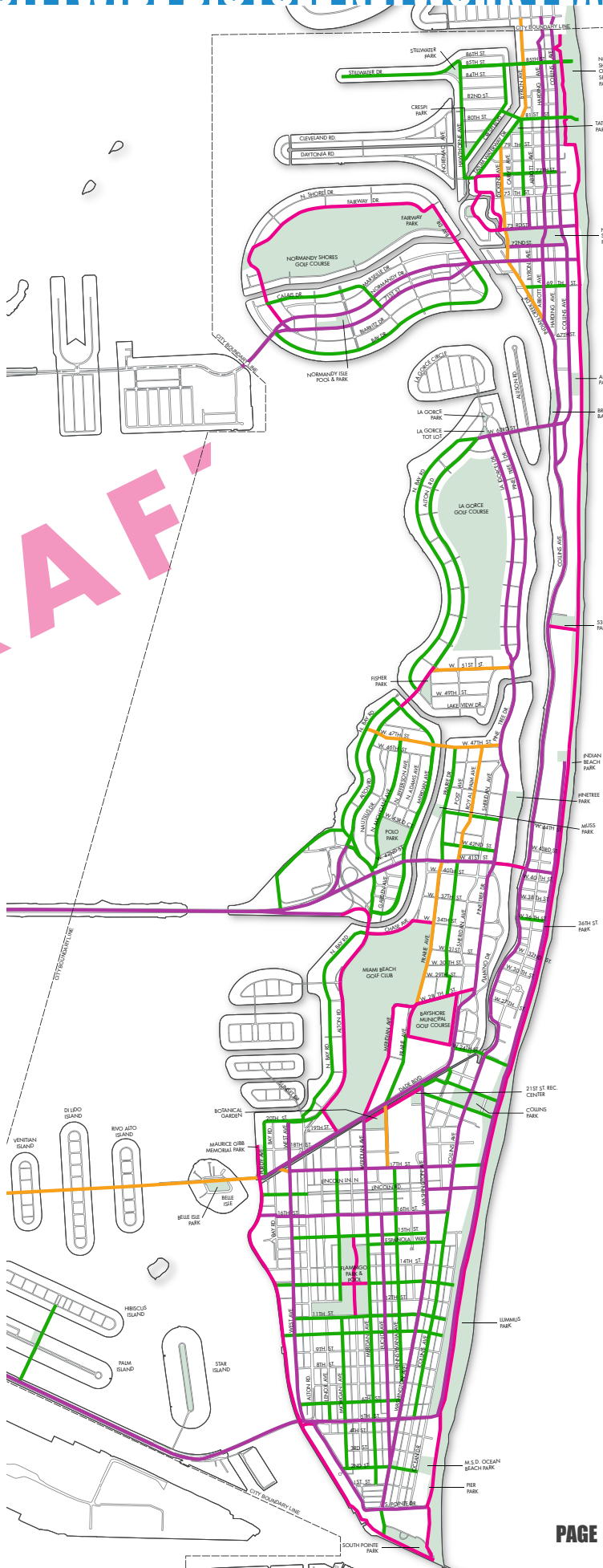
## FILLING IN THE GAPS

At a minimum, the projects included in the first phase are critical. This phase (shown to the left) is what we call “Filling in the gaps”. This strategy looks at the existing bicycle network as it exists today, and suggests improvements that can be done immediately to improve connectivity in the near term. No curb to curb reconstruction would be required. The anticipated mode shift achieved by this network is 4% over a five year horizon.

## 2035 LONG TERM MASTER PLAN

The 20 year plan envisions a network of protected bike lanes on major corridors, and a network of secondary greenways on residential streets. Existing bike lanes and sharrows on major corridors should be converted into protected bicycle facilities, and critical connections at 71 Street, 63 Street, 51 Street, and Alton at Chase Ave should be made. Major interventions in the plan occur on state or county roads, where the volume of traffic is above 25,000 ADT or the speed above 35.

Critical regional connections at the MacArthur Causeway, the Venetian Causeway, the Julia Tuttle and the JFK Causeway all require investments in separate bicycle and pedestrian infrastructure to accommodate inter-city regional travel between Miami Beach and mainland Miami. Notable in the long term plan is a synthesis with potential rail linkages on 5 Street and Washington. These investments in rail transit infrastructure along with the improvements shown here will lead to the 14% bicycle mode share by 2035 (A 9% increase over 20 years.)



AFI

**LEGEND: BIKEWAY NETWORK**

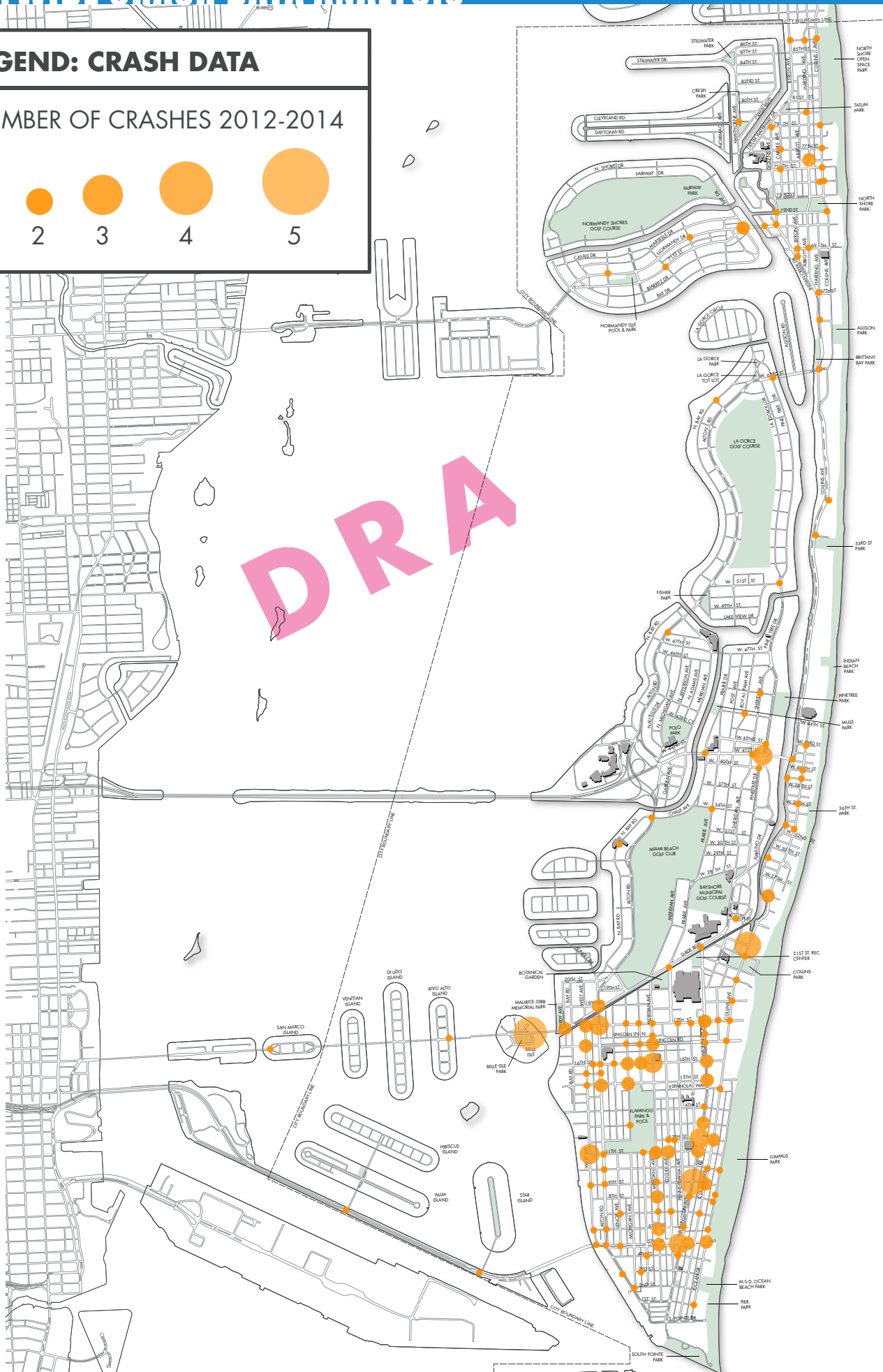
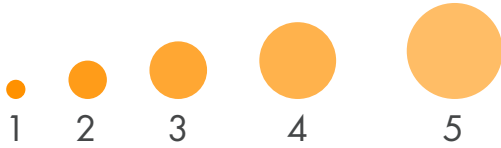
PROPOSED

- Shared Path
- Protected Bike Lane
- Bike Lane
- Neighborhood Greenway

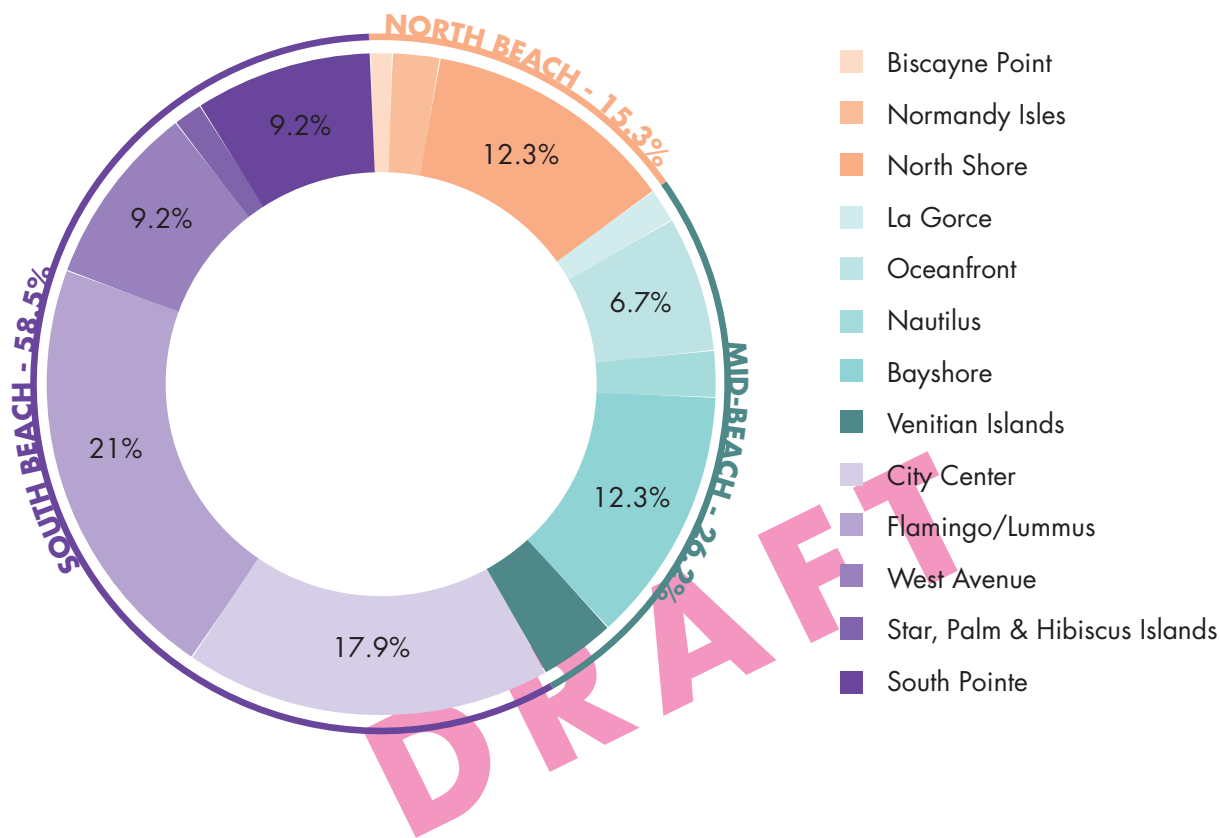
# CITYWIDE CRASH DATA ANALYSIS

## LEGEND: CRASH DATA

NUMBER OF CRASHES 2012-2014







## BICYCLE AND PEDESTRIAN CRASHES IN MIAMI BEACH

The crash data included in the diagram on page 32 was collected from an online crash data database managed by the University of South Florida and includes reported bicyclist and pedestrian crashes with cars. As with other similar data, crashes between bikes or between bikes and pedestrians are represented less. Mapping the crashed revealed several important patterns that impact the recommendations in this report. For the period between 2012 and 2014 there were 51 reported crashes in Miami Beach, a number far lower than the proportion of bicyclists would lead to believe.

The first, and most obvious pattern is that most of the crashes happen on state roads, or at intersections with state roads. This is not surprising, since these are also the roads which carry the highest volume of automotive traffic, and thus require a higher standard of bicycle facility than what is currently built. Alton, Washington, Collins, and 71 Street account for most of the crashes.

A second observation is that crashes happen on busy local or county streets where there are a high number of bicyclists and pedestrians with no protected bicycle facility (West, Meridian, 17 Street, 11 Street).

Finally there are a number of crashes existing bicycle facilities. Upgrading these routes to protected facilities will help address this issue. (16 Street, Euclid, 5 Street)

The citywide stats (shown above) indicate that South Beach is the area with the largest concentration of crashes, with 58.5% of the total.



# COLLINS @ 71 STREET IN PROGRESS

Pedestrian Crosswalk

Tight curb radius

Street Trees

Bike Box

Pedestrian Crosswalk

Pedestrian Refuge

Widen + Declutter Sidewalk

Intersection Countermeasure

The communities of North Beach include Normandy Isle, Normandy Shores, North Shore and Biscayne Pointe stretch from the northern boundary of the city down to around 63 Street.

Both Normandy Isle and North Shore are home to some of the most vibrant pedestrian friendly commercial districts in the City. Indeed, these attractions place many of life’s daily needs within a short walk or bike ride for most residents, something which is not obvious when looking at the modeshare analysis for the area.

Crash data for the area shows that the main points of conflict are Collins, Indian Creek Drive, 71 Street and 63 Street Bridge. These are locations where protected bicycle facilities should be prioritized. Overall, North Beach accounted for XX% of the total crashes citywide over the past three years.

The modeshare analysis for the neighborhood, as documented in the Miami Beach Community Satisfaction Survey, shows that one third of residents do not use cars as their main form of transportation. When viewed against the backdrop of compact walkable urbanism, these numbers are encouraging.

### PREVIOUS BIKEWAY ANALYSIS

Both the 2007 Bikeways Master Plan and the 2009 Atlantic Greenways Network Master Plan showed several proposed routes in this area. They included bike routes on 72 Street, 73 Street, 77 Street, 81 Street, a bike boulevard on Carlyle, a bicycle path on Park View Island, and a bike lane on Dickens Avenue.

The Basis of Design Report for the North Shore neighborhood was also reviewed for consistency with development of the master plan. We reference this document in the pages ahead.



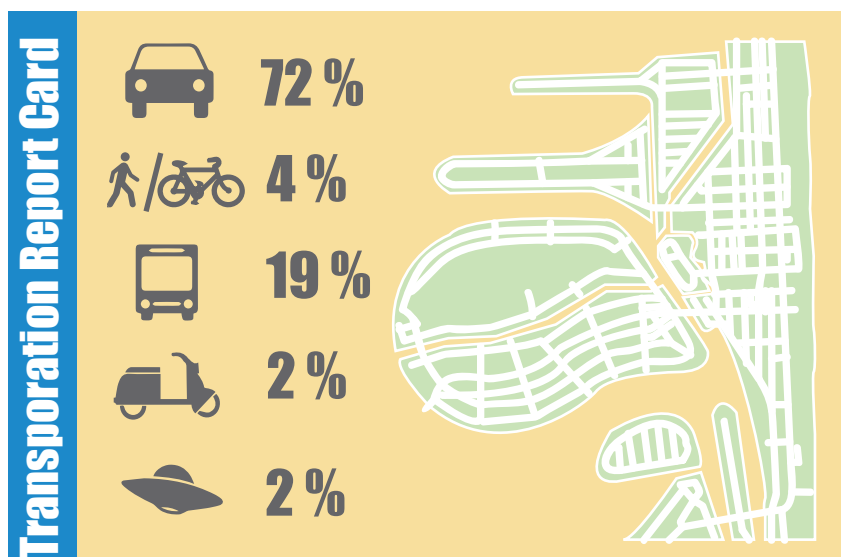
The re-paving of 71st Street included the addition of bicycle lanes. Image: Miami Bike Scene



Miami Beach Community Ride participants enjoy a police escort south along Indian Creek Drive.

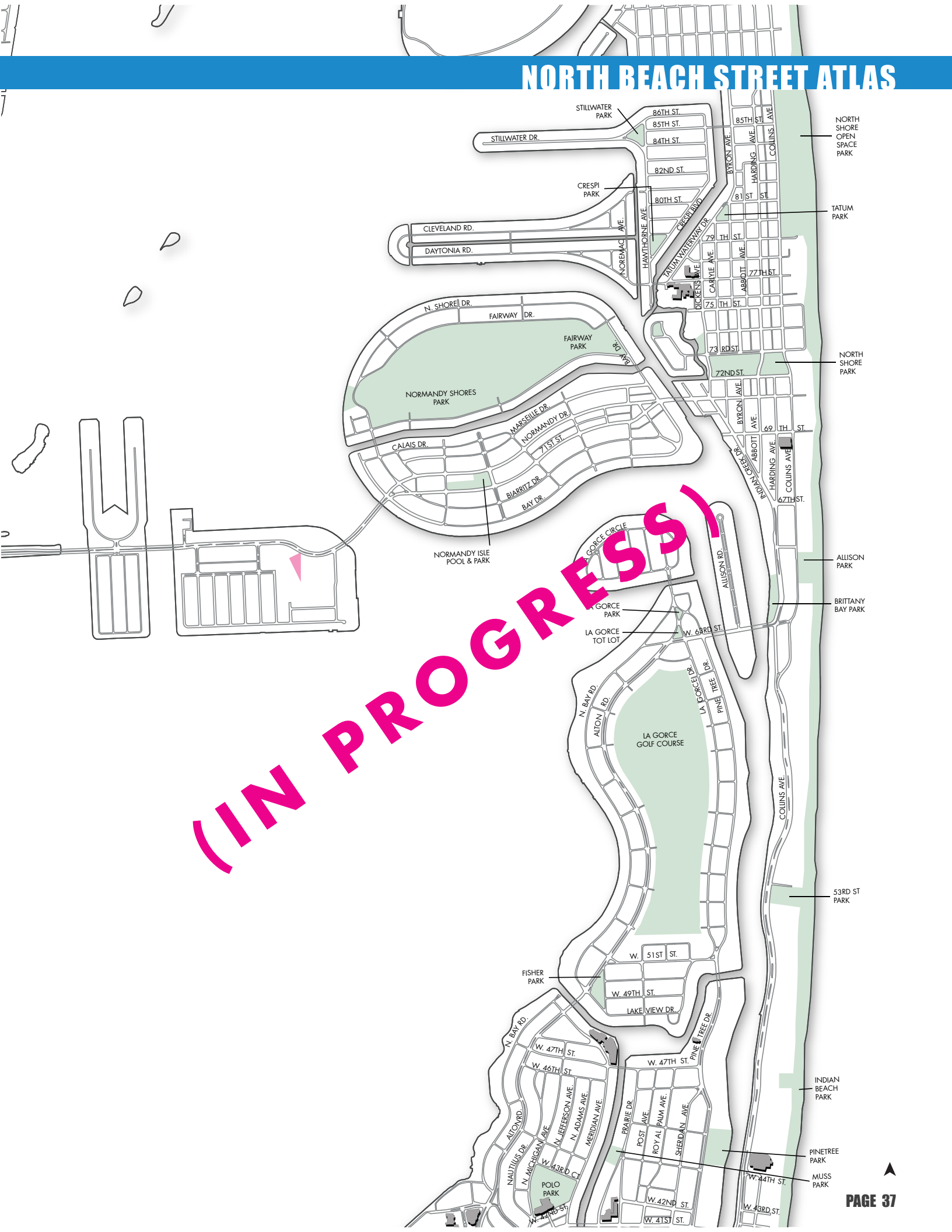


Connecting Stillwater Park and Crespi Park, Hawthorne is a good candidate for a bicycle facility.



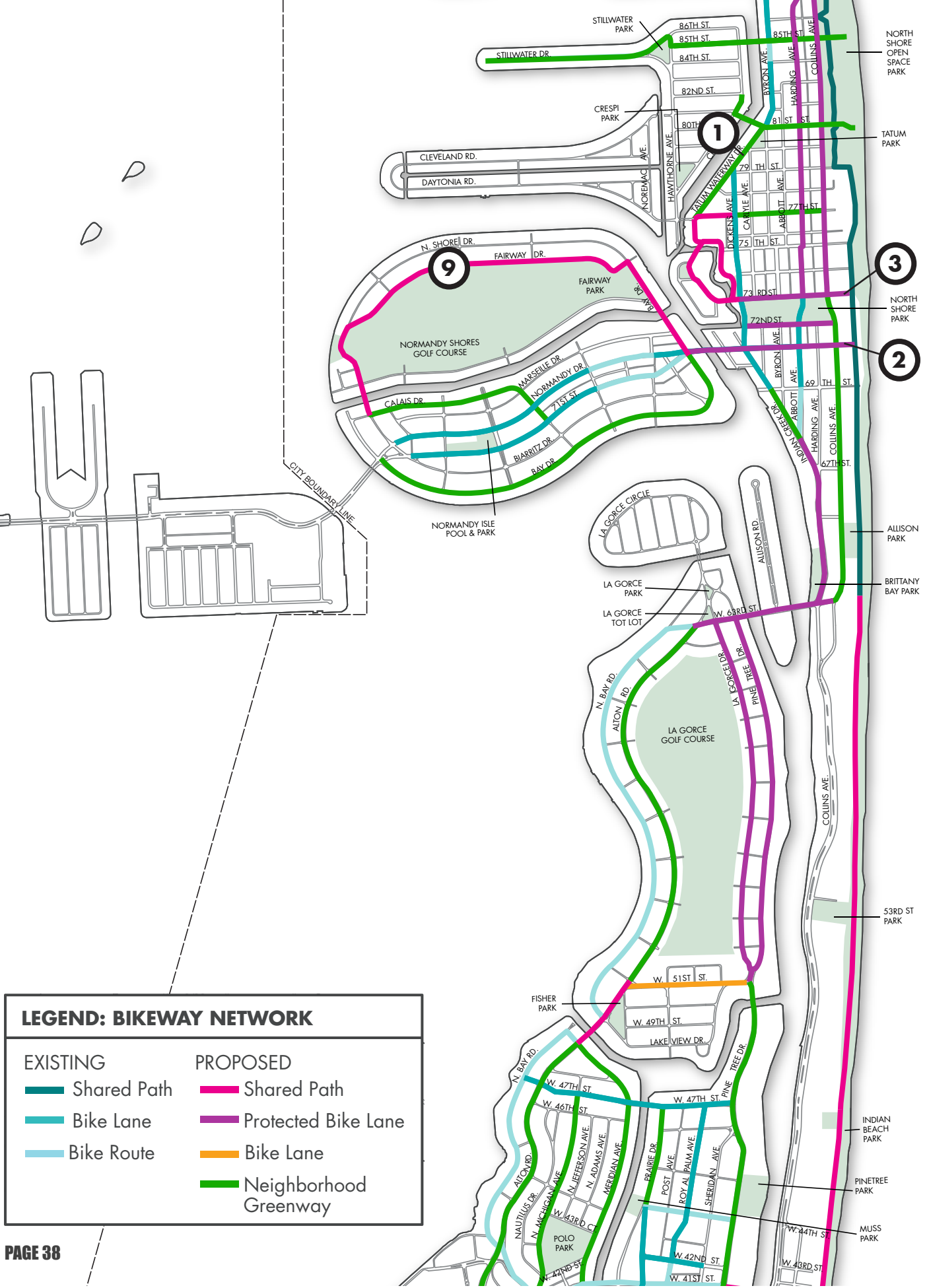


# NORTH BEACH STREET ATLAS



**(IN PROGRESS)**

# FILLING IN GAPS IN PRIORITY CORRIDORS



## FILLING IN THE GAPS

With a network of slow, residential streets, and a budding bicycle network, the prospects for North Beach are strong. The adjacent plan shows how the network in North Beach may develop by focusing on connecting to or improving existing bicycle facilities and proposing solutions that can be implemented without curb reconstruction. These projects represent the first five percent jump in bicycle modeshare envisioned by the modeshare goals. The main elements of the short term plan are:

1. Connect existing bike lane segments on Byron Avenue and Dickens Avenue along Tatum Waterway Drive (50' ROW) with a parking protected facility.
2. Extend the 71 Street bike facility from Collins to the Beachwalk.
3. Creating east/west parking protected lanes on 72/73 Streets where there is ample ROW to connect the Beachwalk and commercial center on Collins to the neighborhoods to the west.
4. Create additional east/west bike routes on 81 Street and 77 Street (to provide beach connections to low stress streets on Biscayne Pointe).
5. Providing better connectivity along the Beachwalk through North Shore Open Space Park during nighttime hours.
6. Create protected lanes on Indian Creek/Harding/Byron/Collins one way pair of protected bike lanes.
7. 82 Street Bike Lane - Continue Bike Lane from 82 Street to bridge over Tatum Waterway south of 81 Street intersection
8. On Normandy Isle, Fairway Drive provides an opportunity for a shared path around the golf course and connecting to Normandy Drive.
9. Shared Path on Parkview island (along Wayne Ave) and around Parkview Island Park



The paved portion of the Beach Walk currently terminates at 79th Street, approximately .5 miles from the city's northern border.

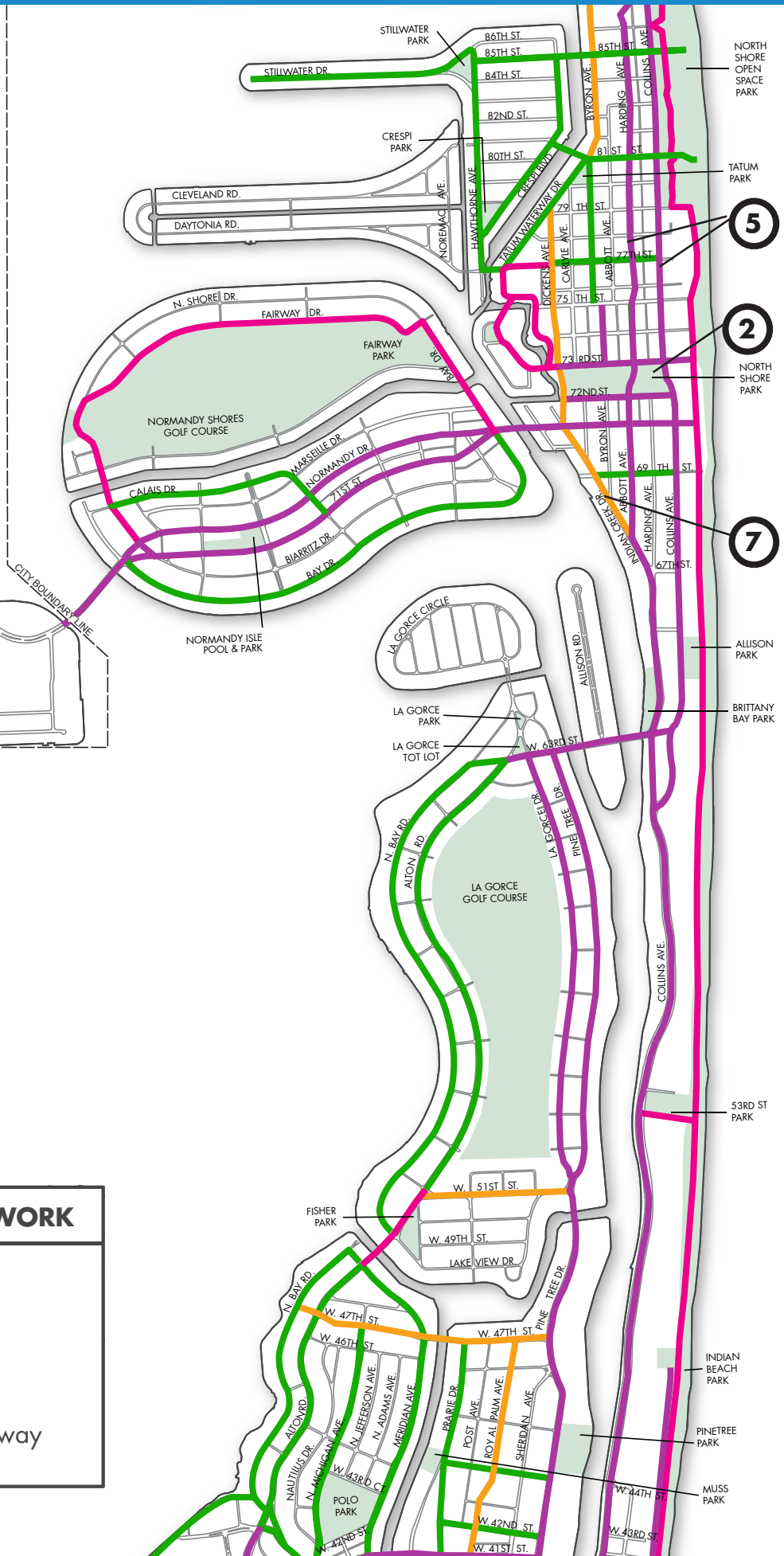


A western looking view of 85th Street, which terminates at Stillwater Park.



Bicycle parking at Crespi Park.

# LONG TERM PLAN



## LEGEND: BIKEWAY NETWORK

### PROPOSED

- █ Shared Path
- █ Protected Bike Lane
- █ Bike Lane
- █ Neighborhood Greenway



## LONG-TERM PLAN

The long term plan Over the long-term existing bicycle facilities should be upgraded. Bike lanes on major roads should be converted into projected facilities, and recommends the following improvements as funding arises and demand for improved facilities grow.

1. Create north/south bike route on Byron Avenue, from 73 Street to Tatum Waterway Drive.
2. Reconfigure the parking lot between Harding/ Collins and 72/73 Street as a public space.
3. Upgrade the bike lane on 71 Street to a parking protected or sidewalk level protected facility.
4. Reconstruct 63 Street Intersection to provide for protected bicycle facilities.
5. Redesign Harding/Collins with one way pair of protected bike lanes, and street trees.
6. Redesign Indian Creek Drive with wider sidewalks, protected bicycle facilities and street trees.
7. Upgrade existing facilities on Normandy Drive to protected bike lanes.
8. Lower North Bay Road as a bicycle boulevard.



The Beach Walk provides a great recreational and transportation amenity, especially those looking for an alternative to Collins Avenue.



A father and daughter enjoy the Miami Beach Community Ride. As a police escorted ride, dangerous thoroughfares like Collins Avenue temporarily feel safe for cyclists of all abilities.

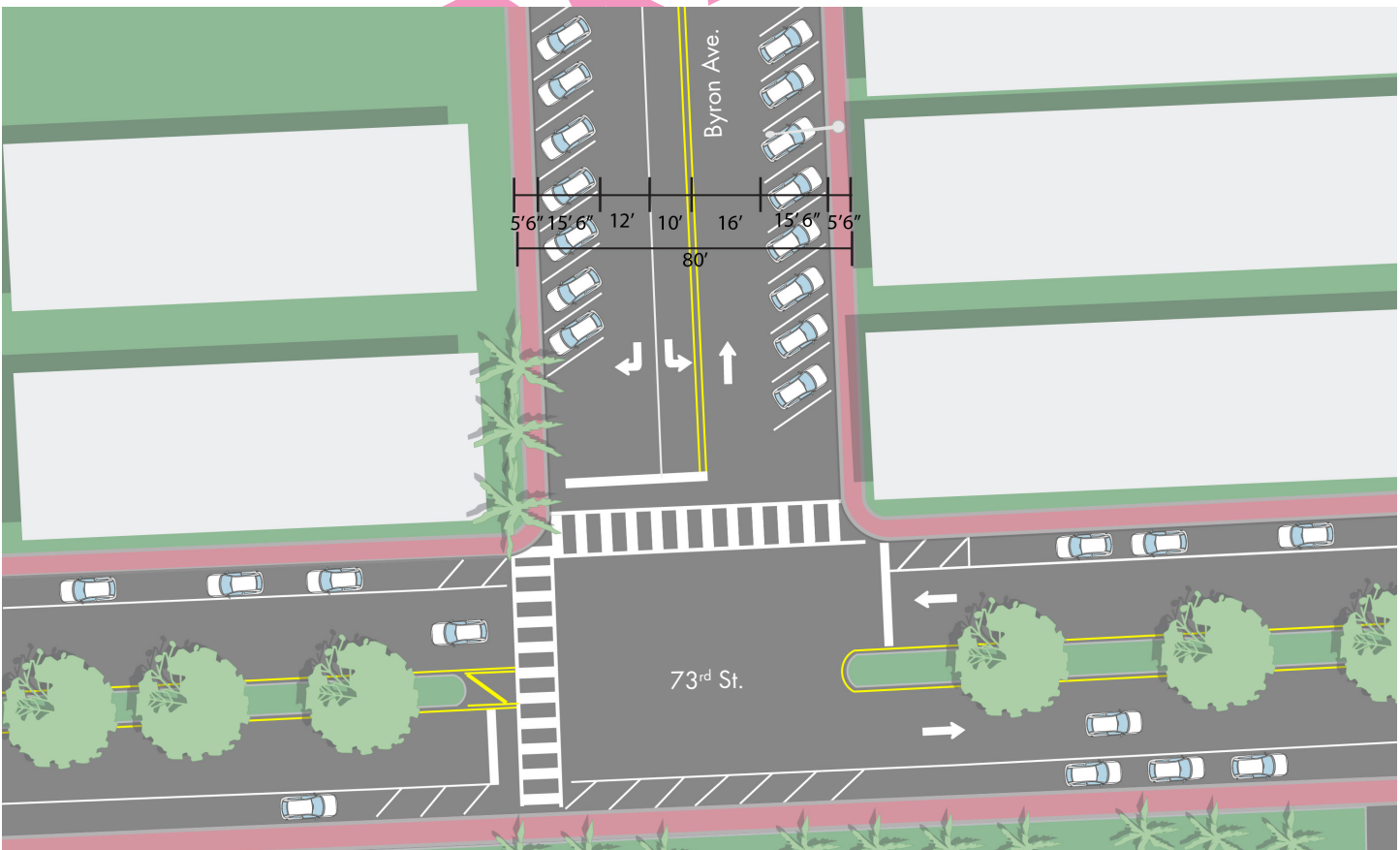


North Bay Road provides an important alternative to the congestion and fast-moving cars found moving along Alton Road.

# BYRON AVENUE

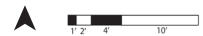
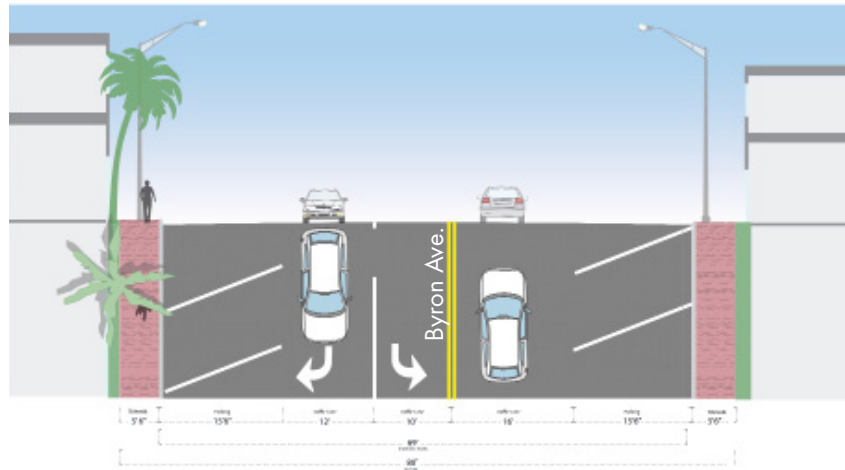
STREET DATA	
Public Right-of-Way Width	80'
Pavement Width	69'
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	2 - 5 Story Apartment Buildings
Project Limits	Between Tatum Waterway Drive and 73 Street
Project Length	3,000', 0.05 Miles
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Medium density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	low
Upcoming Public Works Project/Study	Included for study in BODR

## EXISTING CONDITIONS

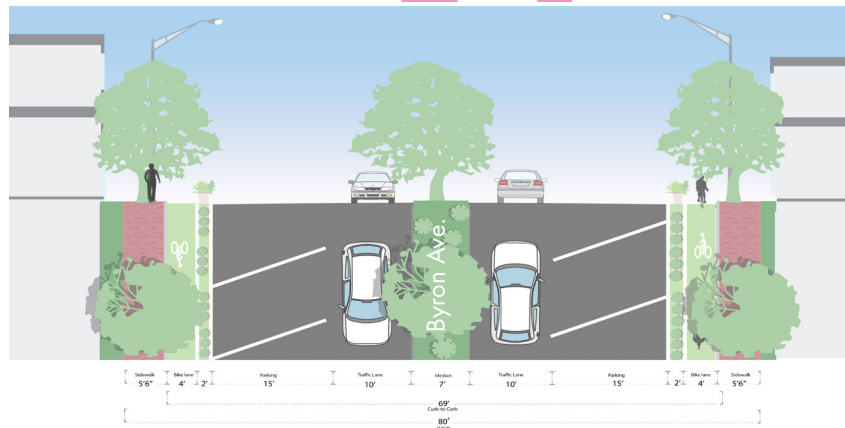


Byron Avenue at 72 Street is a 68' wide three lane street with angled parking. There is ample room here to create a great street, and an important connection within the bicycle network. Given the low volume of traffic and low speeds, this route is a good candidate for a bike lane or bike boulevard.

# BYRON AVENUE EXISTING CONDITIONS

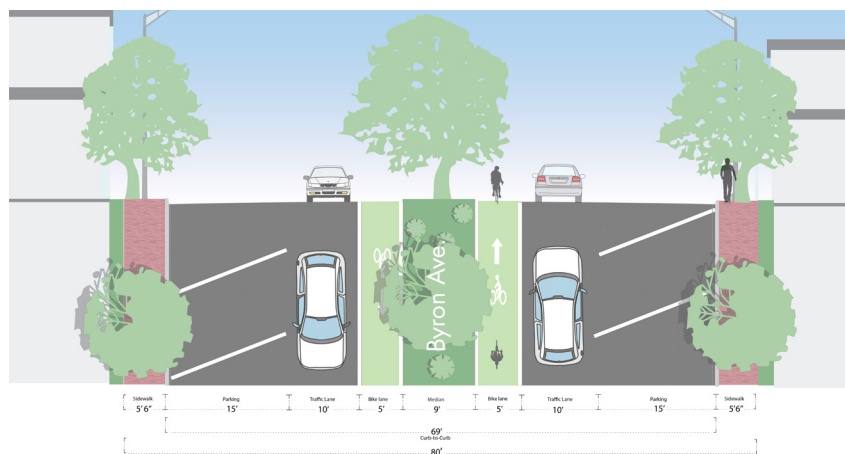


## BIKE LANE



This section of Byron has angled parking. In cases with angled parking, conventional bike lanes are not ideal. One potential tool to use is the protected bikeway. Here a 4' bike lane is protected by a 3' buffer between the angled parking and the sidewalk.

## PROTECTED BIKE LANE

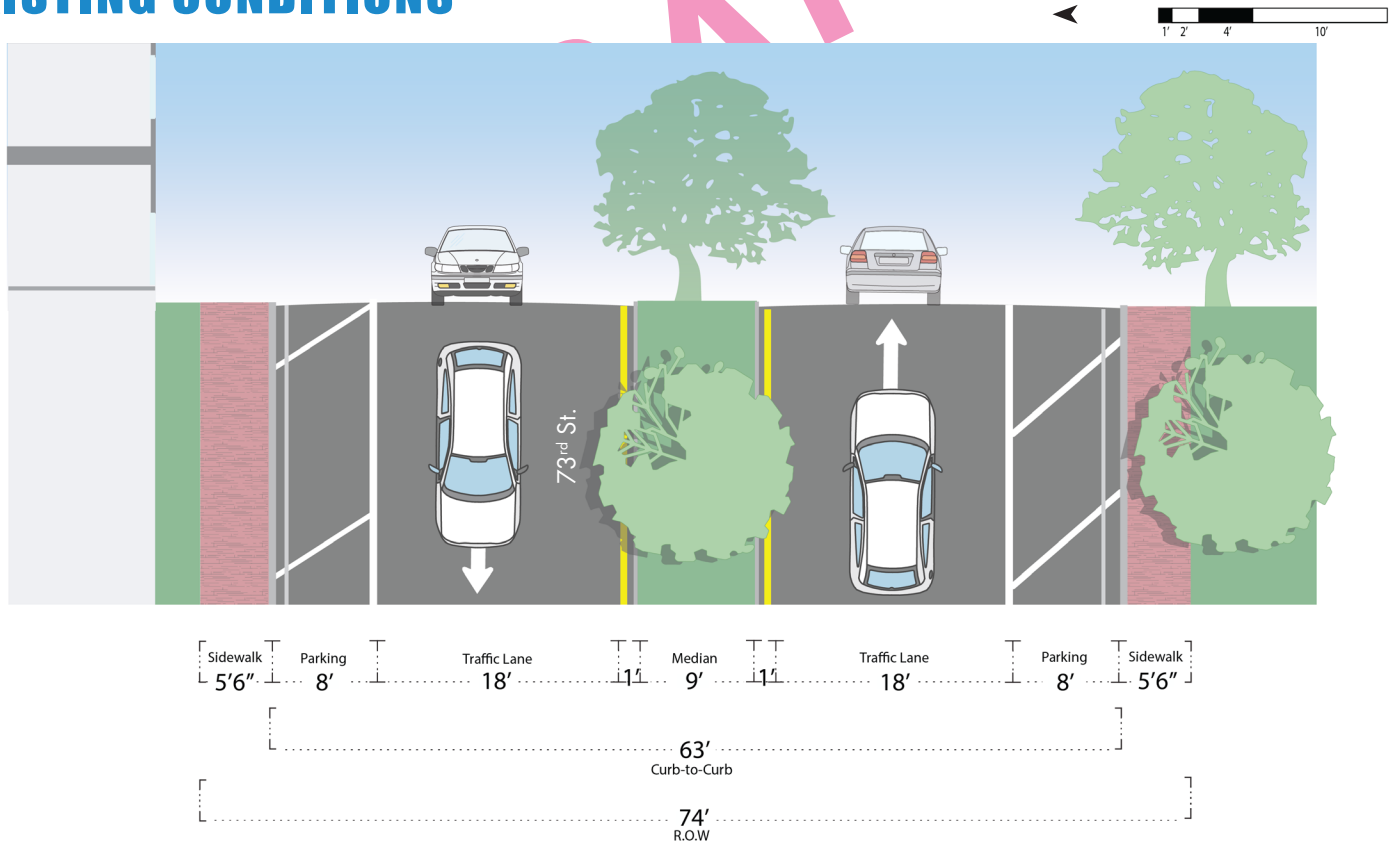


This variation on the idea of conventional bike lanes on the driver side of the travel lane provides more visibility to riders in the street, and the green paint alerts motorists that this is a bicycle priority corridor.

# 73<sup>RD</sup> STREET

STREET DATA	
Public Right-of-Way Width	74'
Pavement Width	63' typical
Project Limits	Between Collins and Dickens
Project Length	1,800' or 0.35 Miles
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	2 - 3 story apartment buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The high density residential apartment buildings, North Shore Park, and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	low
Upcoming Public Works Project	Yes

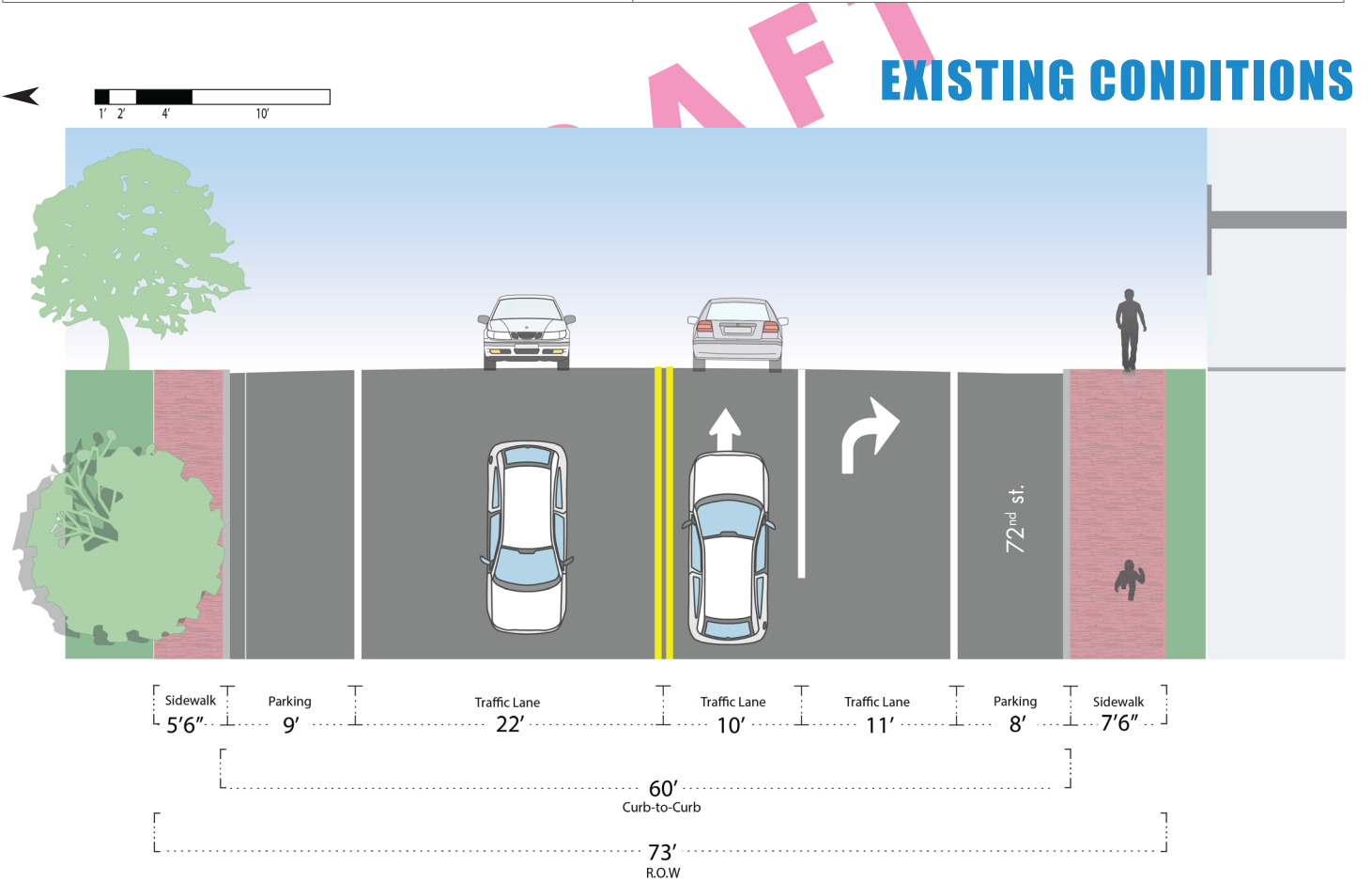
## EXISTING CONDITIONS



The adjacency to both North Shore Park and the 71 Street commercial district make the 73 Street/72 Street Pair an important east west axis, connecting Park View Island, Carlyle Avenue, Harding, Collins and the Beachwalk. The ample roadway dimensions (70' and 74') allow for several different variations of protected and unprotected bicycle facilities on both corridors, shown on pages 44 - 45. Most of the crashes shown on page 36 for the North Shore area occur on 71 Street, but several are on 72 (at Collins and Dickens).

A Basis Of Design Report for the North Shore area was created in 20XX and reviewed as part of this effort. The report proposes increases in sidewalk width on the south side of the street and increases the median width for 73 street. These are great starts. For 72 Street, the report takes a currently wide street with on-street parking on

STREET DATA	
Public Right-of-Way Width	73' (70' Typical, 73' at times)
Pavement Width	60' typical
Project Limits	Between Collins and Dickens
Project Length	1,800' or 0.35 Miles
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	1 - 2 Commercial Buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	North Shore Park and recreational center and the Beachwalk are major bicycle /pedestrian trip generators in this area.
Impact on modeshare	low
Upcoming Public Works Project	Yes

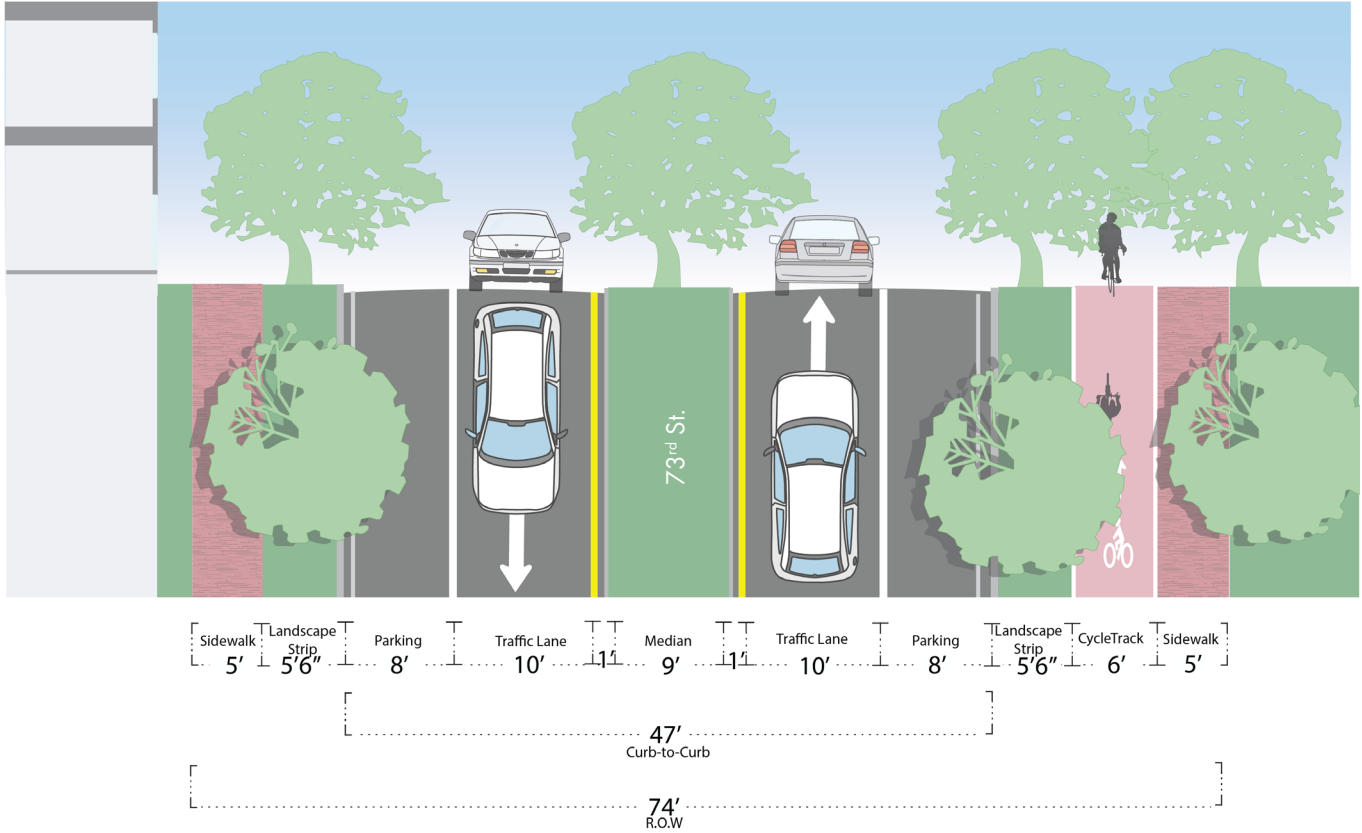


(from 85 spaces currently to 95 spaces) at the expense of a wide swath of potential pedestrian and bicycle roadway surface.

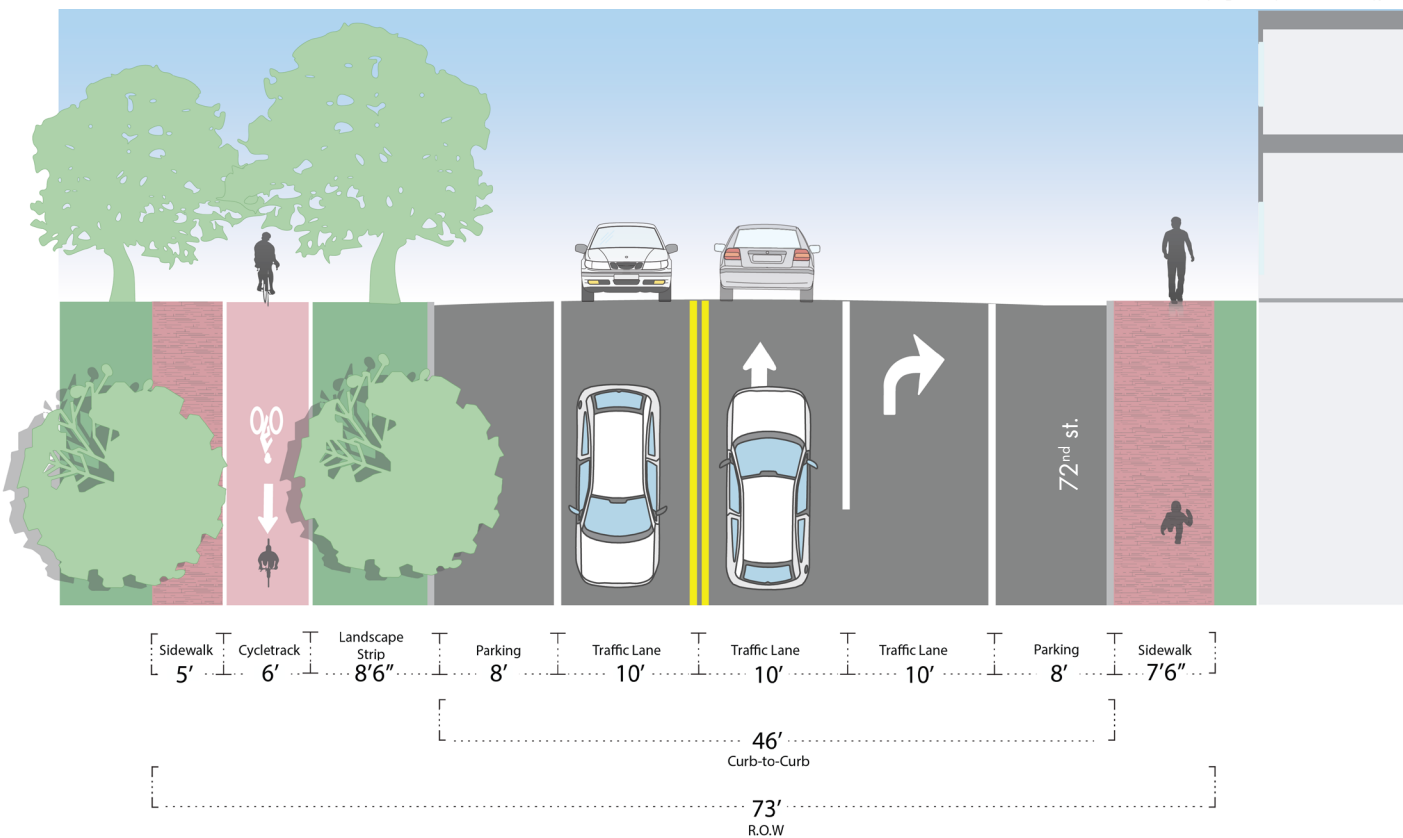
The proposals described on the following pages approach the design of 72 and 73 Street as a one way pair of facilities. In the first phase proposes parking protected bike lanes without reconstructing the street between the parallel parking and the sidewalk. In the long term, the street can e redesigned with street trees, narrow lanes, wider sidewalks and a sidewalk level bicycle facility going westbound. These are steps in the right direction.

# 72<sup>ND</sup> STREET / 73<sup>RD</sup> STREET

## ONE-WAY CYCLETRACK EASTBOUND ON 73<sup>RD</sup>



## ONE-WAY CYCLETRACKS WESTBOUND ON 72<sup>ND</sup>



**DRAFT**



**DADE BLVD  
IN PROGRESS**





Middle Beach encompasses the neighborhoods between Dade Boulevard in the South to 63 Street in the North, and includes the communities of Allison Island, Bayshore, Nautilus, La Gorce, and Oceanfront. The mid beach community boasts some of the best real estate in the country, with their narrow, tree lined streets and adjacency to the beach.

As the Transportation Report Card Shows, most of the trips in this area are made by car. This is one of the most suburban parts of Miami Beach, and is heavily designed around the car. 41 Street is the only pedestrian corridor in the area, and the beachwalk is the only protected bicycle facility.

Within the network, La Gorce Neighborhood forms a critical connection between Nautilus to the South, and North Beach. There are only 6 north/south corridors in Midbeach. Four of these converge at 63 street in La Gorce. Alton Road is a critical north-south auto-connection, with volumes and speeds that require protected facilities, but a protected facility along this orridor will be difficult to accomplish in the short term. This plan proposes two alternate low-stress routes that incorporate North Bay Road and the 2-mile Pine Tree/La Gorce pair.



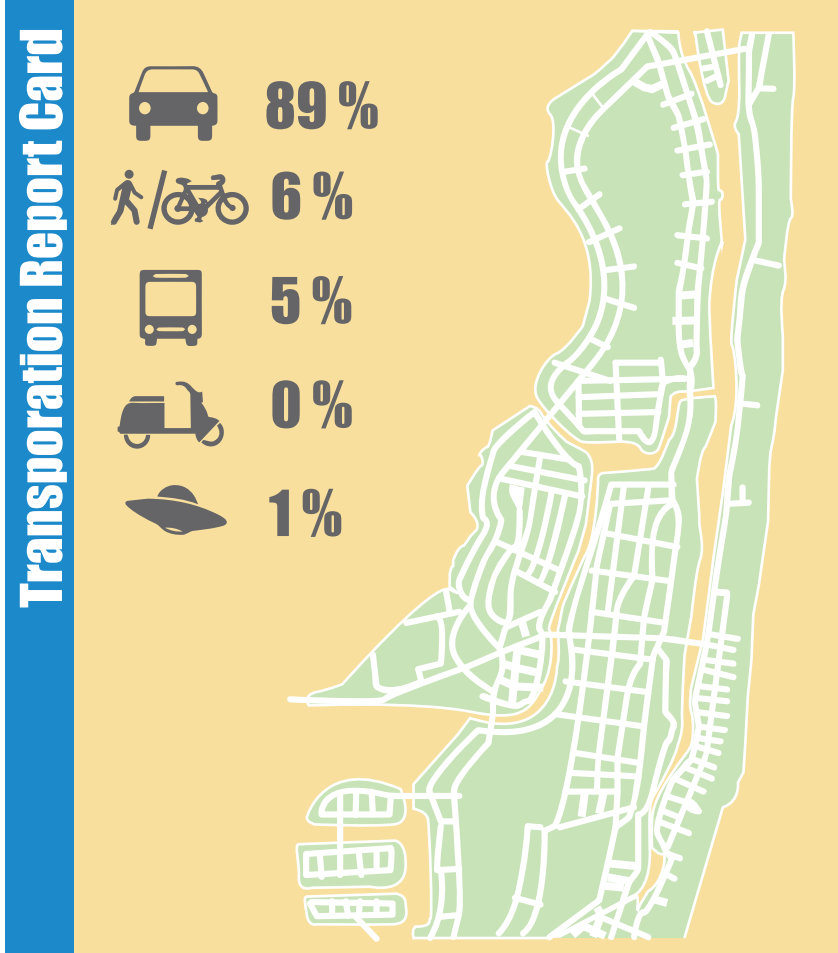
This northbound only Alton Road bicycle lane terminates abruptly at Chase Avenue.



Along 47th Street, bicycle lanes of varying quality connect Pine Tree Drive with Alton Road



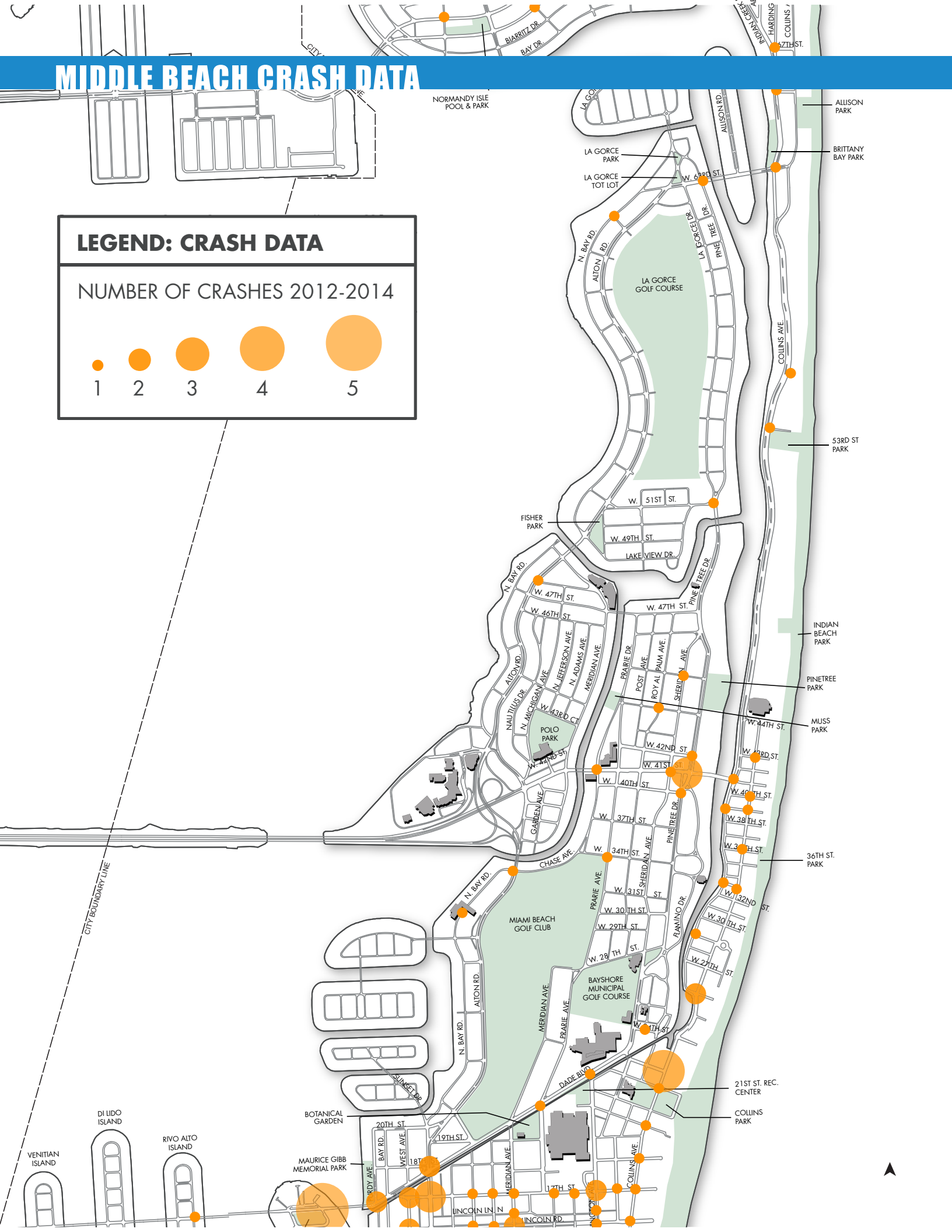
Narrow sidewalks along the 41st Street leave little room for bicycle parking or other pedestrian-oriented amenities.



# MIDDLE BEACH CRASH DATA

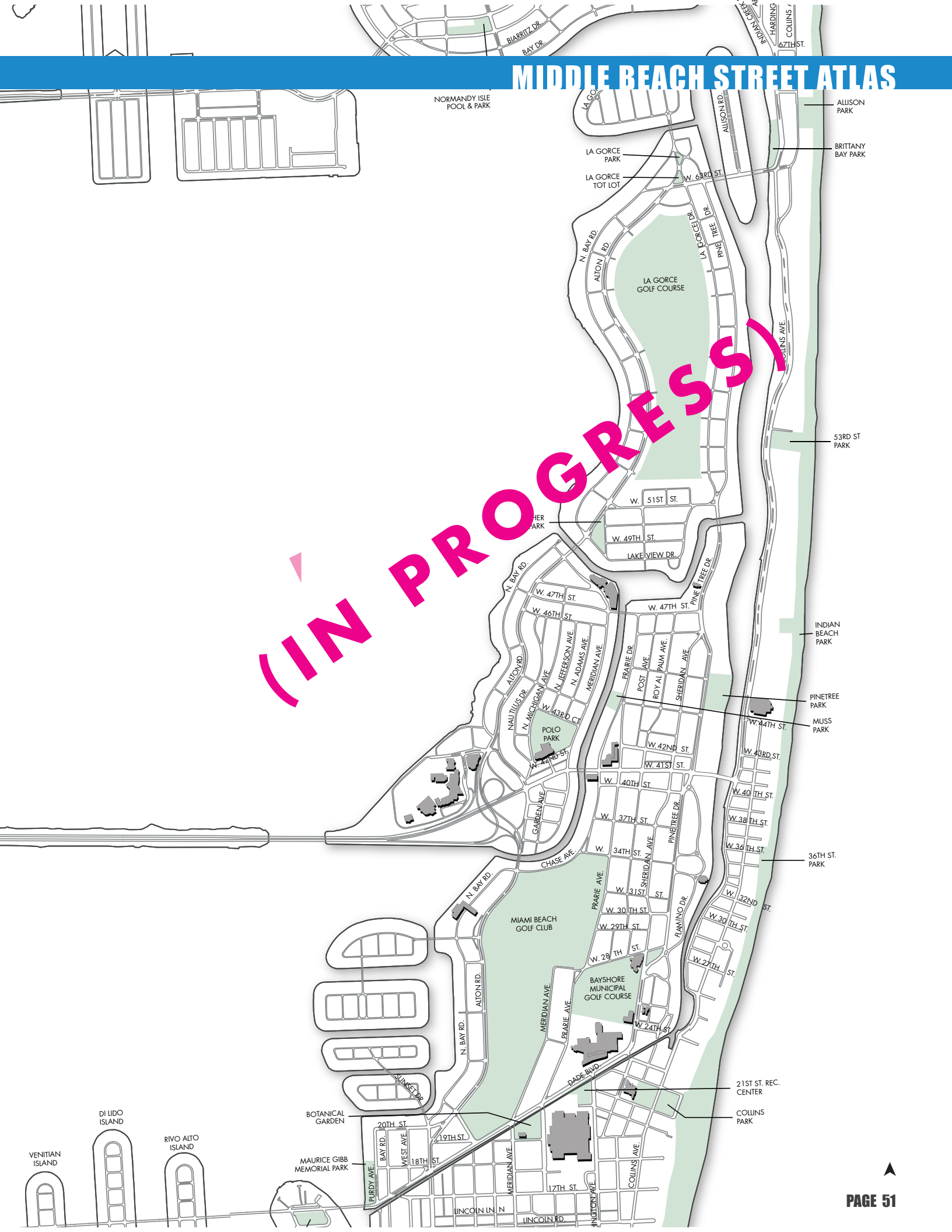
## LEGEND: CRASH DATA

NUMBER OF CRASHES 2012-2014



# MIDDLE BEACH STREET ATLAS




(IN PROGRESS)



# FILLING IN GAPS IN PRIORITY CORRIDORS

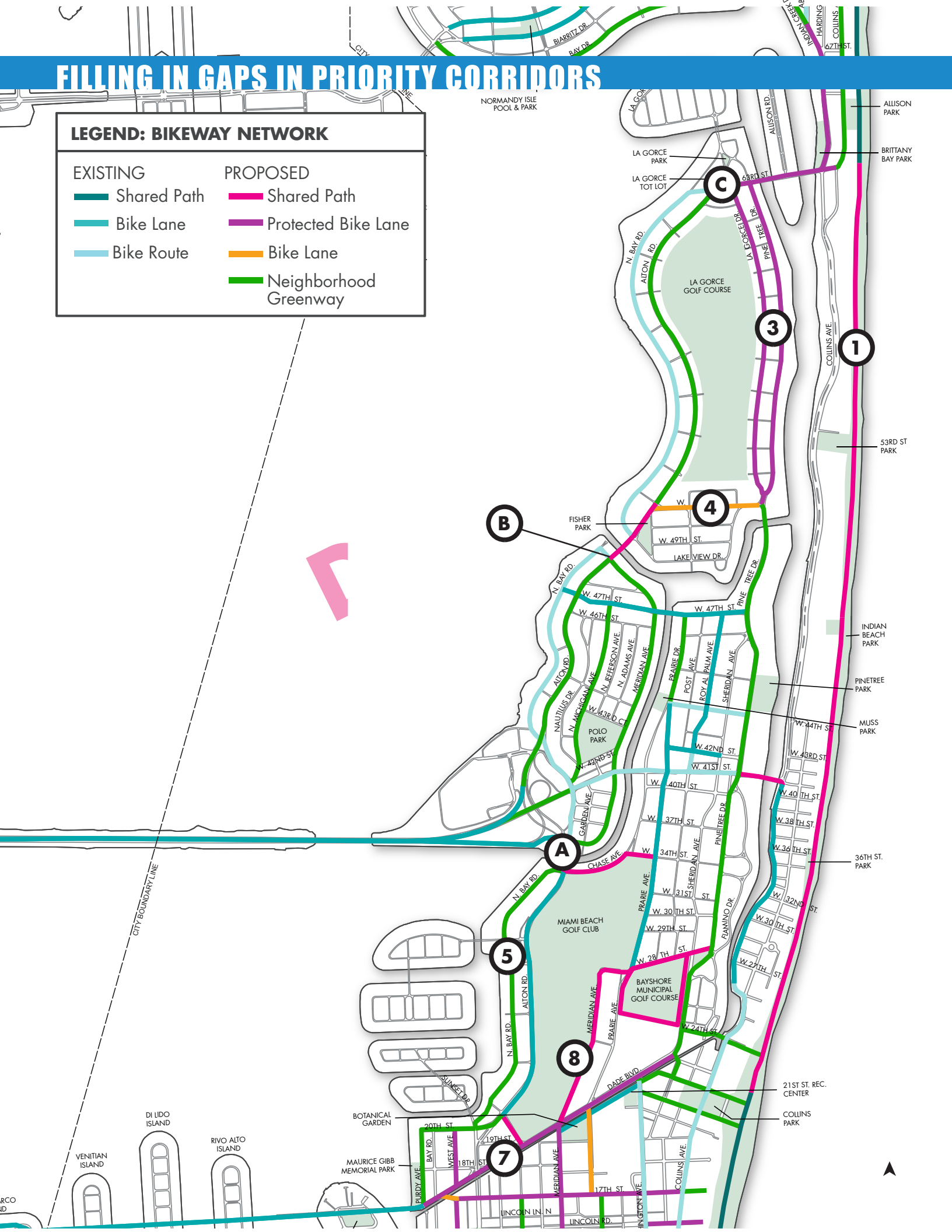
## LEGEND: BIKEWAY NETWORK

### EXISTING

-  Shared Path
-  Bike Lane
-  Bike Route

### PROPOSED

-  Shared Path
-  Protected Bike Lane
-  Bike Lane
-  Neighborhood Greenway



## SHORT-TERM PLAN

The short-term plan builds on the existing bike lanes and paths in North Beach by connecting gaps in the network and proposing solutions that can be implemented without curb reconstruction. Some of the main elements of the plan are:

1. Complete the Atlantic Trail.
2. Protected bike lanes on the 63 Street bridge.
3. Implement a road diet on Pine Tree and La Gorce with a one-way pair of protected bike lanes on Pine Tree Drive and La Gorce, from 63 Street to 51 Street.  
This two-mile connection could provide numerous benefits for cyclists, but also local residents, and at a relatively low-cost because the existing pavement-to-pavement conditions could remain relatively unchanged.
4. Conventional bike lane on 51 Street, between Alton Road and Pine Tree Drive.
5. Bicycle boulevard on North Bay Road.
6. Off street shared path along Alton between 51 Street and North Bay Road.
7. A shared path greenway along Dade Boulevard
8. Shared path along Meridian, between 28 Street and Dade Boulevard.
9. Shared path on Alton, between Dade Boulevard and Chase Avenue.
10. Neighborhood greenway designations on Meridian (north of Chase), Michigan, and Alton (between
11. Three intersections are major pinch points for connectivity between the hospitals and North Beach/Collins corridor. The intersections are:
  - A) Alton Road & N. Bay Road (by the hospital)
  - B) Intersection of 48th Street & Alton Road (including the bridge over Surprise Waterway)
  - C) 63rd Street & Alton Road

This report pays specific attention to these areas because workable solutions exist and will help create a viable network for an expanded number of cyclists.



On North Bay Road, which provides a north-south alternative to Alton Road, thick rubber speed humps leave gaps where cyclists may travel unimpeded.



East-west and north-south bicycle lanes and shared use lane markings (sharrows, pictured above) are commonly found in the Nautilus neighborhood.



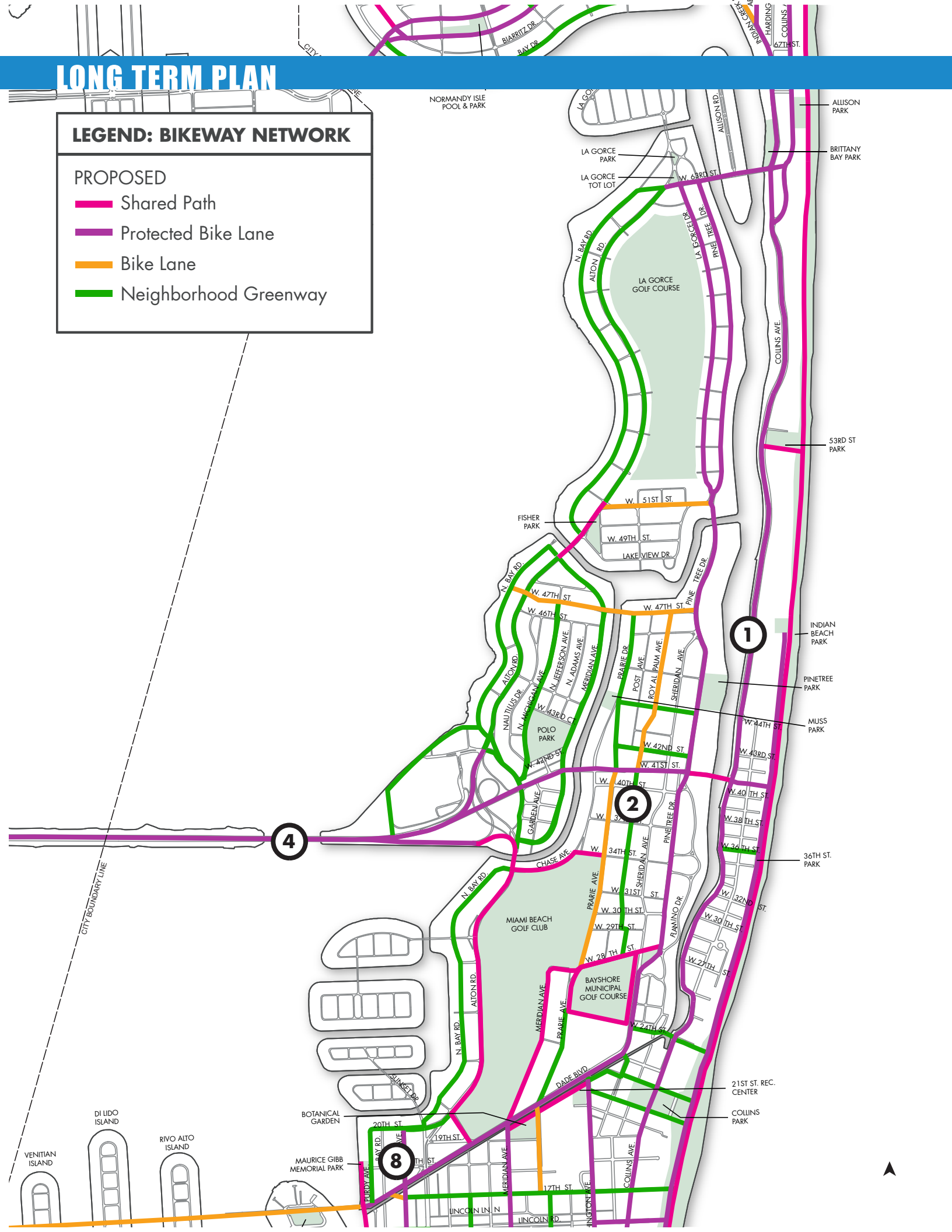
Unused bicycle parking at the main campus of the Mount Sinai Medical Center.

# LONG TERM PLAN

## LEGEND: BIKEWAY NETWORK

### PROPOSED

- Shared Path
- Protected Bike Lane
- Bike Lane
- Neighborhood Greenway



## LONG-TERM PLAN

In order to achieve the 2035 modeshare goals, major connections will need to be made in the bicycle network. Among the changes are:

1. Protected bike lane on Collins, between 63 Street and 41 Street.
2. Bicycle Boulevard on Royal Palm, from 41 Street to 28 Street.
3. Protected bike lane on 41 Street, from Julia Tuttle to Collins.
4. Protected bike lane on Julia Tuttle.
5. Protected bike lane on Collins, between 41 Street to 26 Street.
6. Buffered bike lane on Pine Tree, between 51 Street and Dade Boulevard.
7. Protected bike lane on Alton Road, between Chase Avenue and 63 Street.
8. Bike Route that would connect people coming into Miami Beach from the Venetian Causeway east parallel to Dade Boulevard. It would give bicyclists yet another option for entering the city according to their level of comfort.



Digital speed readout signs remind motorists when they are exceeding the speed limit along Alton Road.



An old Bike Route sign along North Bay Road reminds users of the street's history as a preferred alternative to cycling Alton Road.



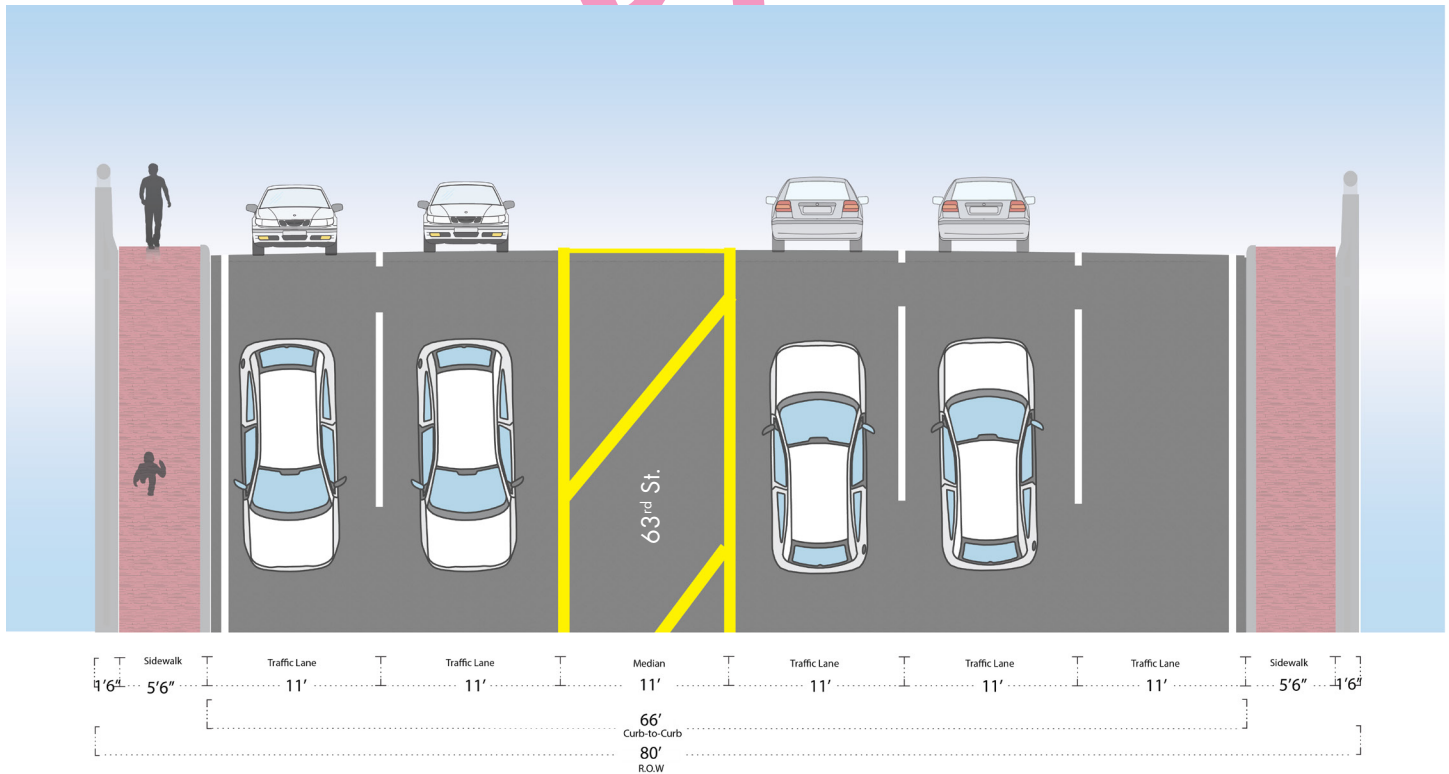
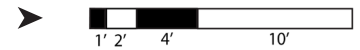
Looking east along a short residential street located between La Gorce and Pinetree Drive. Narrow residential streets like this provide a pleasant cycling environment.

# 63<sup>RD</sup> STREET

STREET DATA	
Public Right-of-Way Width	80'
Pavement Width	66' typical
Project Limits	Between Alton Road and Indian Creek Drive
Project Length	2,000' 0.4 Miles
Posted Speed Limit	35 mph
Daily Volume	32,960 ADT
Predominant Land Use	Single Family Residential / multifamily residential
Predominant Development Pattern	Suburban Detached/ small apartment buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	High density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	High
Upcoming Public Works Project	Yes - FDOT

## EXISTING CONDITIONS

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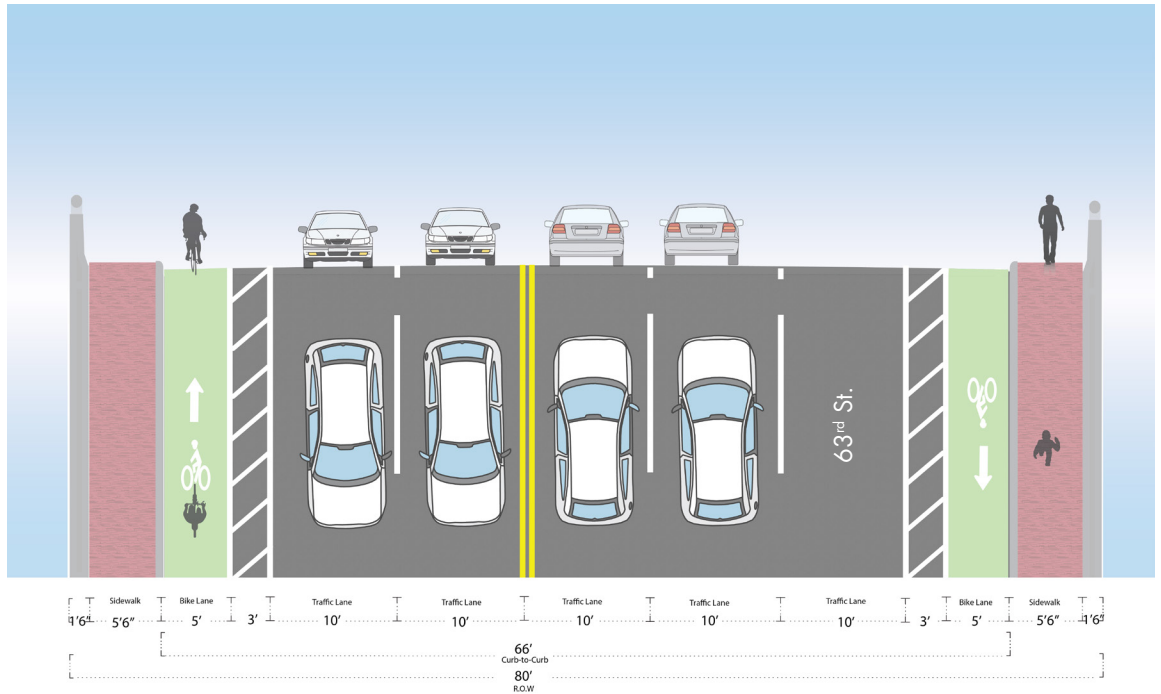


63 Street is a critical connection between mid/south beach and the communities of north beach. The street is the subject of an upcoming FDOT road redesign, and preliminary designs are headed in the right direction. A reduction in lane widths is a good step, but there are serious concerns regarding the proposed section's ability to provide much needed connectivity for cyclists where they need it most. While traffic volumes approaching the bridge are very high, the proposed sections do little to alleviate the comfort of cycling. Unfortunately, there is no parallel option here, as North Bay and/or La Gorce/Pine Tree all empty out onto this point. For this reason, and because the volume of traffic is high, the most emphasis should be placed here on safe and comfortable bicycle and pedestrian infrastructure, not the least.



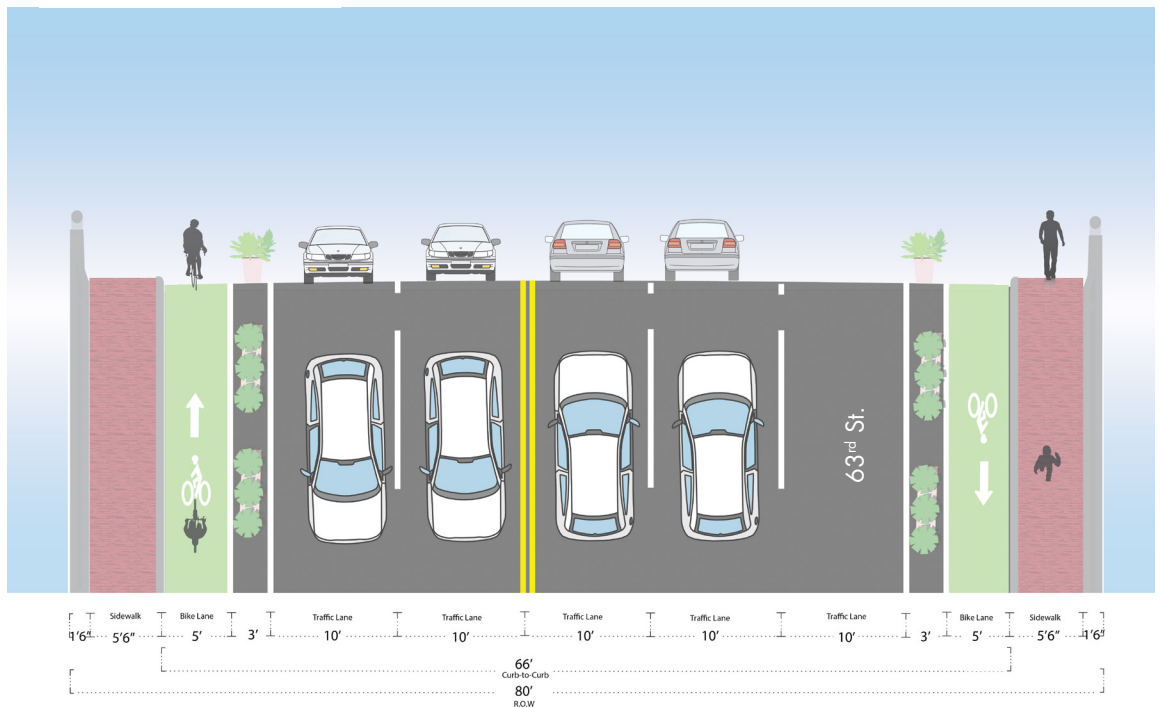
## OPTION 1: PROTECTED BIKE LANE

Reductions in lane widths to 10', along with the elimination of a center turn lane provide the space needed to expand bicycle and pedestrian facilities. In the short term, a bike lane can be striped with a buffer or a temporary physical separation. The sidewalk has also been enlarged in this proposal.



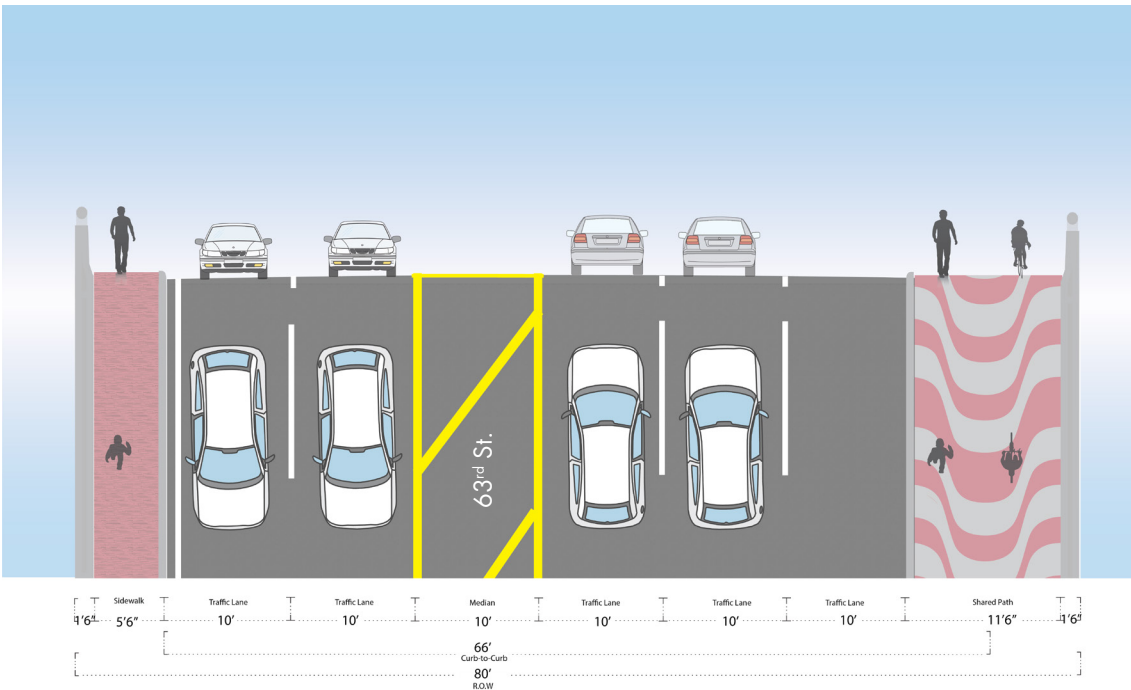
## OPTION 2: PROTECTED BIKE LANE

A variation of the protected bike lane could contain planters with shrubs or flowers.



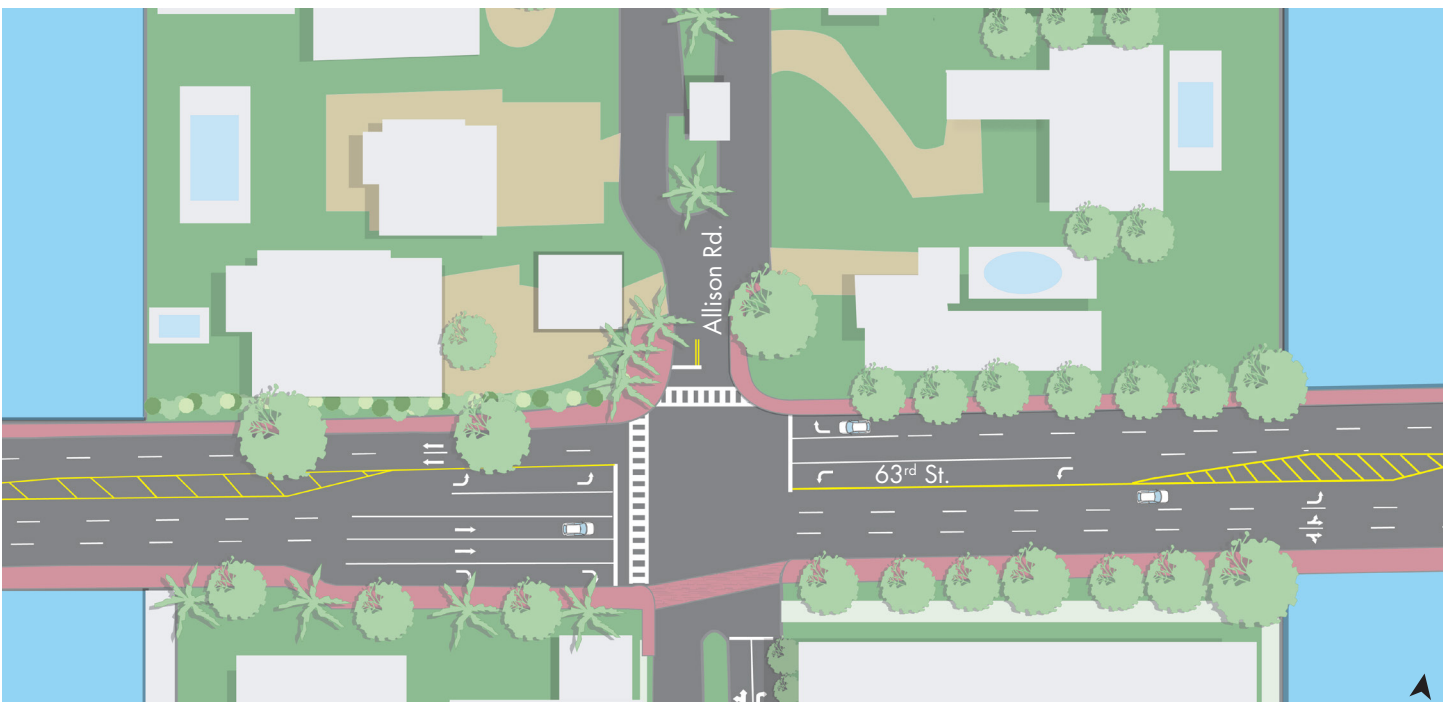
# 63<sup>RD</sup> STREET

## OPTION 3: SHARED PATH



This last option shows a shared path on the south side of the street and a protected lane on the north side. This provides for ample protected facilities for those coming from points north through the westbound protected bike lane. Travelers coming from points south take the shared path. At a minimum, the shared path can provide a critical off-street connection.

## ALLISON ISLAND SHARED PATH



In this proposal a shared path is located on the south side of the bridge. Travel lanes have been narrowed, a right turn lane eliminated, and center median space eliminated to accommodate the needed bicycle pedestrian space.

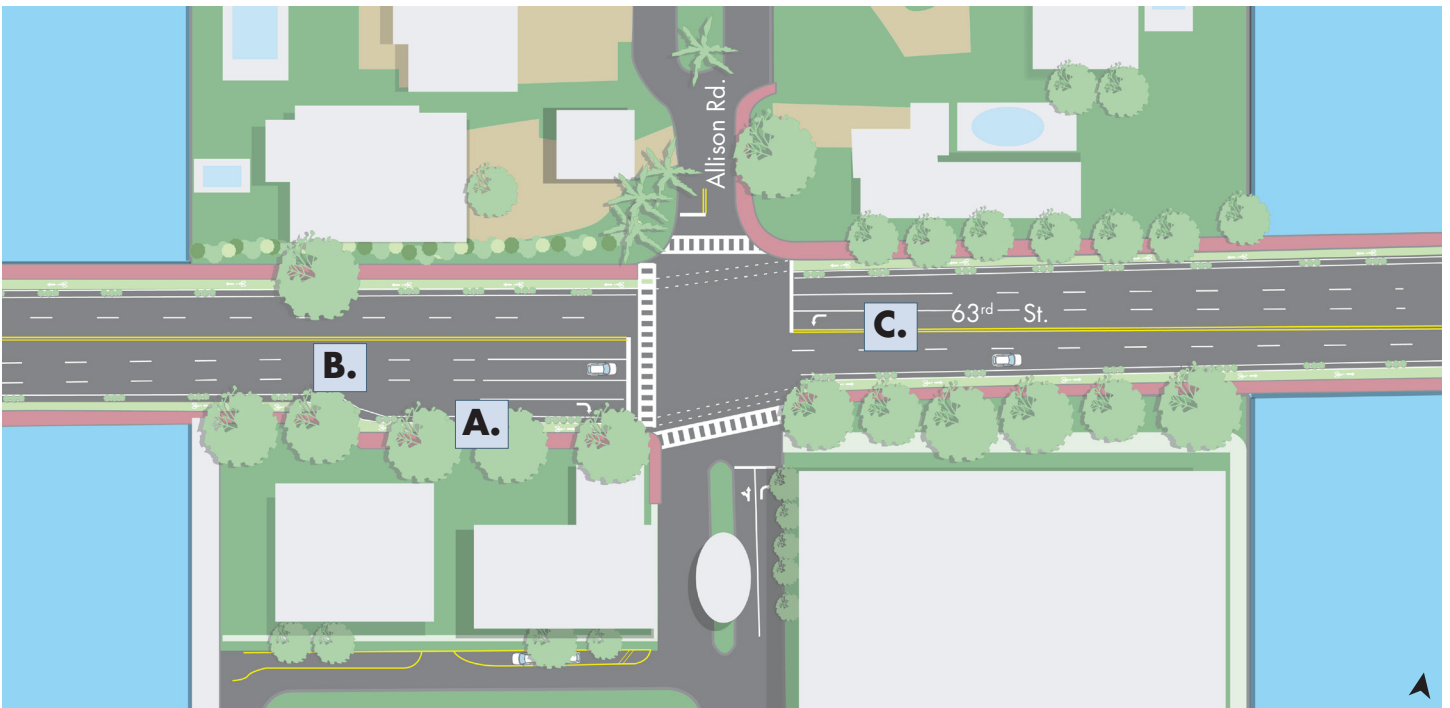
# 63<sup>RD</sup> STREET @ ALLISON ISLAND

## ALLISON ISLAND EXISTING CONDITIONS



The proposal to add pedestrian and bicycle space to 63<sup>rd</sup> Street comes from the idea that this critical connection between the communities of Middle and North Beach needs a low-stress connection for the Type 3 riders. 63 is a high speed, high volume corridor that requires a protected facility.

## ALLISON ISLAND PROTECTED BIKE LANE



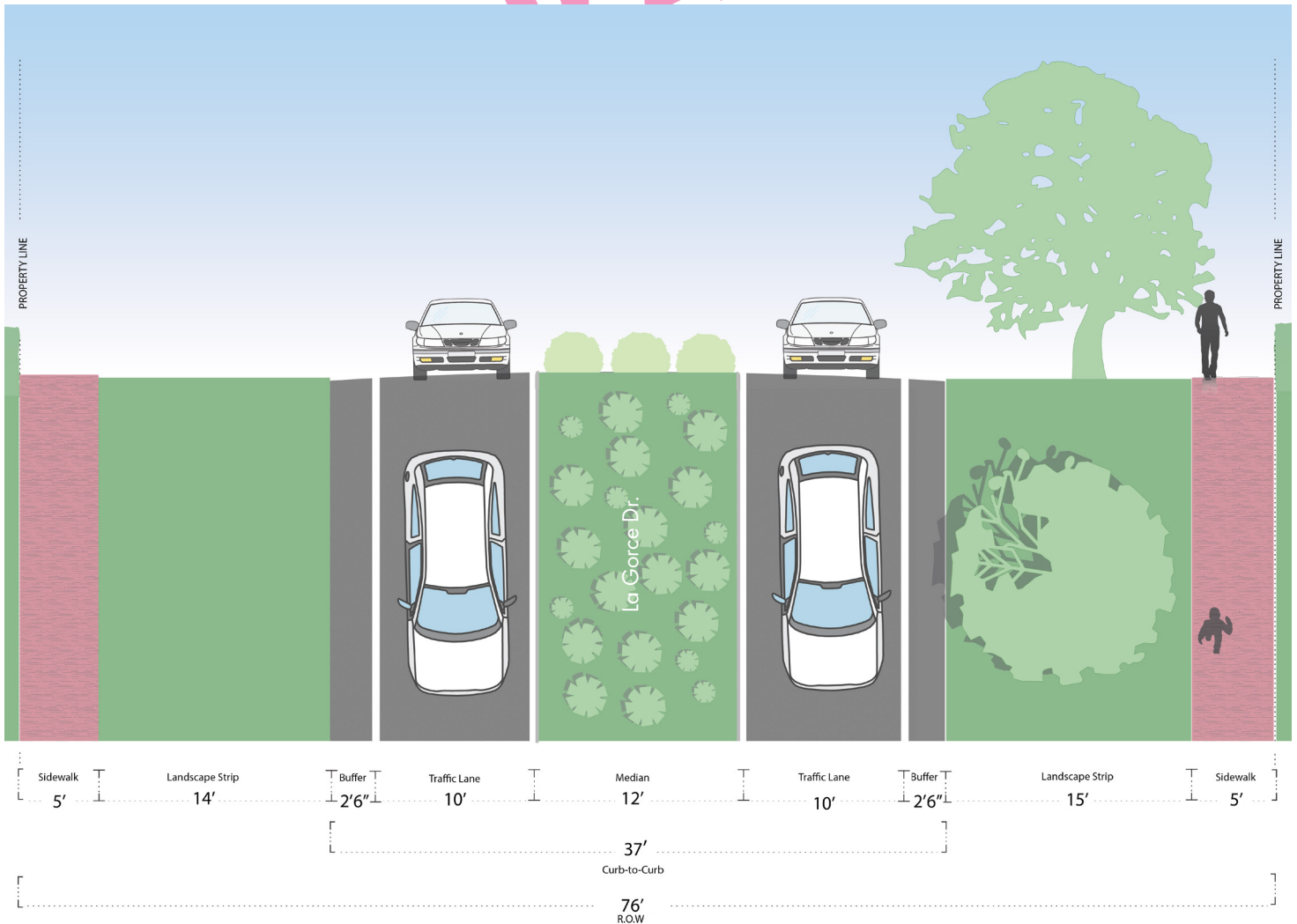
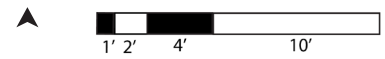
In this proposal a protected bike lanes are on both sides of the bridge. **A.** The right turn into Allison Island is still there. **B.** Travel lanes have been narrowed, **C.** center turn lane eliminated to accommodate the needed bicycle pedestrian space.

# LA GORCE DRIVE

STREET DATA	
Public Right-of-Way Width	76'
Pavement Width	37' typical
Posted Speed Limit	35 mph
Project Limits	Between 63 Street and 51 Street
Project Length	6,000' or 1.1 Miles
Daily Volume	4,800 ADT
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	this route serves as an important north sSouth connector in the greenway network.
Impact on modeshare	Moderate
Upcoming Public Works Project	Yes - Miami-Dade County

## EXISTING CONDITIONS

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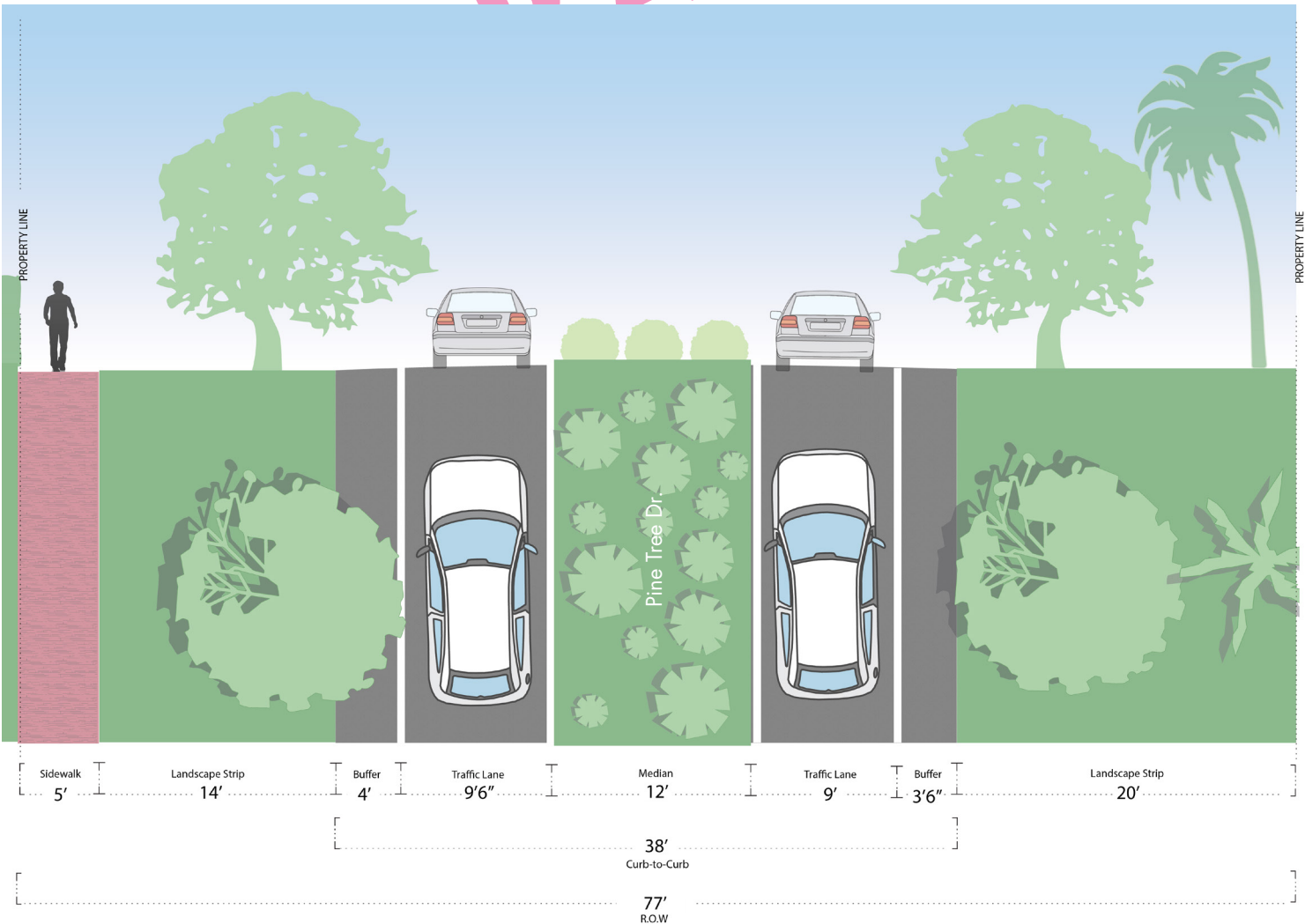


STREET DATA	
Public Right-of-Way Width	77'
Pavement Width	38' typical
Project Limits	Between 63 Street and 51 Street
Project Length	6,000' or 1.1 Miles
Posted Speed Limit	35 mph
Daily Volume	5,1200 ADT
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	this route serves as an important north sSouth connector in the greenway network.
Impact on modeshare	Moderate
Upcoming Public Works Project	Yes - Miami Dade County



DRAFT

## EXISTING CONDITIONS



# PINE TREE / LA GORCE COMBINATIONS

Pine Tree Drive and La Gorce have the potential to provide a critical north/south link between Nautilus to the south and North Shore to then north. The corridors are currently a one-way pair of two car travel lanes with an average daily volume of 7,200 between the two corridors. The low volume and ample roadway surface make for a flexible street design and allow for the inclusion of on-street bicycle facilities and a significant increase in greenway space.

Within the overall network, connections must be made at 51st Street and 63rd Street (see page x-y for intersection details). The corridors are the subject of an upcoming Miami-Dade county capital improvement project, which will allow for their redesign as part of a milling/repaving project. Before then, the Alton Road repaving project will happen requiring a short term and long term strategy.

Given the low traffic volumes, these corridors are prime candidates for a road diet and should be reduced to one lane in each direction, with on-street bicycle facilities and additional street trees and landscape strips. The pages that follow describe several variations in street design for the corridors.

## **PHASE 1: SHORT TERM - ONE WAY PAIR CAR LANE + BIKE LANE**

One-way pair of bike lanes. Southbound on La Gorce, northbound on Pine Tree.

- Replace one car lane in either direction with a bike lane.
- One-way pair of bike lanes. Southbound on La Gorce, northbound on Pine Tree.
- Additional landscaping (moveable or permanent) dividing car lane from bike lane.
- Additional space added to landscape strip (4' -5')
- Easy and immediate retrofit from existing condition

## **PHASE 2: SHORT TERM - CONVERT BOTH TO TWO WAY CAR TRAVEL, WITH ONE WAY PROTECTED BIKE LANES**

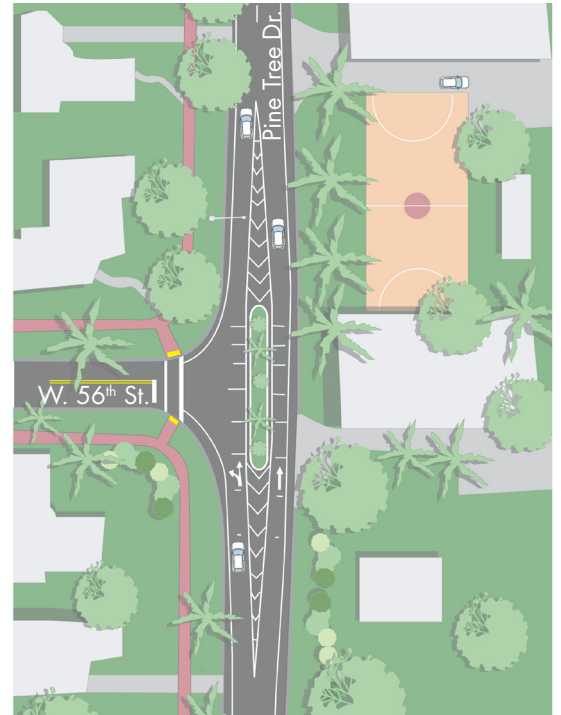
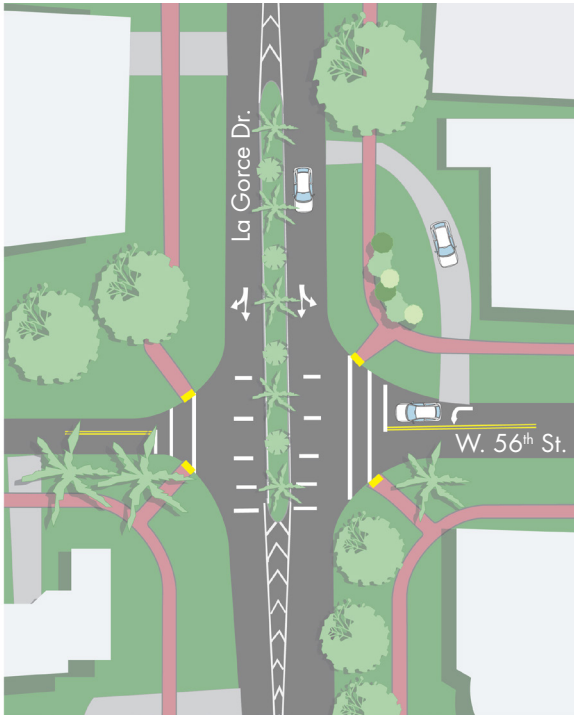
- One-way pair of bike lanes. Southbound on La Gorce, northbound on Pine Tree.
- Two-way car travel on both streets - additional capacity to accommodate for reconstruction of Alton Road, between 51 and 63 Streets.
- Removal of medians at intersections.
- Preliminary Approval by Miami-Dade County
- increase in car capacity

## **PHASE 3: LONG TERM - ONE WAY PAIR CAR LANE + BIKE LANE**

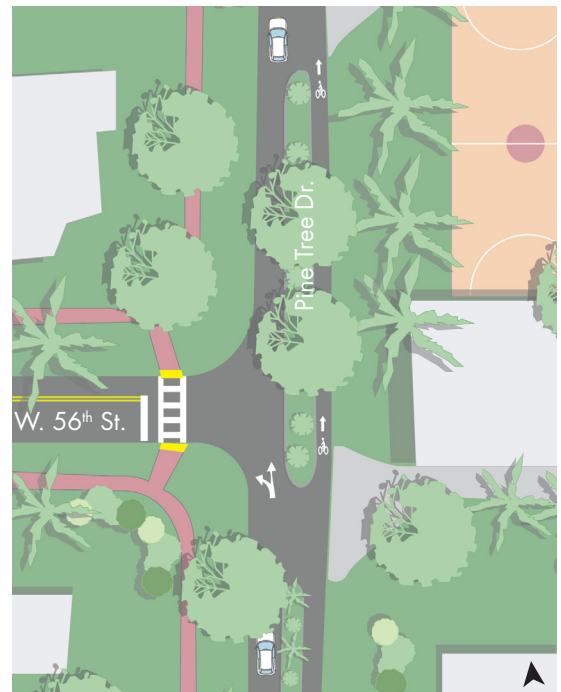
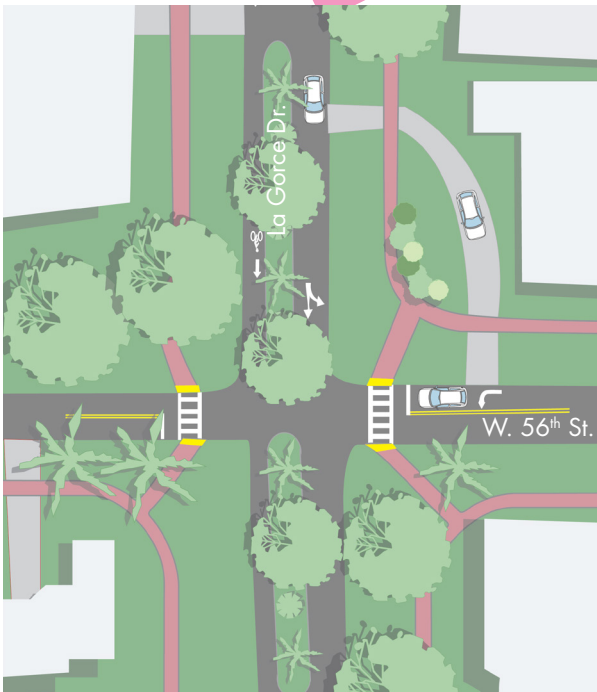
- Revert back to one lane of car travel in each direction.
- One-way pair of bike lanes remains. Southbound on La Gorce, northbound on Pine Tree.
- Addition of medians and landscape space.
- Additional space added to landscape strip

# PINE TREE / LA GORCE COMBINATIONS

## EXISTING CONDITIONS



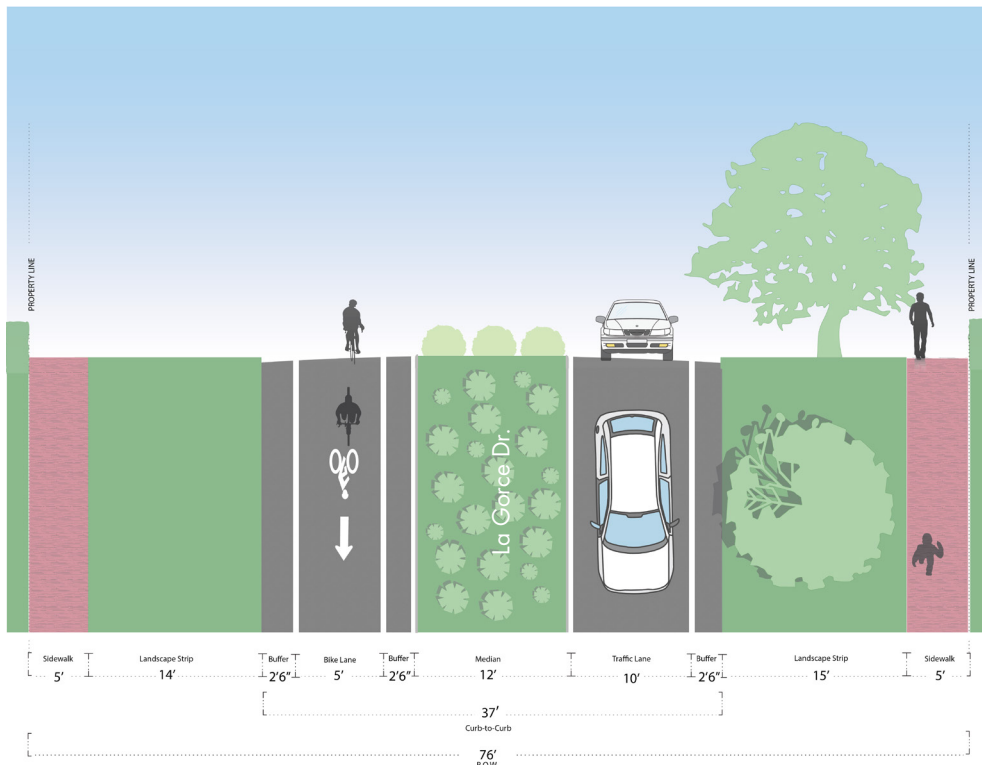
## FUTURE CONDITIONS



The primary recommendation for these corridors is the removal of one lane of traffic in each direction (from both Pine Tree and La Gorce) and the implementation of buffered and physically protected bike lanes. The data shows that for both Pine Tree and La Gorce there are just under 9,900 average cars per day, well under the 25,000 ADT threshold used to evaluate four lane roads for reduction in capacity. At the time when both Pine Tree and La Gorce are due for reconstruction, their lane widths should be significantly reduced, and more space given over to the landscape strip, or in the case of this design, to a wide, tree-planted median.

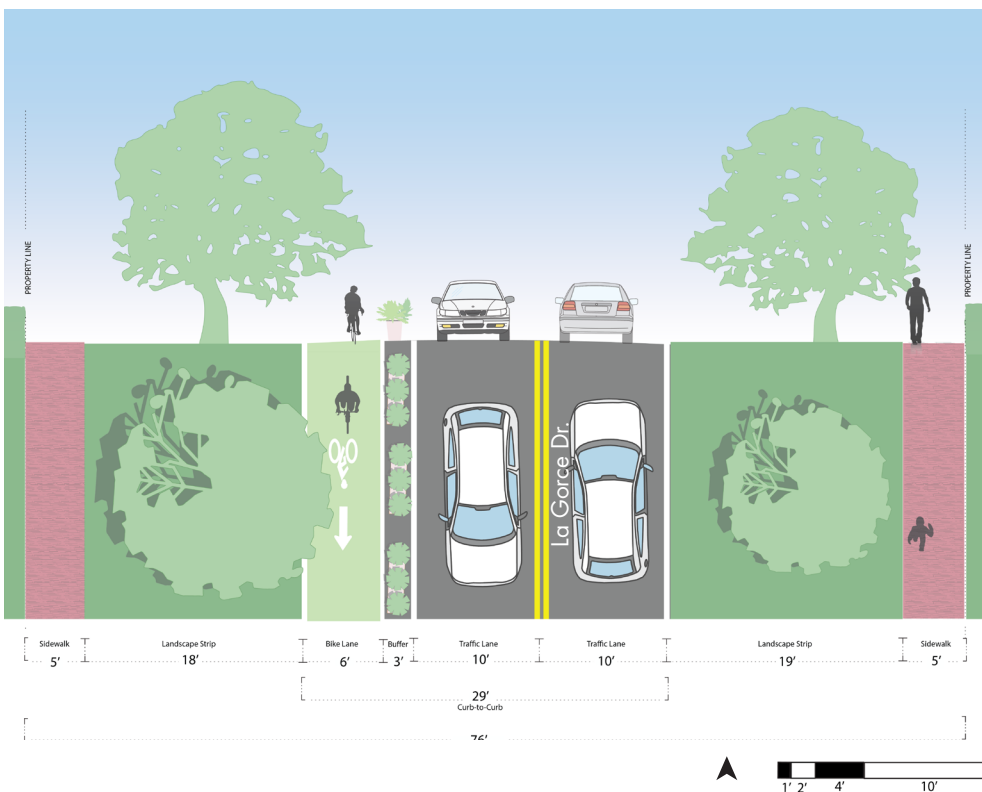
# PINE TREE / LA GORCE COMBINATIONS

## PHASE 1: ONE-WAY PROTECTED BIKE LANE



The most immediate thing that can be done to improve connectivity on these two corridors is the removal of one lane of traffic in each direction (from both Pine Tree and La Gorce) and the implementation of buffered and protected bike lanes. Phase 1 results in a net decrease in automobile network capacity, and an increase in greenspace.

## PHASE 2: ONE-WAY PROTECTED BIKE LANE



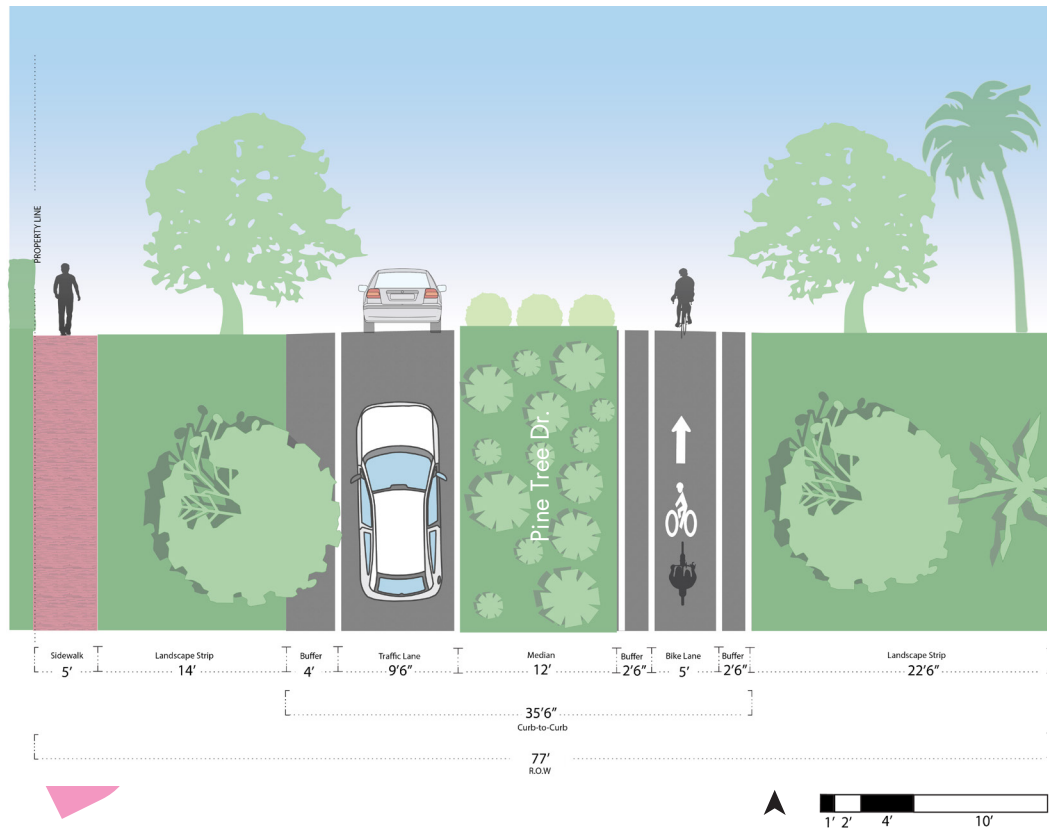
As with the one-way proposal on Pine Tree, this proposal assumes the creation of a one-way protected bike lane that forms a one-way pair with Pine Tree, which would have a similar configuration. Here, rather than remove car capacity, travel lanes are made two-way. Phase 2 results in a net increase in automobile network capacity.



# PINE TREE / LA GORCE COMBINATIONS

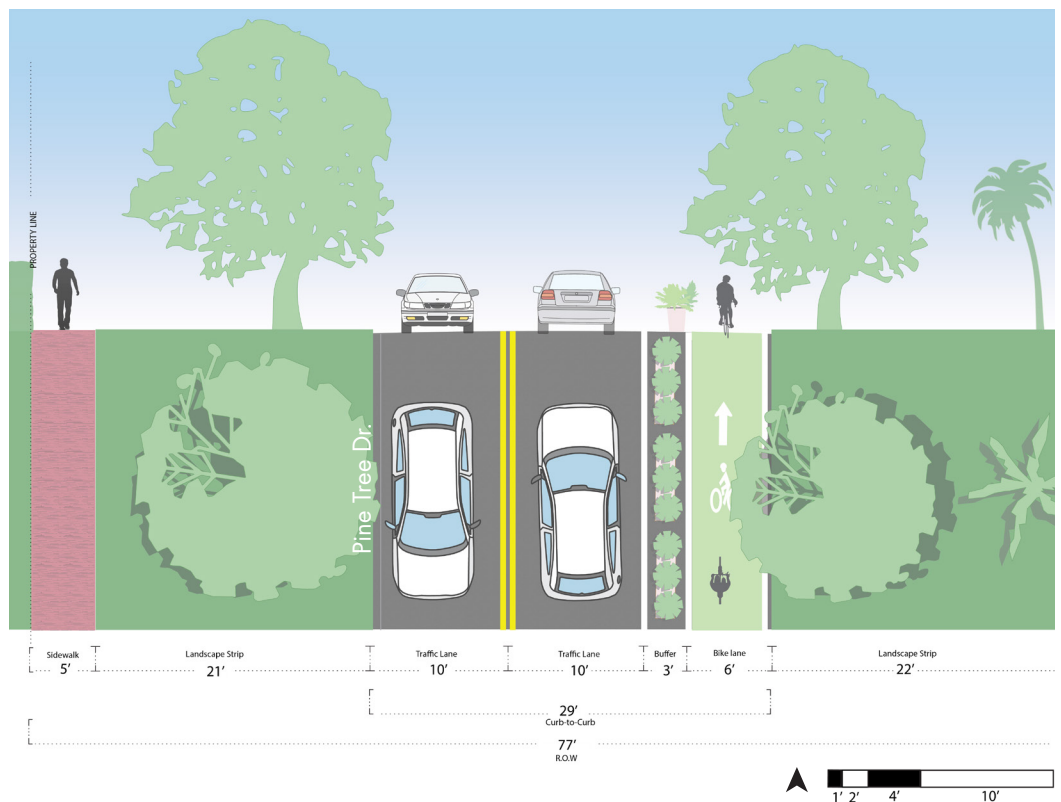
## PHASE 1: ONE-WAY PROTECTED BIKE LANE

Without very much investment, a buffered and protected bike lanes can be implemented within the current width of Pine Tree. Over the long term additional medians and street trees should be added to create a well shaded greenway.

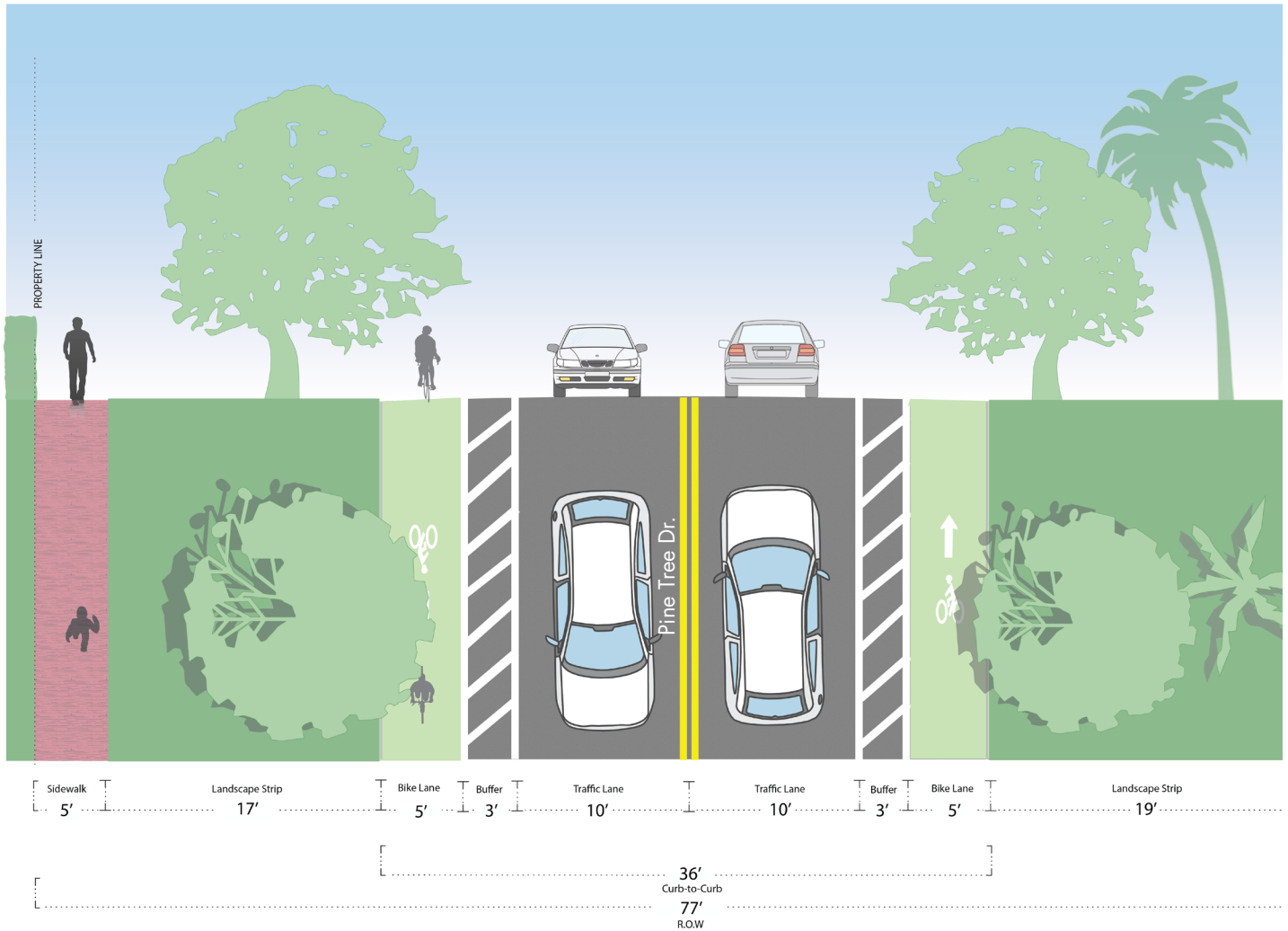


## PHASE 2: ONE-WAY PROTECTED BIKE LANE

The existing 36' pavement width allows for great flexibility in redesigning the street. This proposal assumes the creation of a one-way protected bike lane that forms a one-way pair with Pine Tree, which would have a similar configuration.



# PINE TREE / LA GORCE PROTECTED BIKE LANES



As the most direct route with connections south of 51 Street, a two-way set of protected bike lanes on Pine Tree would allow for the conversion of the street to two-way travel. If this option is chosen, no bicycle facility is needed on La Gorce, and the remaining space can be converted into green space. Any number of treatments found in the Street Design Guide can be used.

# 63<sup>RD</sup> STREET / PINE TREE / LA GORCE INTERSECTION

The intersection of 63 Street, Pine Tree and La Gorce is a pivotal moment in the Miami Beach Bicycle Network. It is one of only two places to go north / south. Traffic coming from Pine Tree merge with traffic on Alton to cross the bridge into North Beach. North Bay Road traffic also empty's out on to this corridor.



# 63<sup>RD</sup> STREET / PINE TREE / LA GORCE INTERSECTION



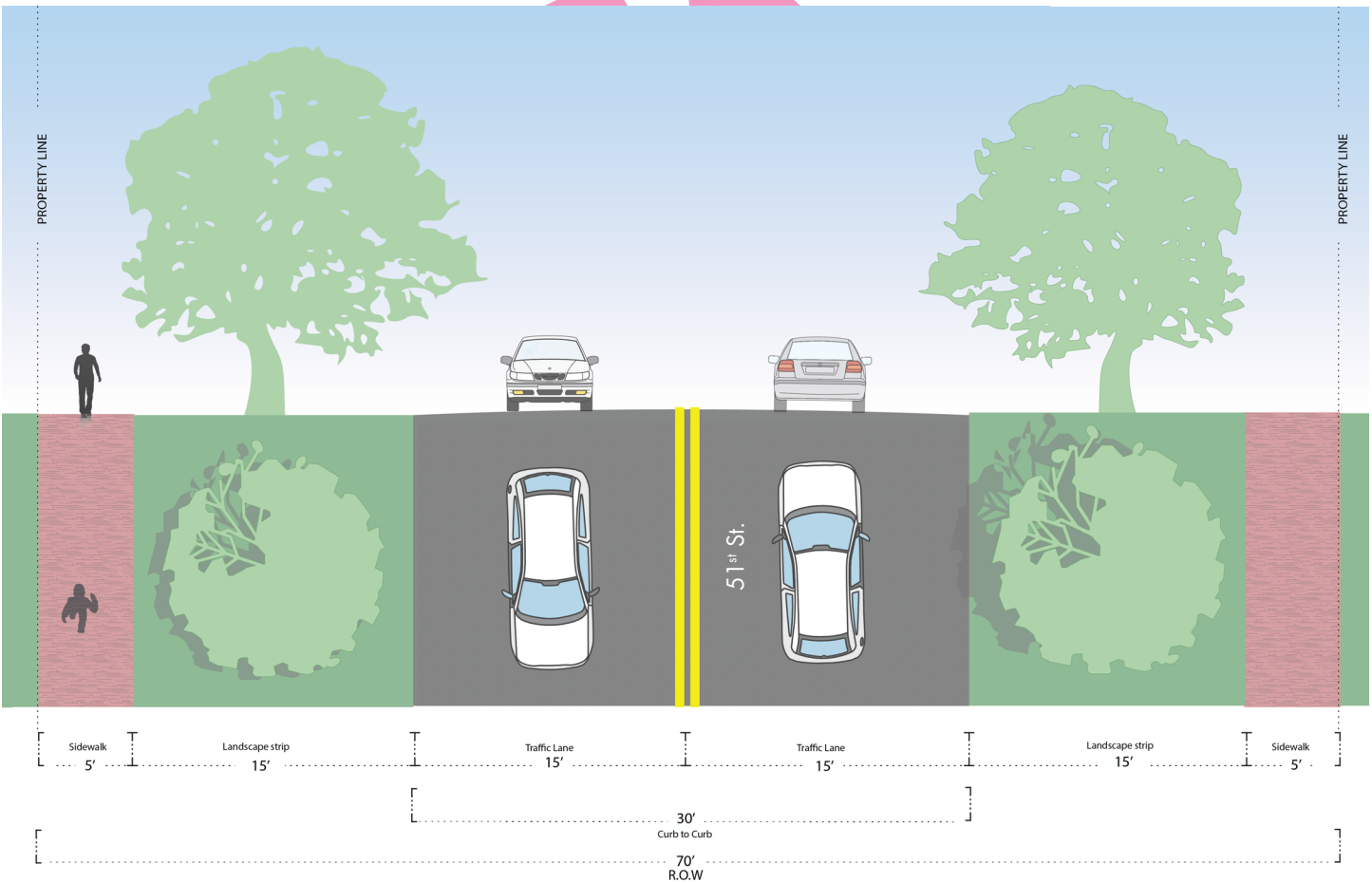
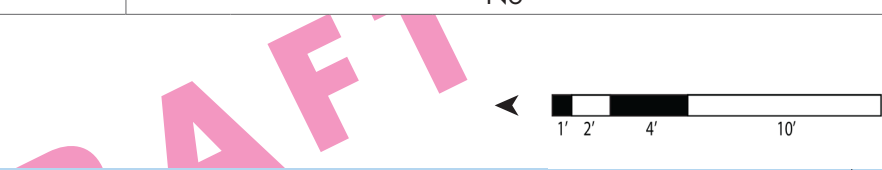
# 63<sup>RD</sup> STREET / PINE TREE / LA GORCE INTERSECTION



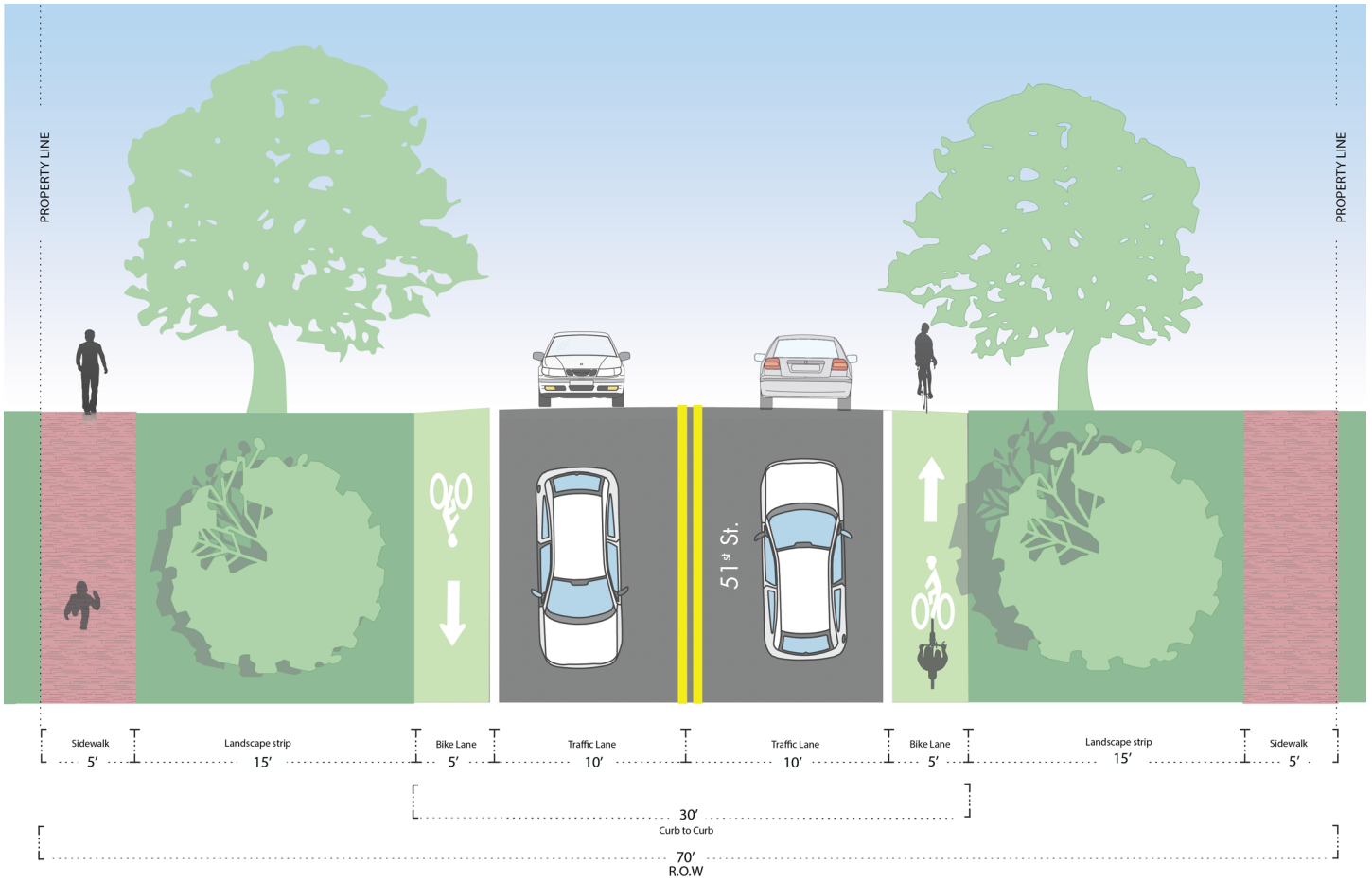
# 51<sup>ST</sup> STREET

STREET DATA	
Public Right-of-Way Width	70'
Project Limits	Between Alton Road and Pine Tree Drive
Project Length	2,000', 0.4 Miles
Pavement Width	30' typical
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	There is a small park on the corridor. The value of this corridor is in the connectivity between routes.
Impact on modeshare	moderate
Upcoming Public Works Project	No

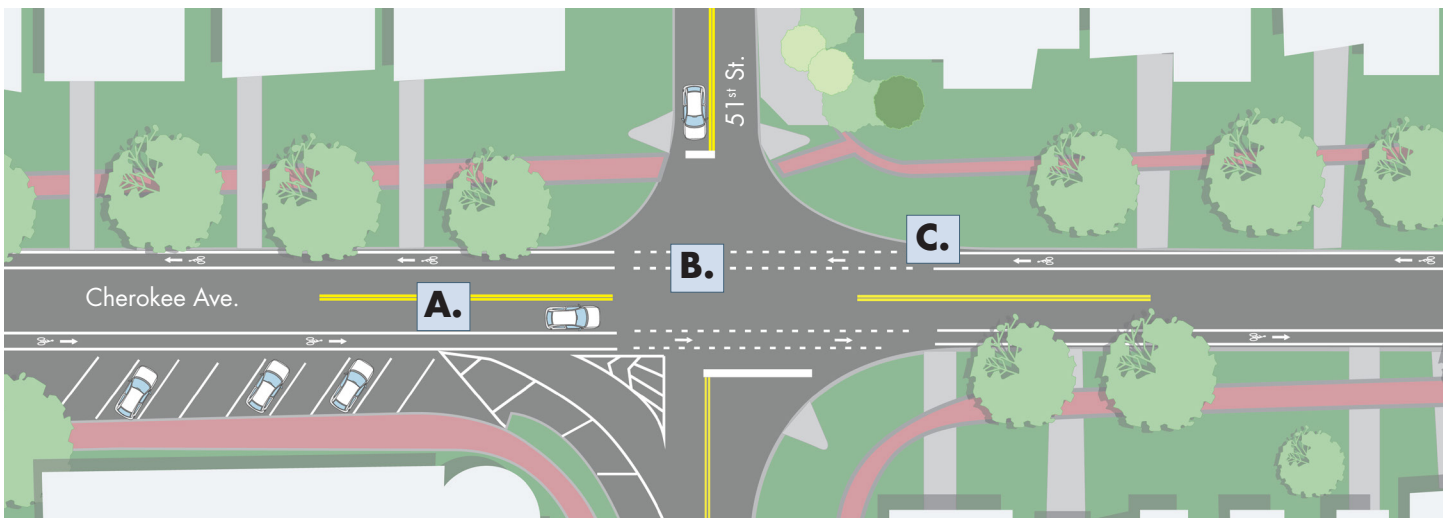
## EXISTING CONDITIONS



51 Street is another east /west connection in the bicycle network. It connects Alton Road and Pine Tree / La Gorce pair.



5' Bike lanes on this 28' roadway surface can be implemented in the short term with no pavement expansion. Given the observed speeds and volumes on this route, the criteria allow for a conventional bike lane.



The intersection of 51 Street and Cherokee Avenue is the site of a unique condition. A combination of angled parking and small scale retail make this

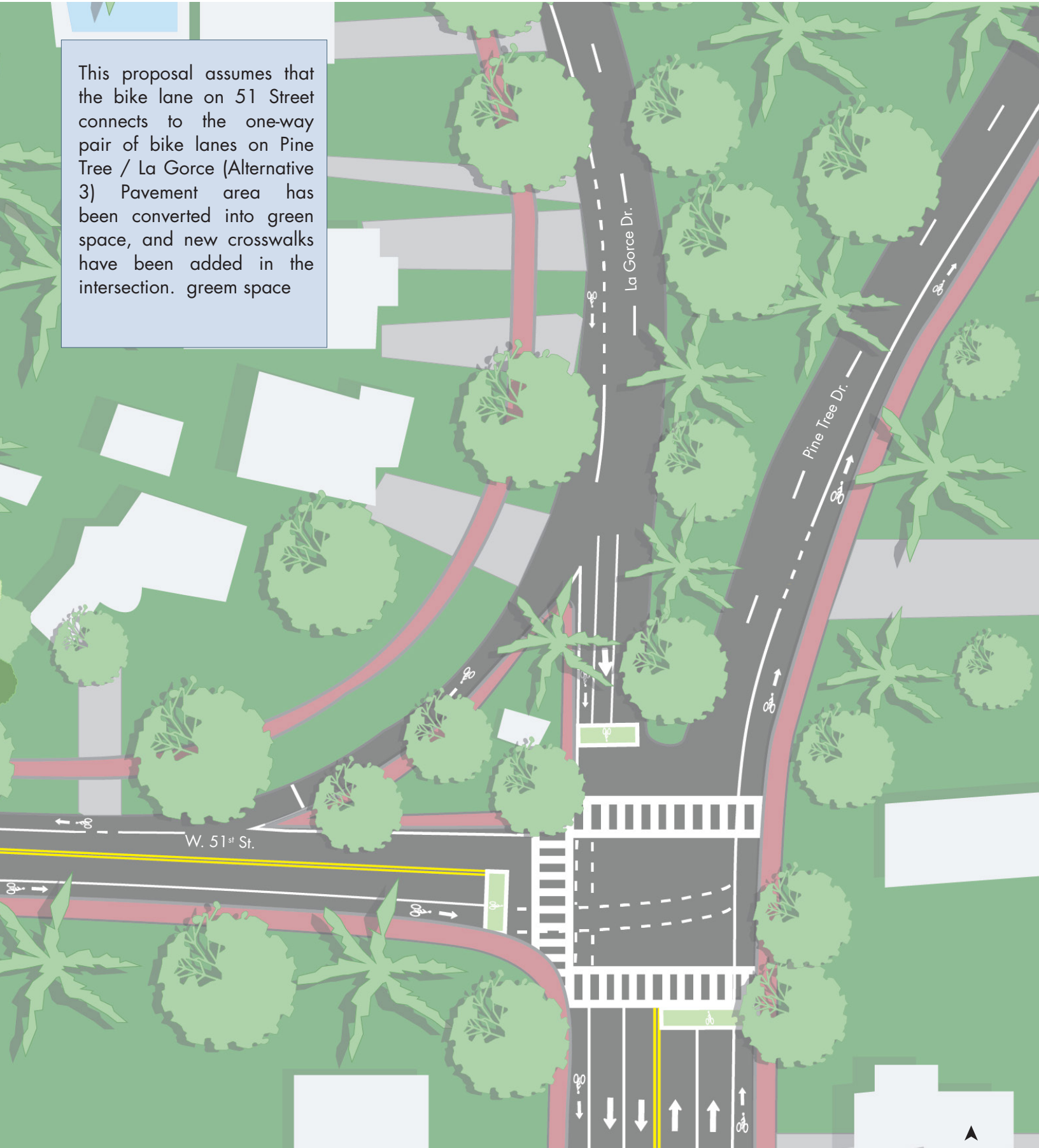
# 51<sup>ST</sup> STREET / PINE TREE / LA GORCE INTERSECTION - EXISTING





# 51<sup>ST</sup> STREET / PINE TREE / LA GORCE INTERSECTION PROPOSED

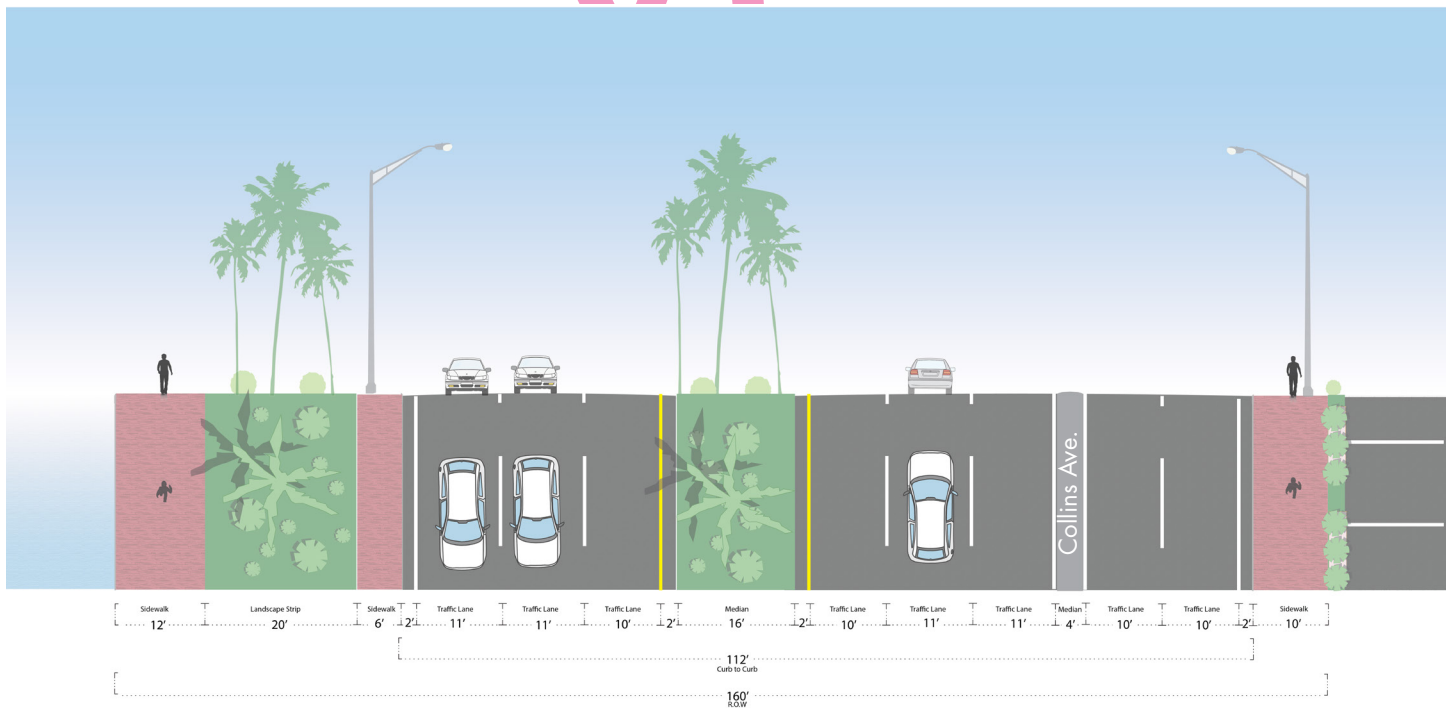
This proposal assumes that the bike lane on 51 Street connects to the one-way pair of bike lanes on Pine Tree / La Gorce (Alternative 3) Pavement area has been converted into green space, and new crosswalks have been added in the intersection. green space



# COLLINS AVENUE

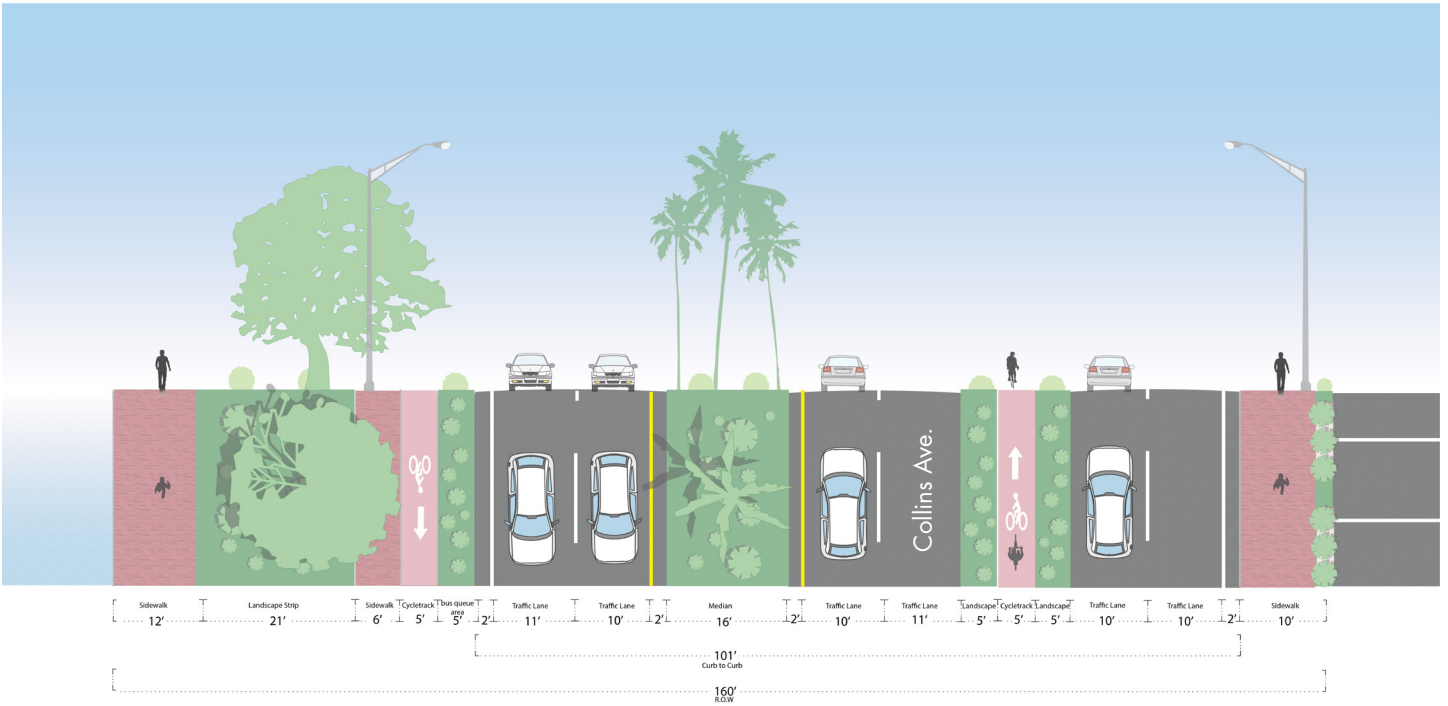
STREET DATA	
Public Right-of-Way Width	160'
Project Limits	Between 41 Street and 63 Street
Project Length	11,400', 2.2 Miles
Pavement Width	112' typical
Posted Speed Limit	35 mph
Daily Volume	15,120 - 32,520 ADT
Predominant Land Use	High Density Residential
Predominant Development Pattern	Resort style mid rise and high rise apartment buildings with no ground level commercial.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The high density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	High
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS



Collins Avenue between 41 Street and 71 Street is the heart of Mid-Beach and the main point of access for thousands of Miami Beach residents. The ample roadway dimensions, daily volumes and speeds suggest that this should be a priority corridor both for transit access and for protected bicycle facilities. From a mode share perspective, this corridor could provide critical connectivity to thousands of residents with the thoughtful redesign of the street to accommodate protected bicycle facilities and additional street trees as shown in the drawings on the following pages.

## PROTECTED BIKE LANE

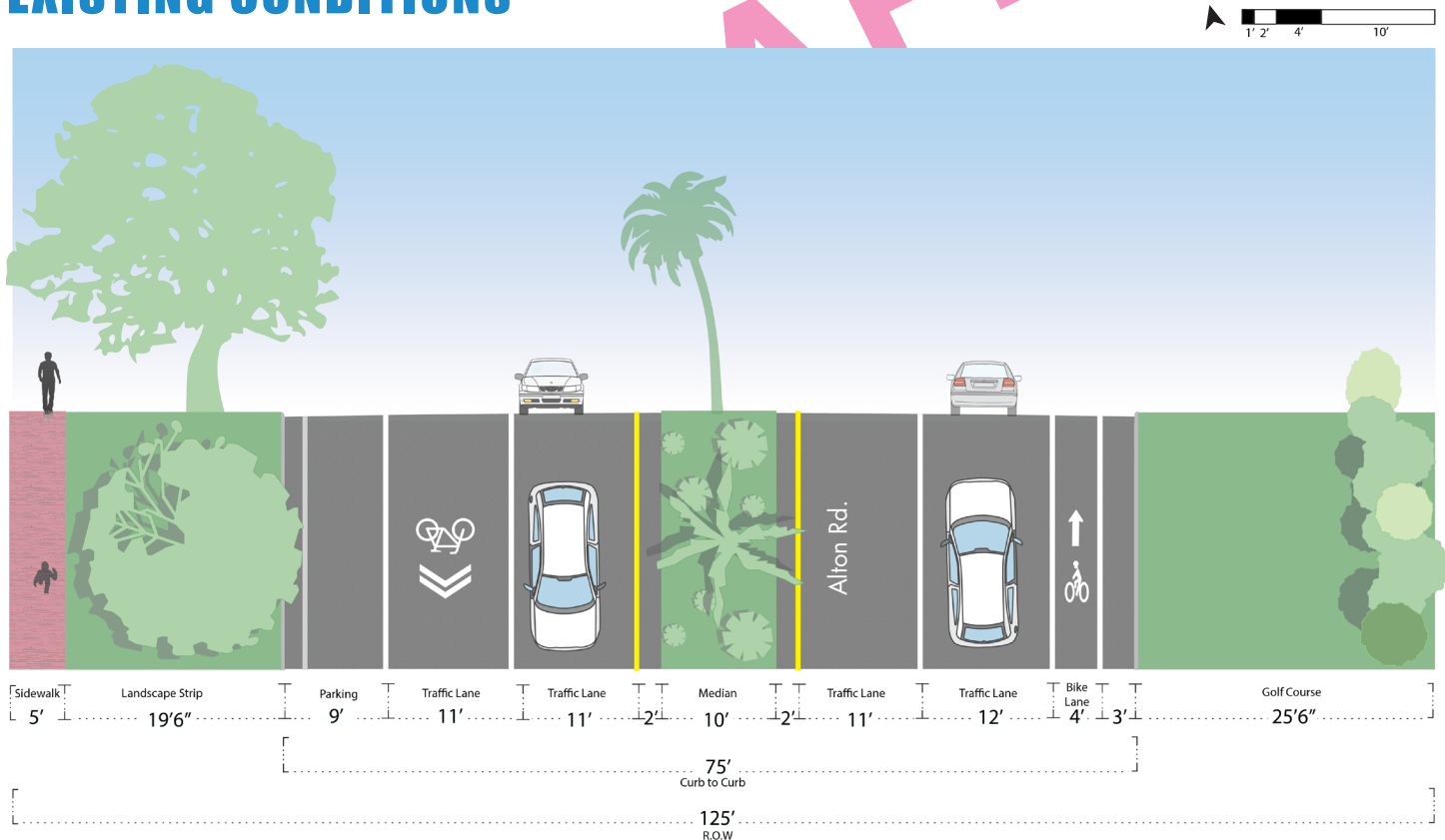


This treatment suggests the removal of a travel lane in either direction to create new landscape protected bike lanes. The design repurposes the median on the northbound side of the street to accommodate a protected bike lane. Entrance/exits from the slip lane can maintain their current geometries with additional treatments for the bike lane. Travel lanes have been reduced to 10' for interior lanes, and 11' for outer lanes. New street trees should be added along the new south bound bike lane, on the median, and along the northbound sidewalk.

# ALTON ROAD

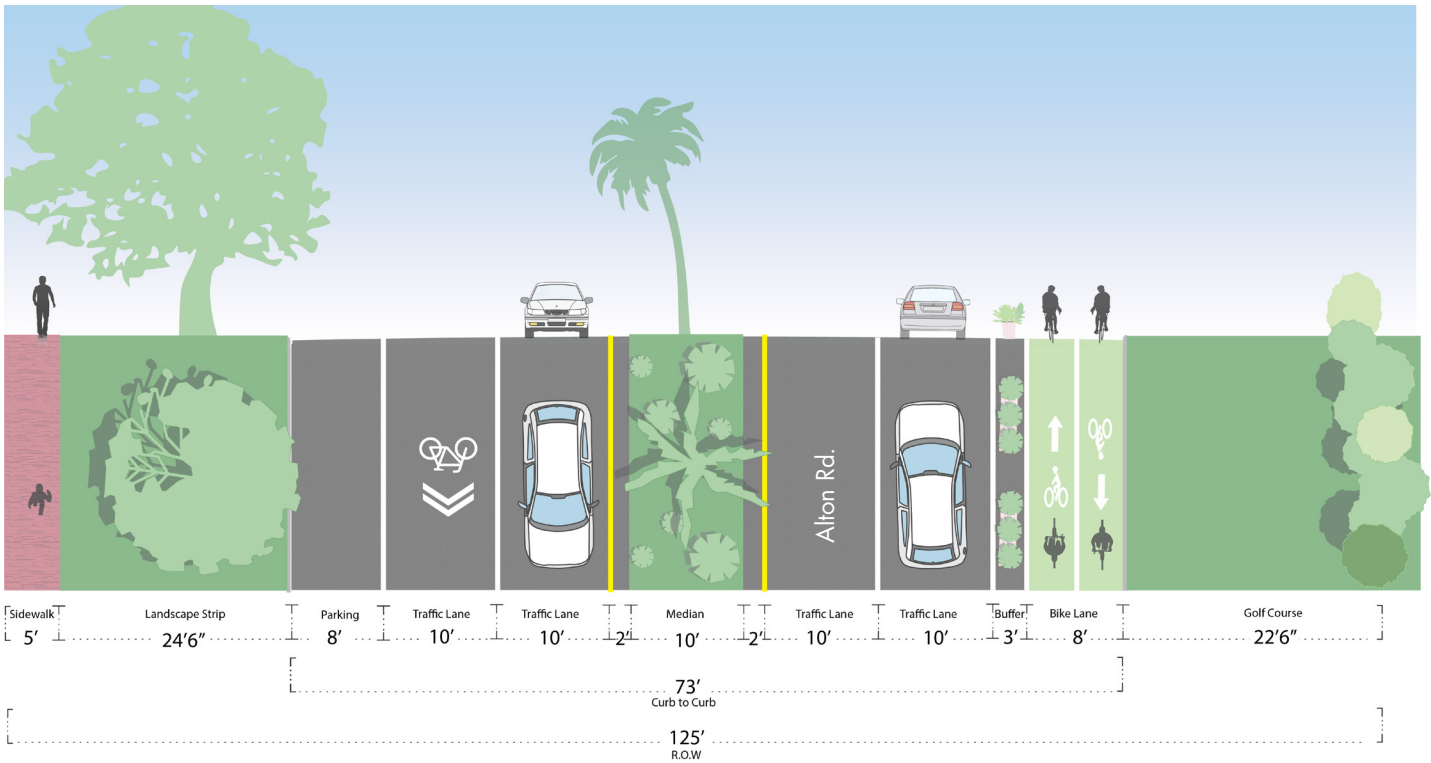
STREET DATA	
Public Right-of-Way Width	125'
Pavement Width	75' typical
Posted Speed Limit	35 mph
Daily Volume	32,000 ADT
Predominant Land Use	Single Family Residential
Project Limits	Between Chase Avenue And North Michigan Avenue
Project Length	Approximately 4,500', 0.8 Miles
Predominant Development Pattern	Detached single family homes with driveways, and a municipal golf course.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The appeal of this corridor is that it is a direct north/south connector. It is also a high volume street that make it a candidate for protected facilities.
Impact on modeshare	High
Upcoming Public Works Project	Yes - FDOT resurfacing

## EXISTING CONDITIONS

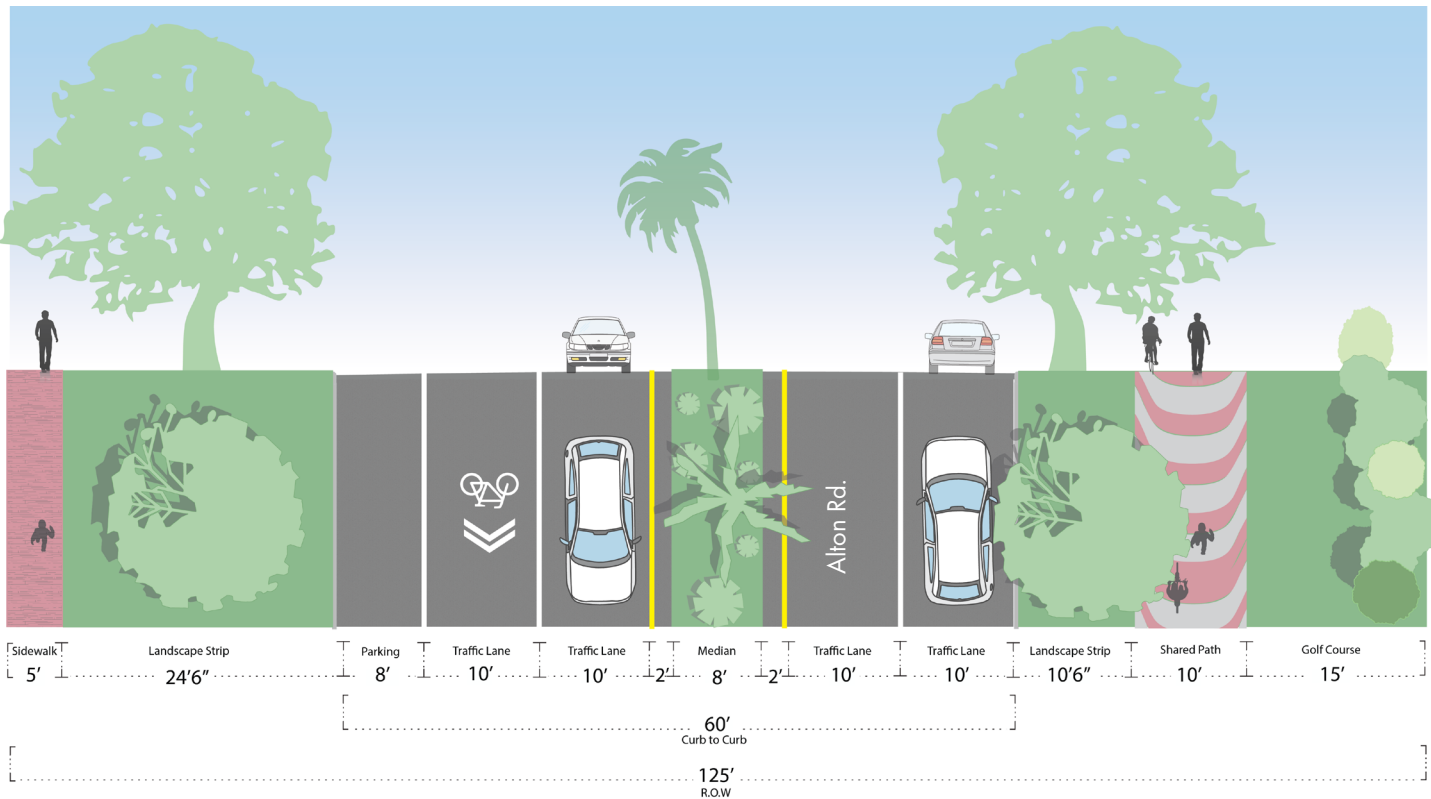


The upcoming reconstruction of Alton Road from X to X by the Florida Department of Transportation provides an opportunity to improve bicycle access on one of the city's main north/south thoroughfares. For a street of this volume and speed the Street Design criteria recommend an off street or protected on-street facility. The corridor currently has a bike lane going north and a sharrow going south. These facility types are not likely to attract the vast majority of users. Our primary recommendation for this corridor is a shared path, or other protected facility like the two-way protected bike lane (shown on page 85). The proposals envision a reduction in lane widths from those proposed by the FDOT to 10' standard, together with an enlargement of the median area. These facilities take advantage of the minimal number of conflicts on the golf course side of the corridor.

## TWO WAY BIKE LANE



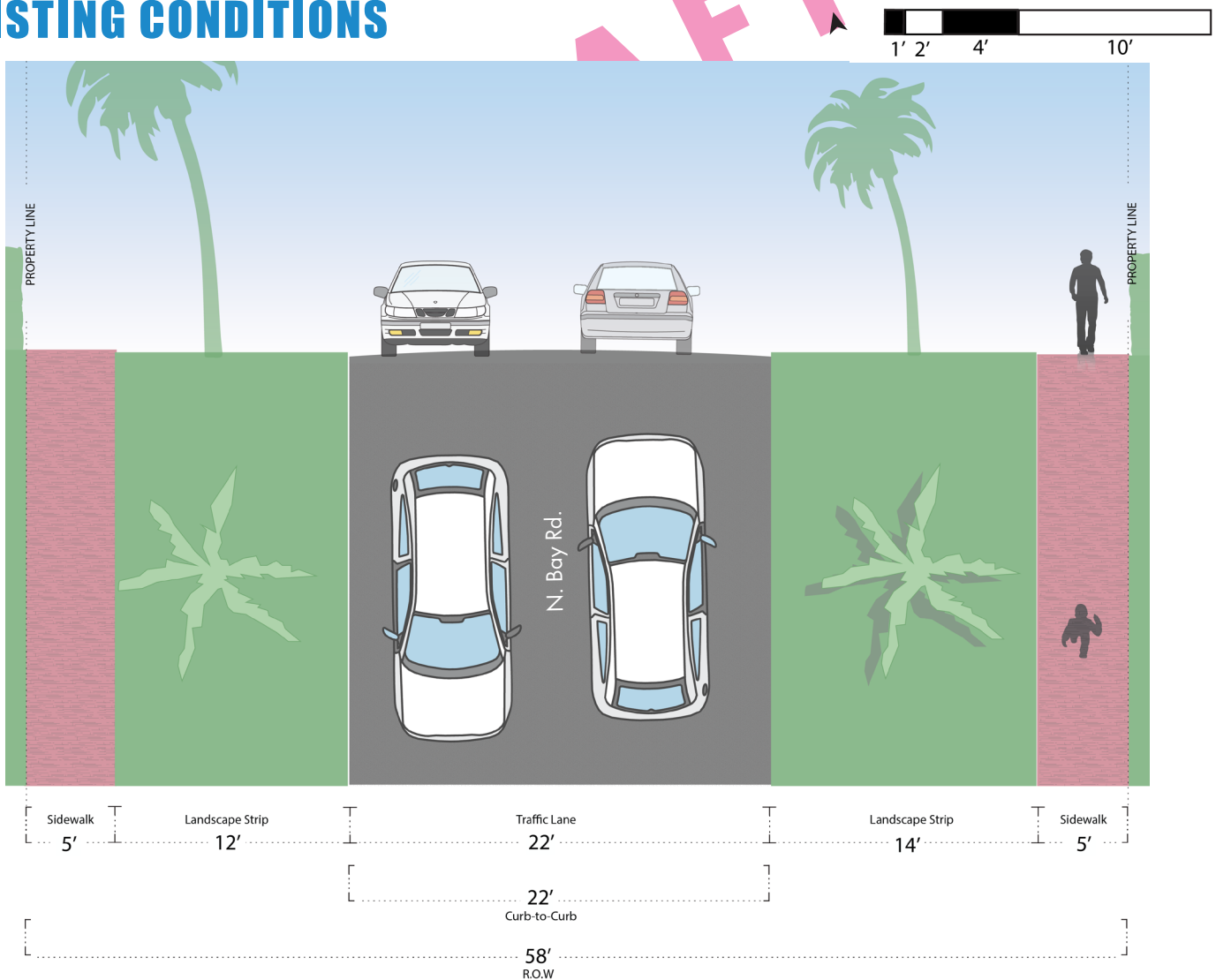
## SHARED PATH



# LOWER NORTH BAY ROAD

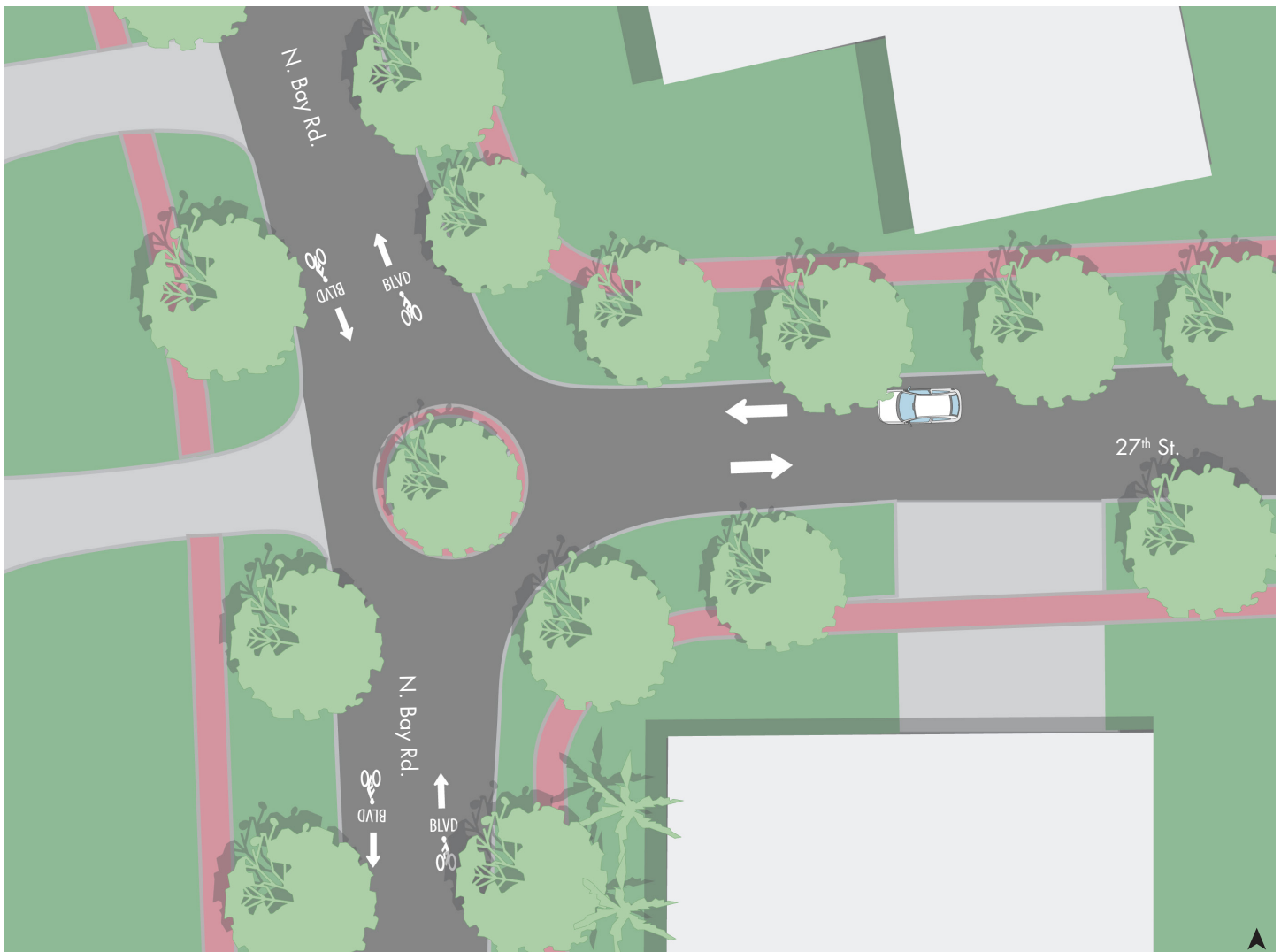
STREET DATA	
Public Right-of-Way Width	58'
Pavement Width	22' typical
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Single Family Residential
Project Limits	Between Alton Road and Alton Road
Project Length	Approximately 5,500', 1.0 Miles
Predominant Development Pattern	Detached single family homes with driveways.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	There are several schools and small parks that generate pedestrian activity along this route.
Impact on modeshare	Low
Upcoming Public Works Project	Yes - CIP

## EXISTING CONDITIONS



Lower North Bay Road, between Alton @ 20 Street and Alton at Chase Avenue is a well used north/south route that serves as a low stress alternative to the high volume and high speed conditions on Alton Road.

# LOWER NORTH BAY ROAD BICYCLE BOULEVARD



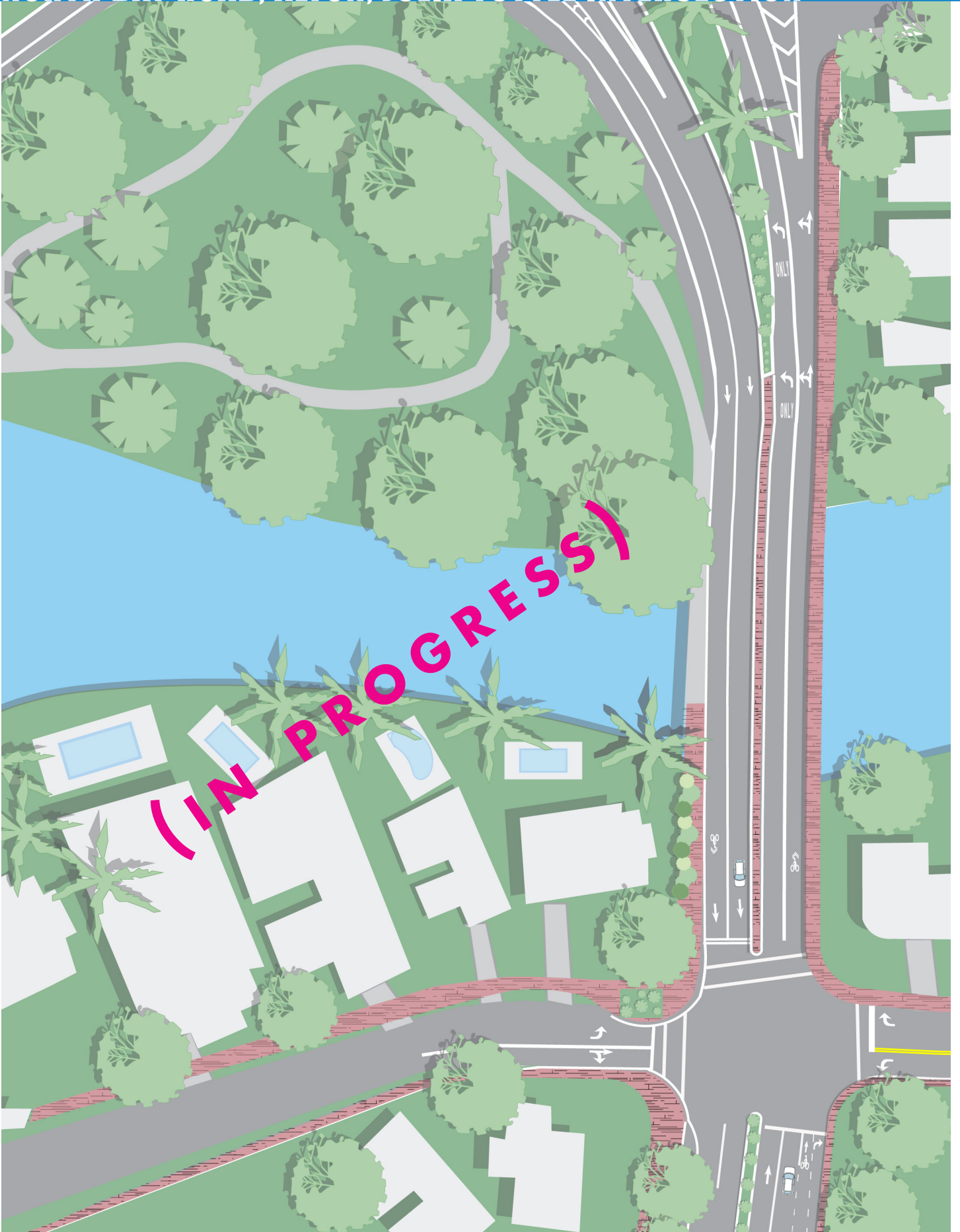
In many ways, lower North Bay Road, between Alton @ 20 Street and Alton at Chase Avenue, already functions like a bike boulevard. As described in the Street Design Guide, a bike boulevard is a street design technique that prioritizes bicycle travel on low volume residential streets. Traffic is diverted from these streets, and priority given to the bicyclists in the road. Given the low volume of cars observed on this street, and the existing traffic diversion devices (at the intersection with Chase Avenue), this is a prime candidate for improvements that will help convert this street into a true bicycle boulevard. Among the most important improvements to the corridor is the addition of street trees, bicycle boulevard pavement markings and traffic circles (or other traffic calming devices).

Typical sections in the October 2010 Bayshore BODR Documents show two 10' lanes and 2' concrete valley gutters. In general, we should strive for drainage solutions that do not increase the size of the street any more than necessary. The extra 2' added for the valley gutter rarely results in a well designed street. Any benefit you get from narrowing the lanes to 10', you effectively give up by widening the driver's field of vision by the extra 2' on either side. On a street like Lower North Bay Road, where we are proposing an on-street solution, we should do our best to make sure that the street is designed for the slowest speed traffic.

Bike route signs have been included at intersections. How are these branded? These should be branded according to the standards in the Street Design Guide.

# NORTH BAY ROAD, ALTON, JULIA TUTTLE INTERSECTION

Julia Tuttle Cswy Existing Condi-



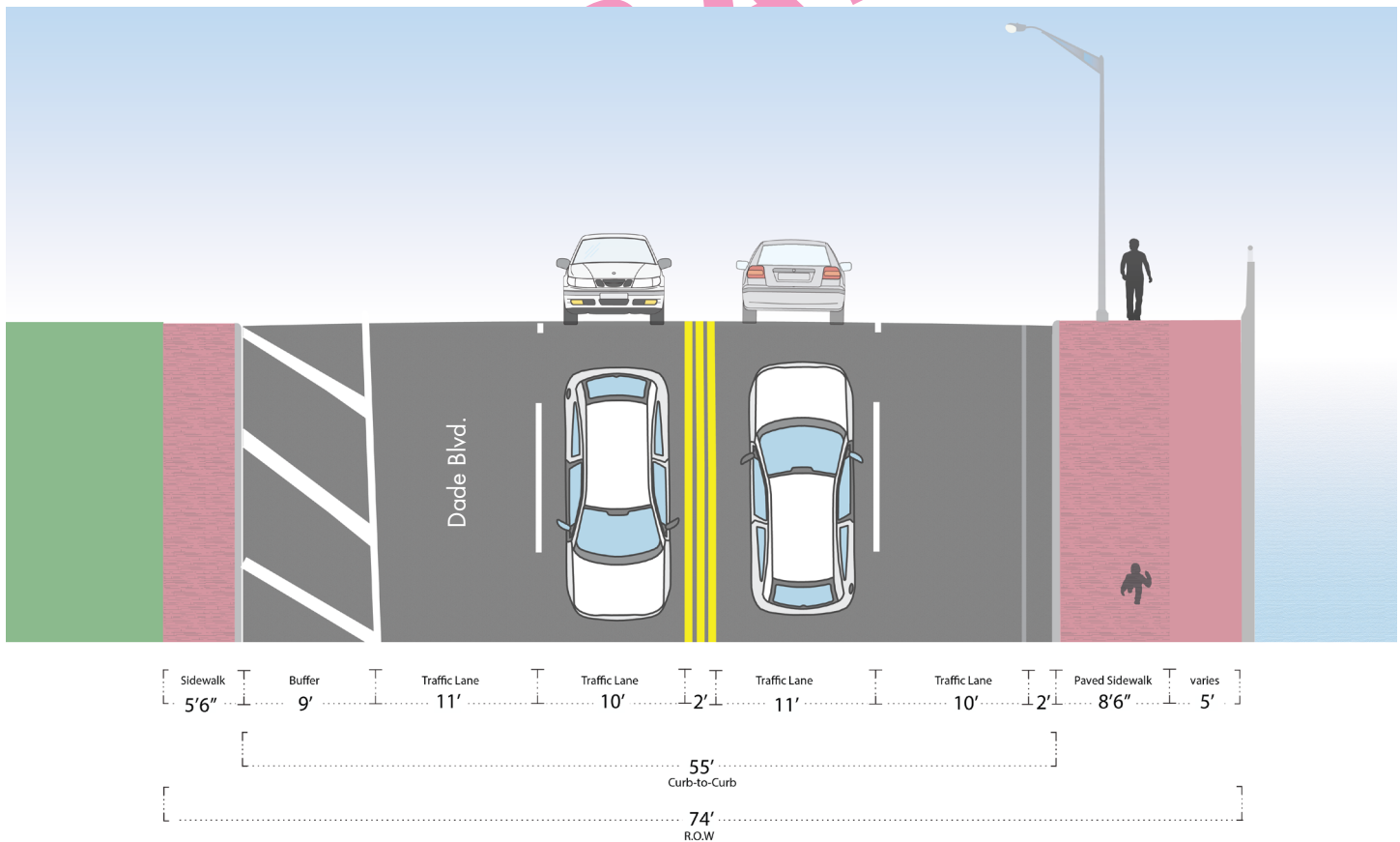
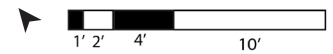


**DRAFT**

# DADE BOULEVARD

STREET DATA	
Public Right-of-Way Width	74'
Pavement Width	55' typical
Posted Speed Limit	35 mph
Project Limits	Between 20 Street and Sheridan
Project Length	Approximately 5,500', 1.0 Miles
Daily Volume	44,330 ADT
Predominant Land Use	Single Family Residential, multifamily, civic
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	There are several schools, museums, and small parks that generate pedestrian activity along this route.
Impact on modeshare	High
Upcoming Public Works Project	Yes - CIP

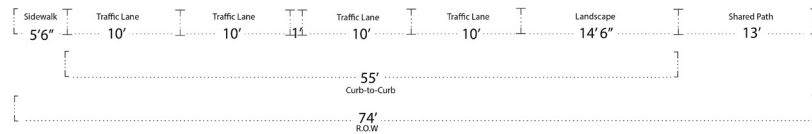
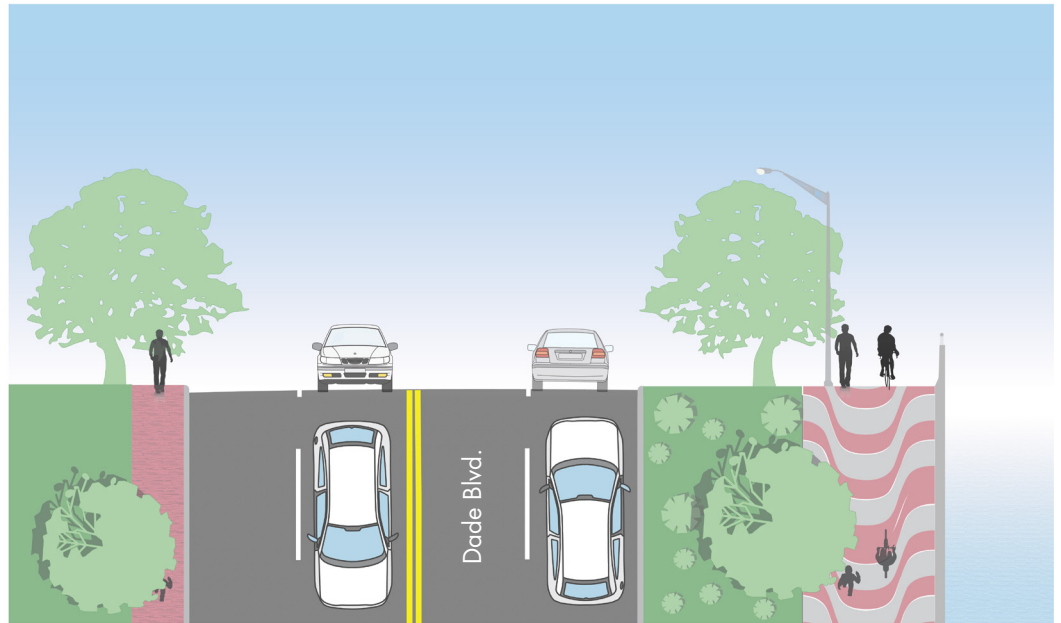
## EXISTING CONDITIONS



Dade Boulevard is one of the most important corridors in the bicycle network. It divides South Beach from Midbeach, and has ample right-of-way space to accommodate a premium protected bicycle facility. The recent sea wall reconstruction project produced a street section that lacked street trees and quality bicycle pedestrian facilities. For most of the corridor, the center turn lane can be removed. The ideal proposal for this street should include a wide tree-lined sidewalk along with a comfortable, protected bicycle facility.

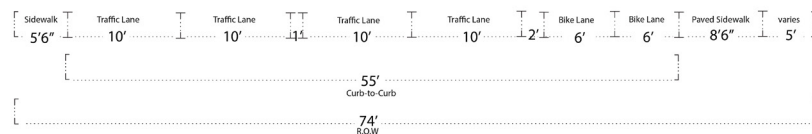
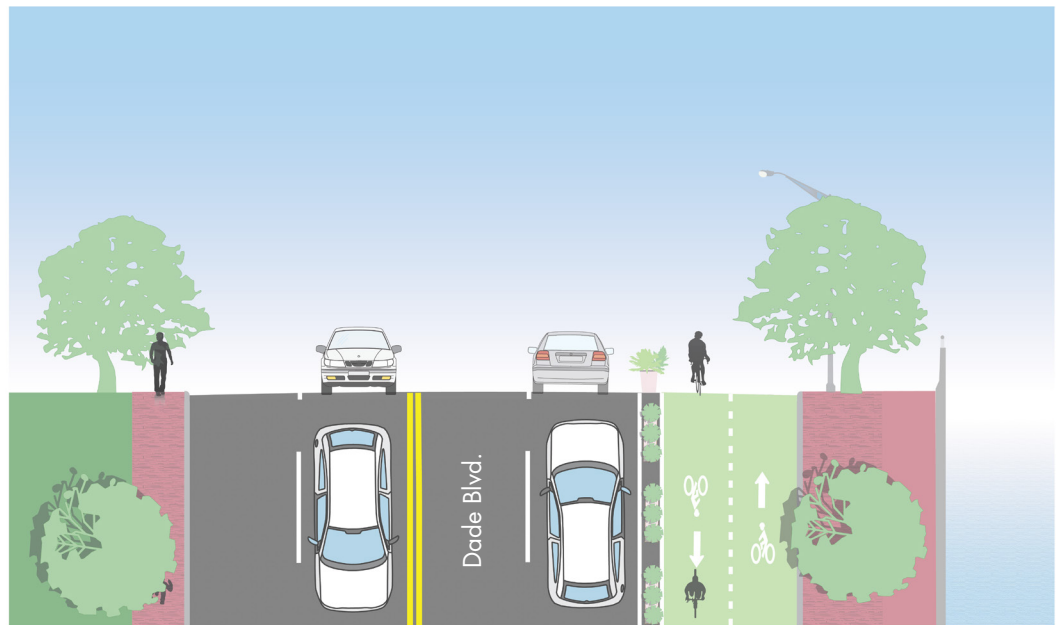
## SHARED PATH WITH LANDSCAPING

One of the signature projects included in this plan, the creation of a grand row of trees in a wide landscape strip between the shared path and Dade Boulevard. The center turn lane is removed for most of the corridor, per the drawings on page 88-89.

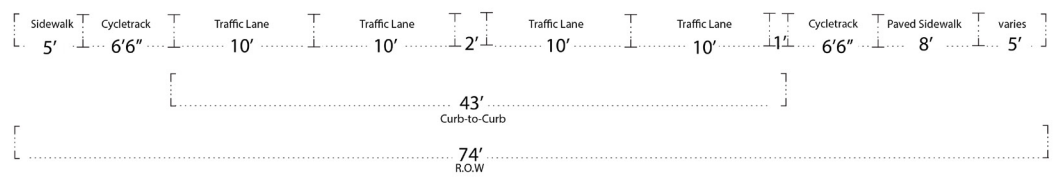
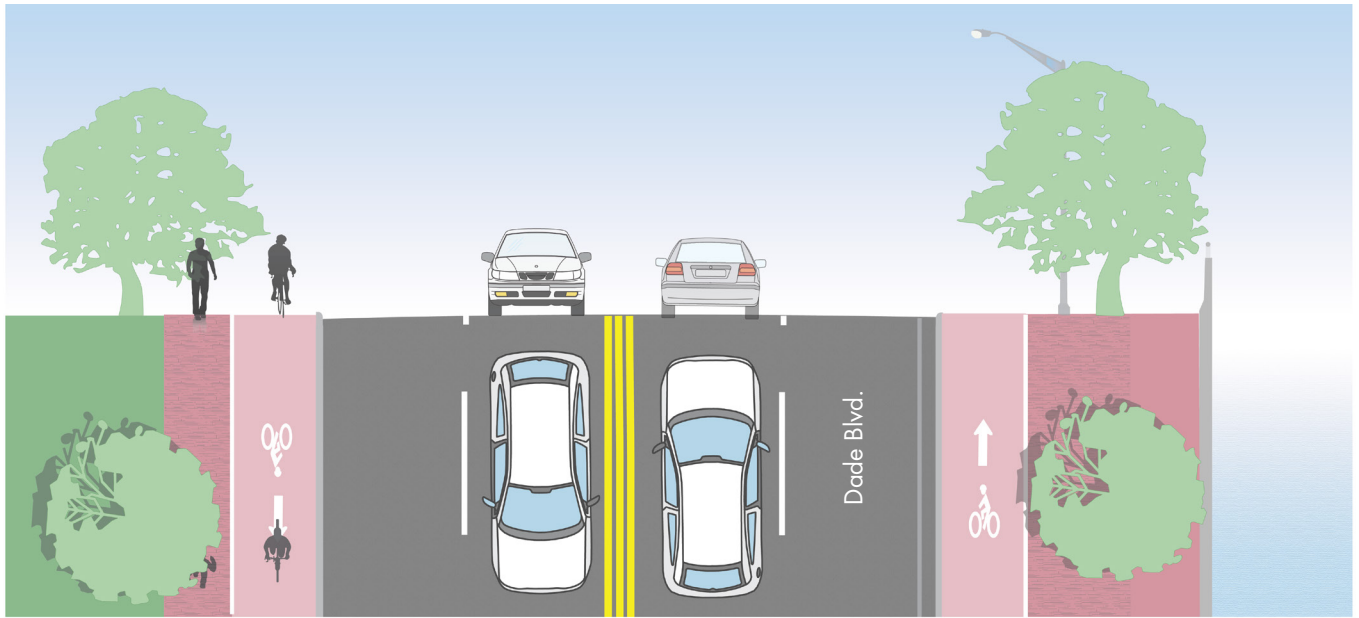
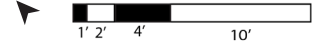


## PROTECTED LANES

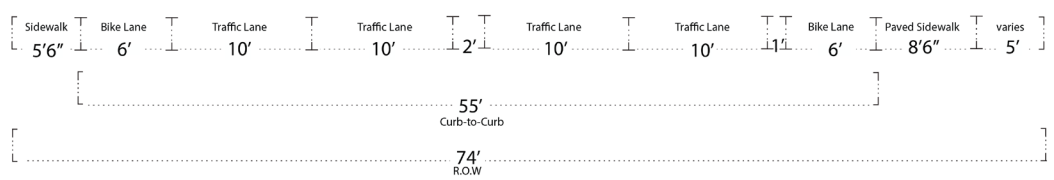
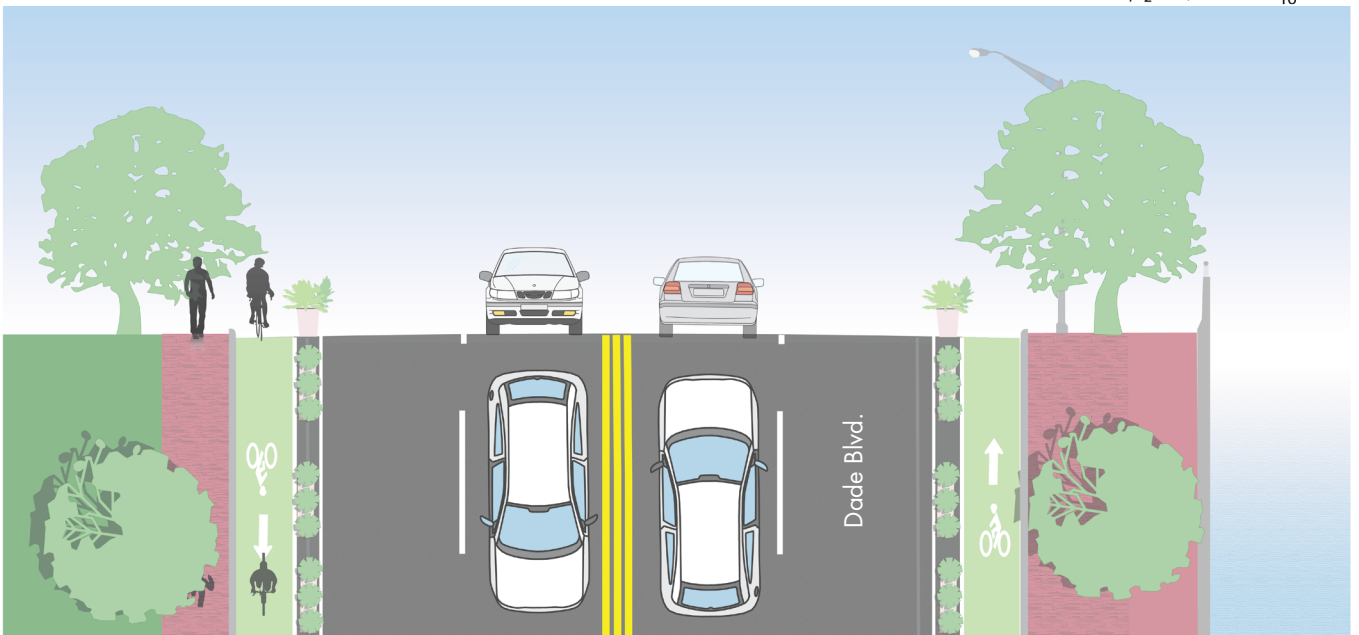
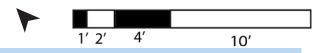
Given the volumes and speeds on Dade Boulevard, a protected bicycle facility is required, either as a shared path or protected bike lane. This are two way protected bike lanes. Any number of variations to Dade Boulevard exist. These were all calibrated using street design methods outlined in the street design guide and are on the pages that follow.



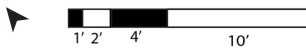
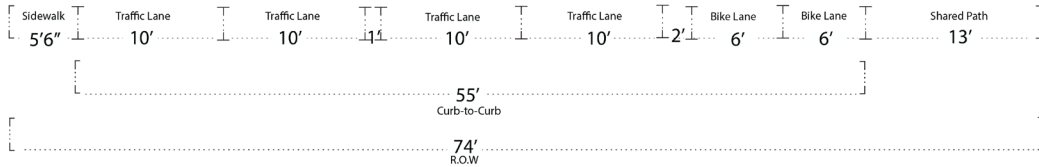
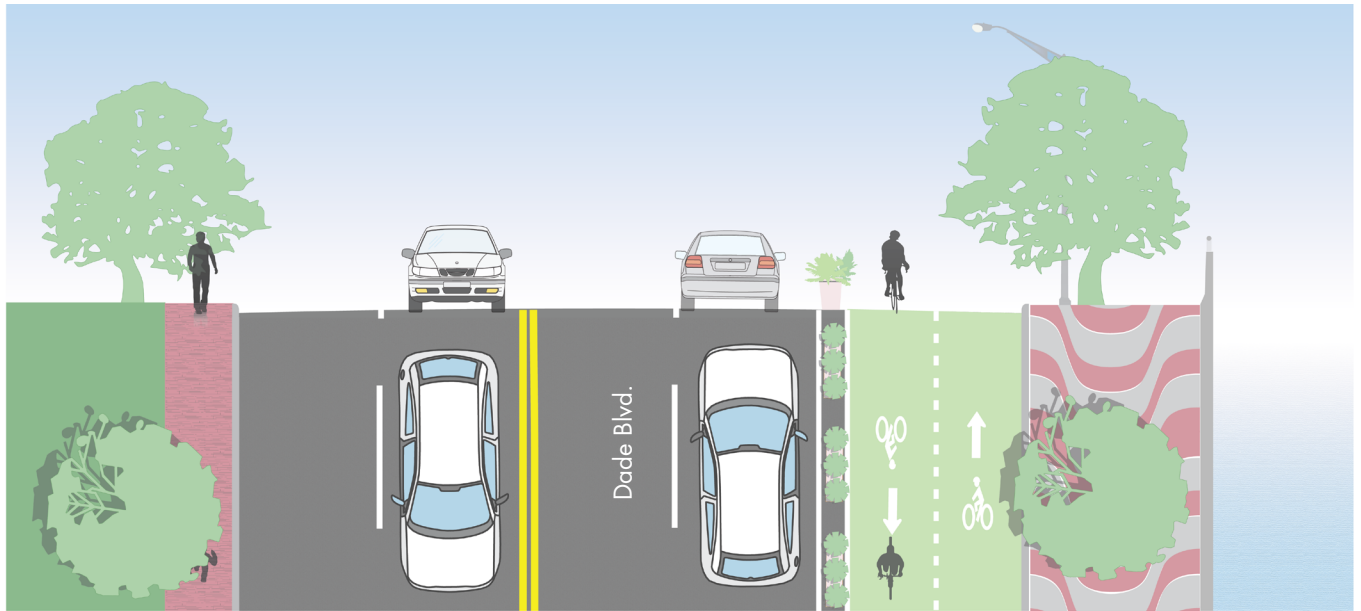
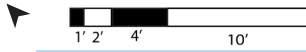
# DADE BOULEVARD CYCLE TRACK



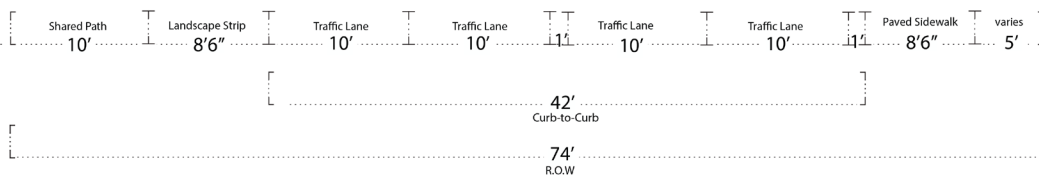
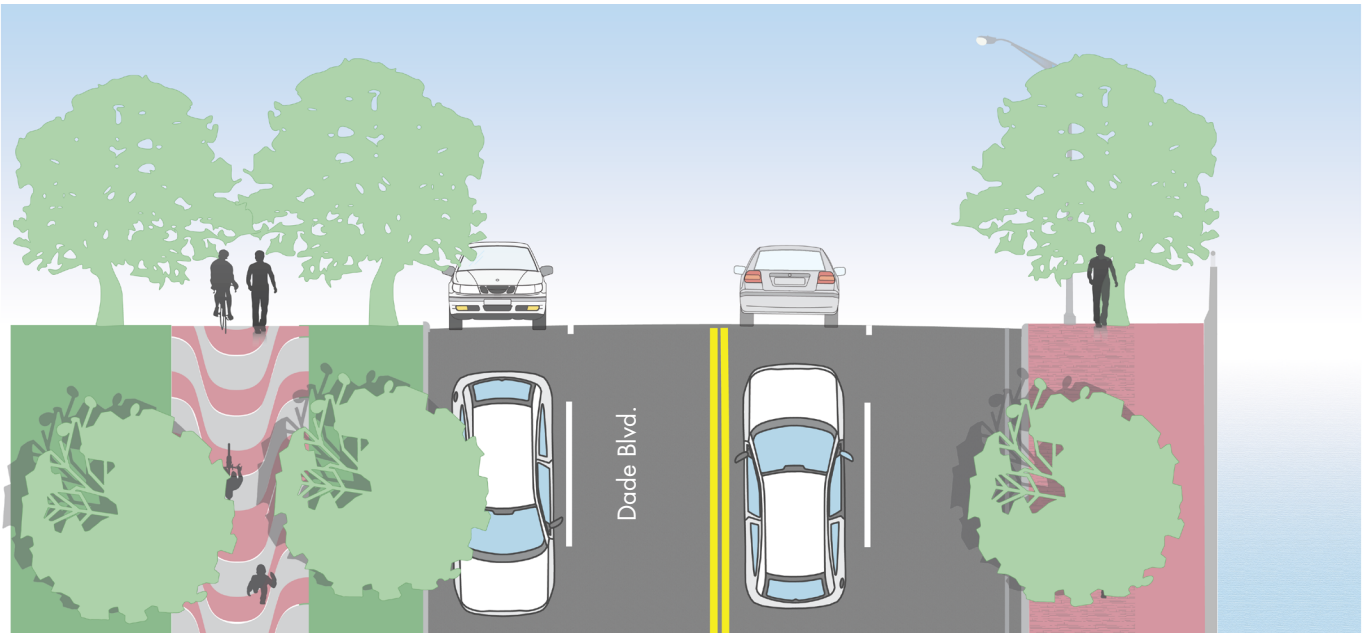
# PROTECTED LANE



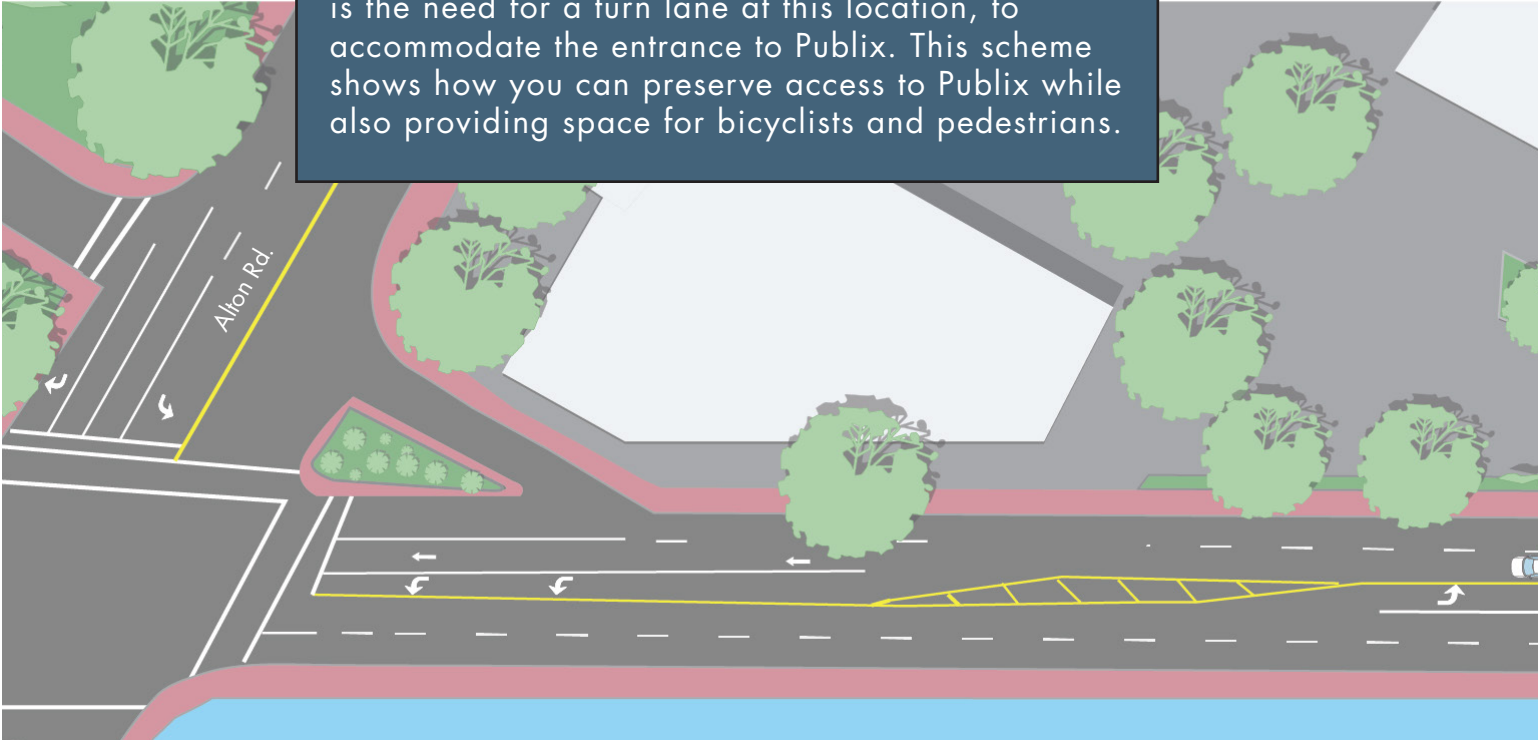
# DADE BOULEVARD SHARED PATH



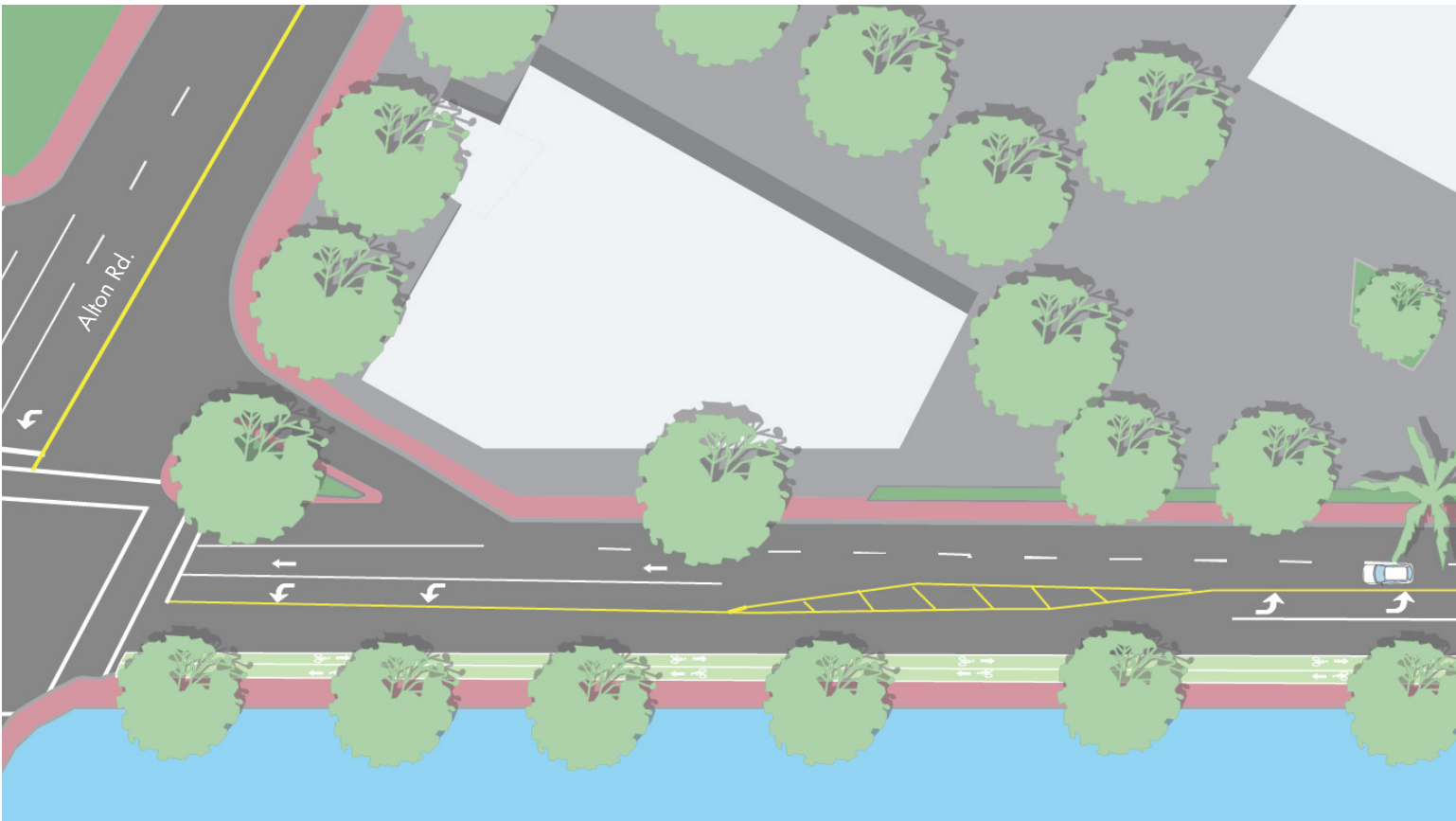
# SHARED PATH



The challenge with redesigning Dade Boulevard is the need for a turn lane at this location, to accommodate the entrance to Publix. This scheme shows how you can preserve access to Publix while also providing space for bicyclists and pedestrians.

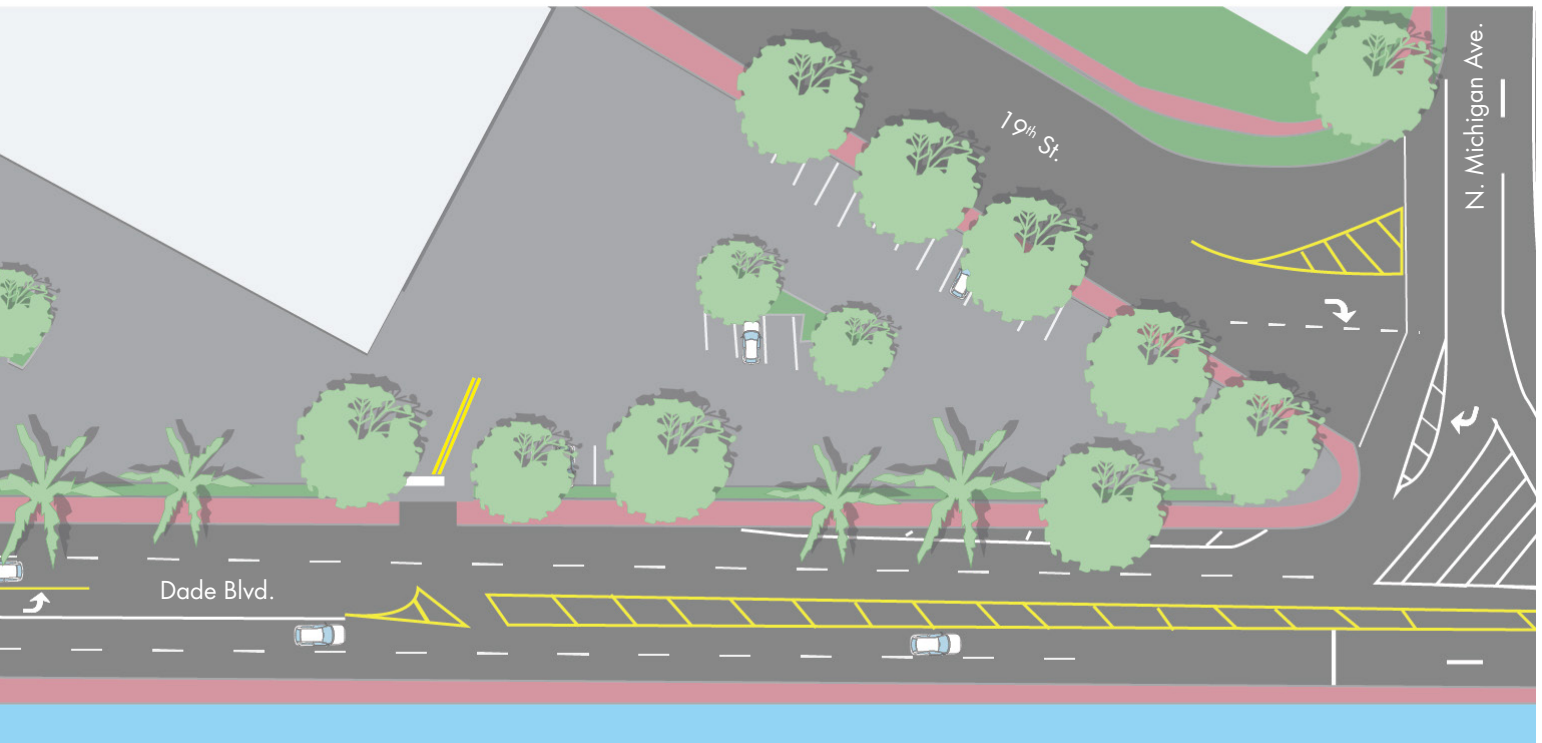


Existing Conditions, Dade Boulevard between Alton Road and North Michigan

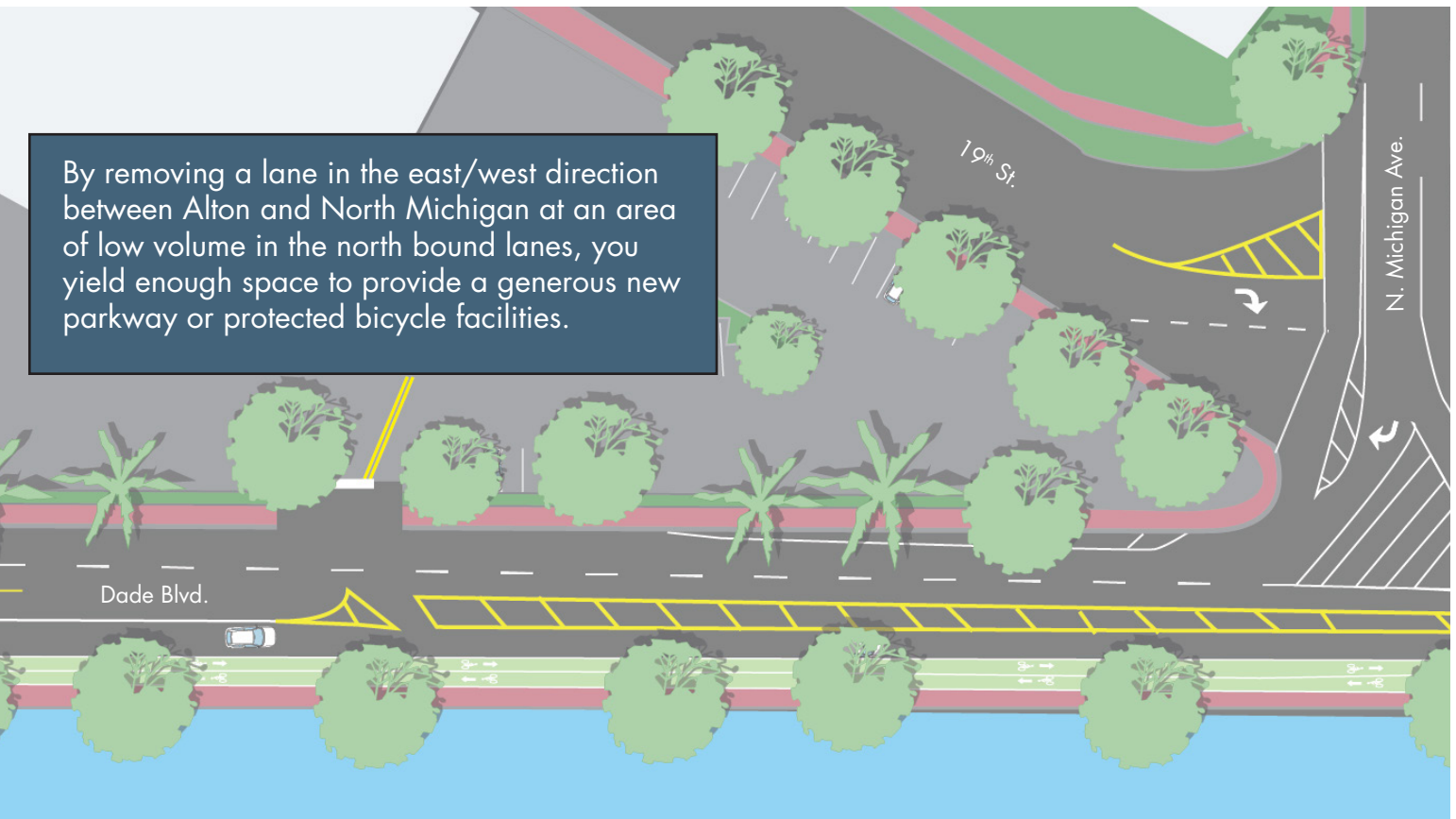


Proposal Conditions

# DADE BOULEVARD BETWEEN ALTON AND NORTH MICHIGAN



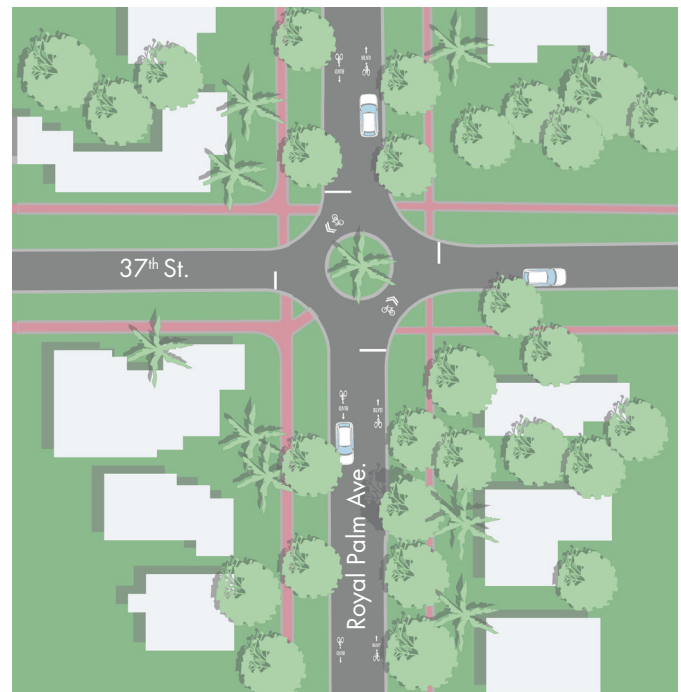
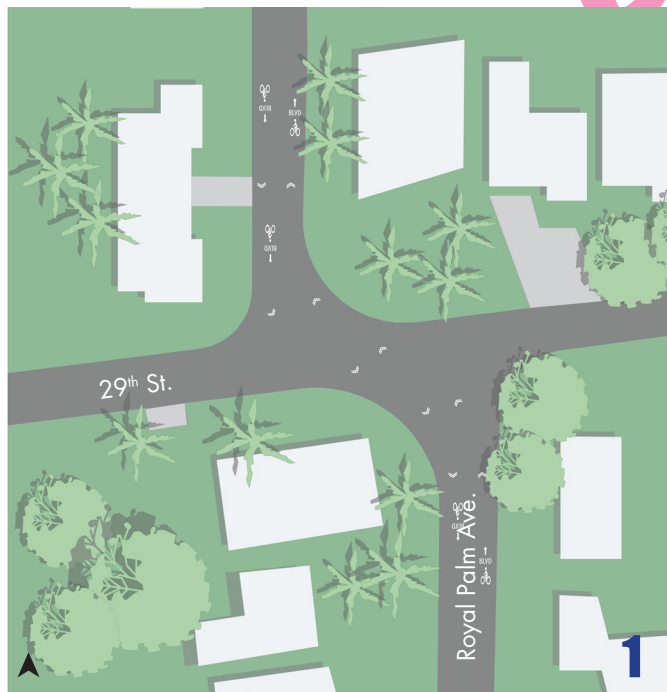
By removing a lane in the east/west direction between Alton and North Michigan at an area of low volume in the north bound lanes, you yield enough space to provide a generous new parkway or protected bicycle facilities.



# ROYAL PALM AVENUE

STREET DATA	
Public Right-of-Way Width	114' 6"
Pavement Width	52' typical
Posted Speed Limit	25 mph
Project Limits	Between 20 Street and Sheridan
Project Length	Approximately 5,500', 1.0 Miles
Daily Volume	300 ADT
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	This is a neighborhood street in the heart of Bayshore.
Impact on modeshare	low
Upcoming Public Works Project	Yes - CIP

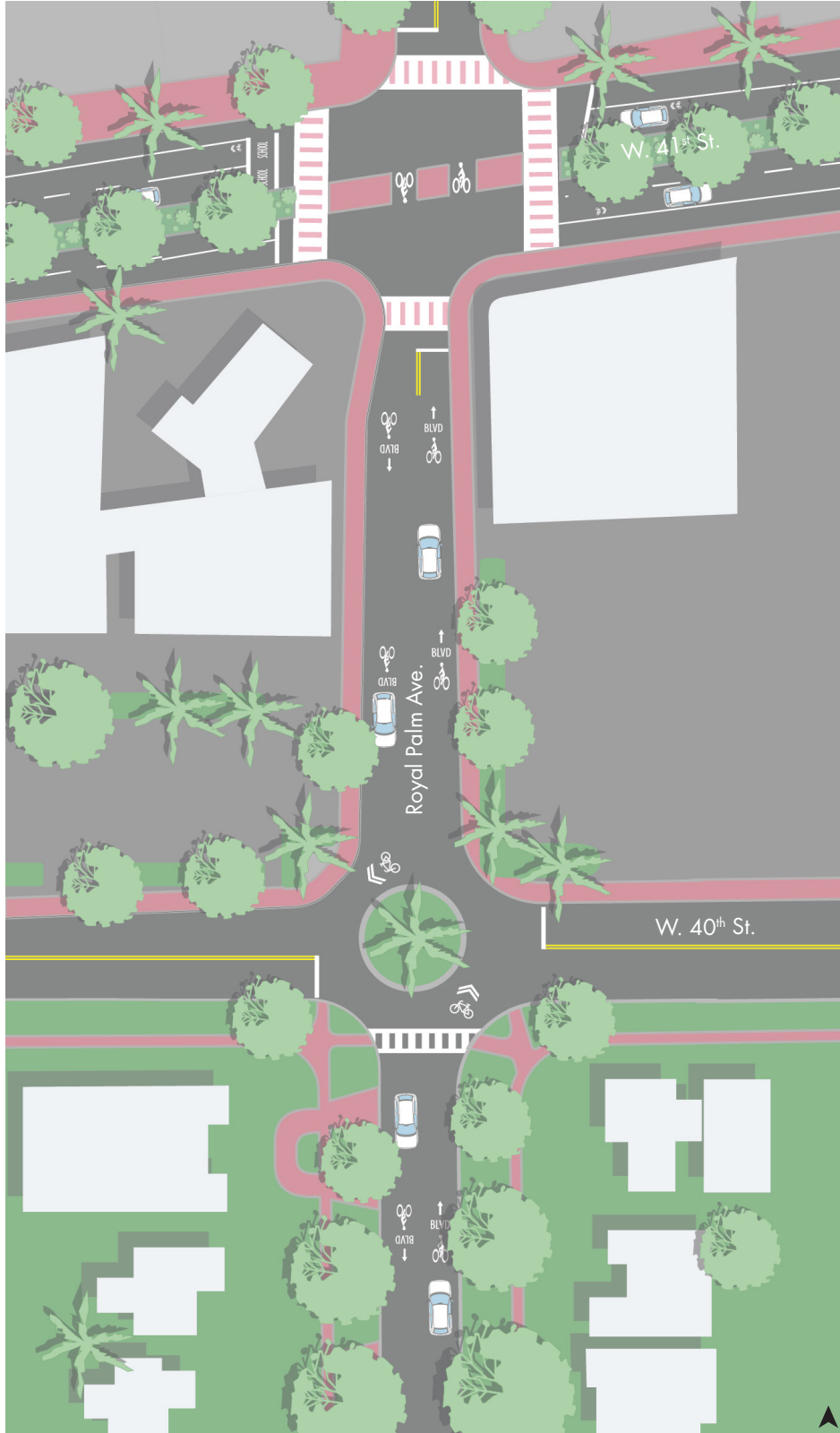
## BICYCLE BOULEVARD



Royal Palm Avenue is a slow, low volume street. It provides connectivity to a bike lane north of 41 Street, and to the high school. It also connects to 41 Street, a major commercial corridor. Along the residential portion of the corridor the pavement width is so low that it already provides a substantial traffic calming effect. Additional efforts to make this corridor an official bike boulevard include traffic circles at cross streets like 29 street (above), bicycle boulevard pavement markings and branded signage consistent with the Street Design Guide.



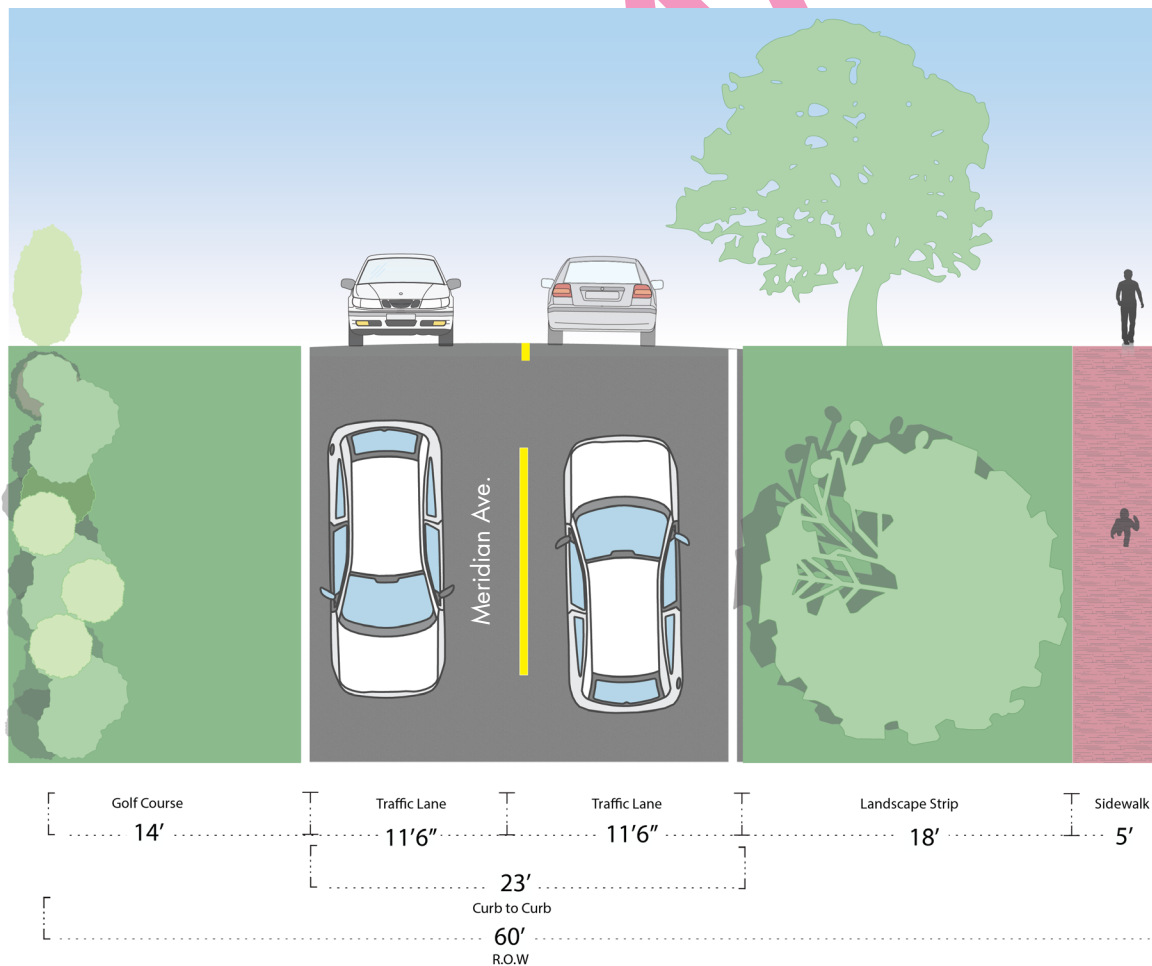
If designed as a bicycle boulevard, left turn lanes from 41 Street would be eliminated and a center median with bicycle and pedestrian refuge.



# MERIDIAN AVENUE

STREET DATA	
Public Right-of-Way Width	60'
Pavement Width	23' typical
Posted Speed Limit	25 mph
Daily Volume	9,600-12,000 ADT
Project Limits	Between 28 Street and Dade
Project Length	Approximately 3,000', 0.56 Miles
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Miami Beach High School
Impact on modeshare	low
Upcoming Public Works Project	Yes - CIP

## EXISTING CONDITIONS

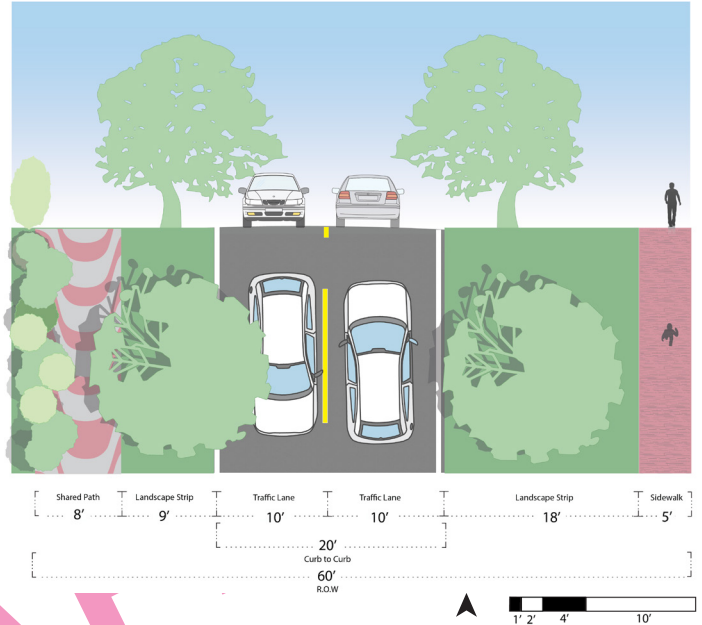


Meridian is a quiet neighborhood street. This segment is adjacent to the golf course and provides north/south connectivity parallel to Prairie.

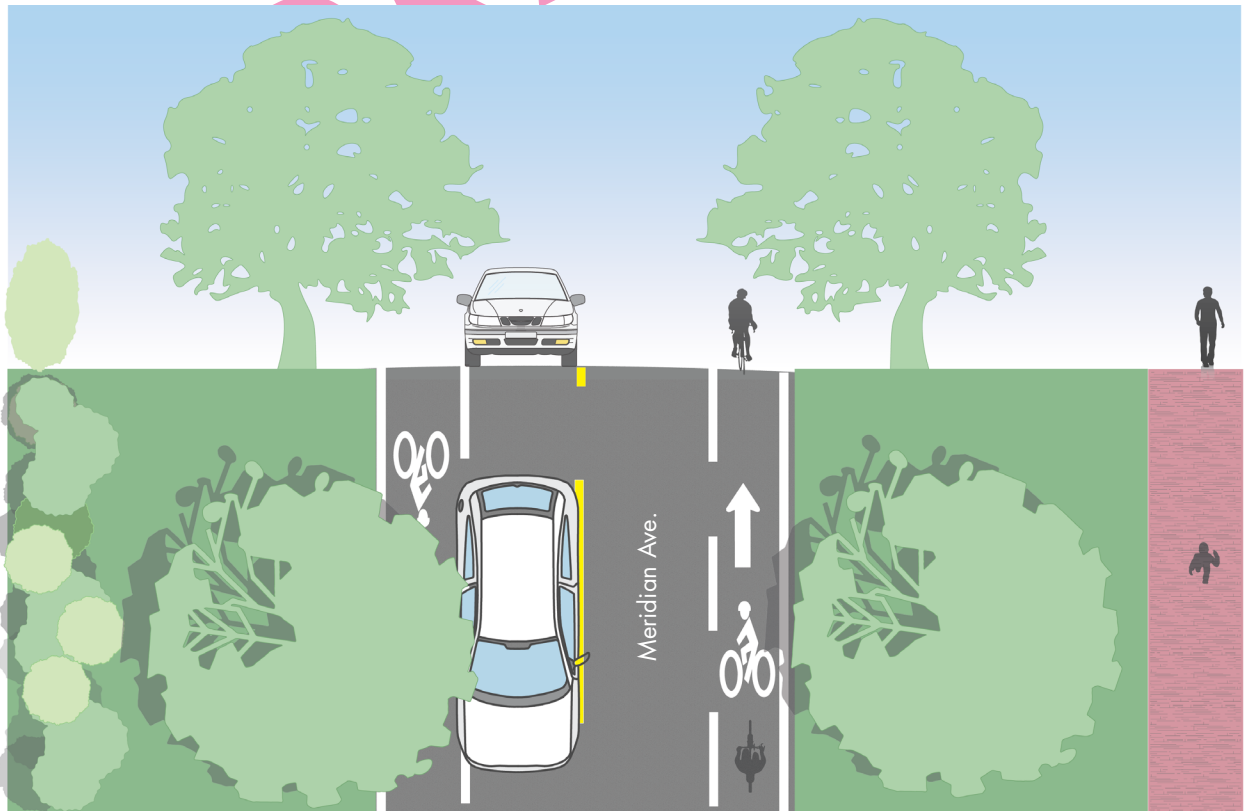
## SHARED PATH

The most obvious option along this segment of Meridian is to provide some type of bicycle/pedestrian access adjacent to the golf course. Though high winds can often be a nuisance when riding this corridor, additional street trees and landscaping would be a benefit to any street redesign.

The option below tries to narrow the pavement as much as possible with an advisory bike lane. This allows for an increase the amount of green space and street trees.



## ADVISORY BIKE LANE





# OCEAN DRIVE) IN PROGRESS



Pedestrian  
Crosswalk

Tight curb  
radius

Street Trees

Bike Box

Pedestrian  
Crosswalk

Pedestrian  
Refuge

Widen + Declutter  
Sidewalk

Intersection  
Countermeasure

South Beach has the highest volume of pedestrians and cyclists in Dade County, and competes only with Key West for having the most cyclists per capita than anywhere else in the southeastern United States.

For the purposes of street design, everything south of Dade Boulevard should be considered a pedestrian and bicycle priority zone. In the short term that means certain streets should be converted into bicycle boulevards with limited cut-through traffic, while other streets are wide enough to accommodate parking protected bike lanes now in anticipation of future reconstruction projects.

In the long term, the overall strategy on Miami Beach is to provide sidewalk level protected bike lanes on major streets, with parallel bicycle boulevards through Flamingo Park. The long term plan also envisions a shared path loop around south beach using the Baywalk on one side, and Beachwalk on the other.

Crash Data shows that South Beach has the highest concentration of crashes in all of Miami Beach. Major hot spots include the intersection of Alton Road and 17th Street and 5 Street and West Avenue.



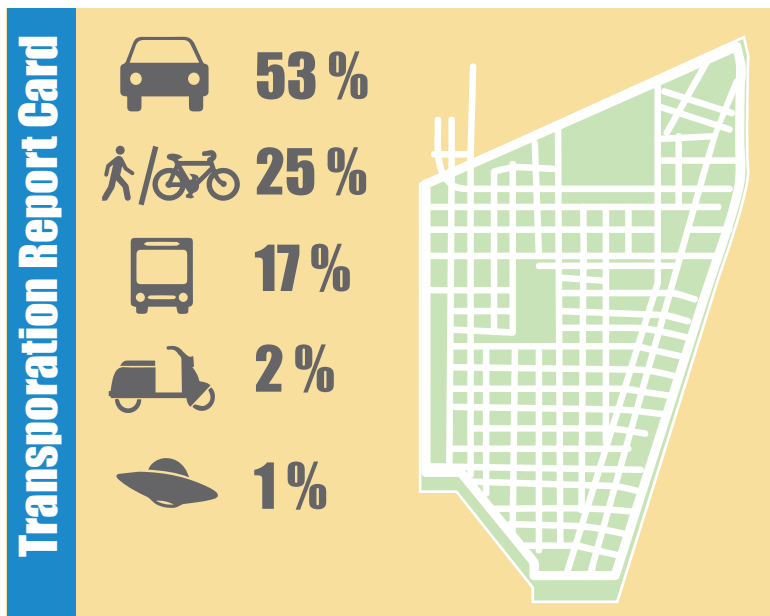
The 16th Street bicycle lane, west of Alton Rd. The use of dashed lines adjacent to the parking lot entrance marks a potential conflict point for motorists and cyclists.



New bicycle lanes along 5th St. improve conditions for skilled bicyclists. However, the eastbound lane ends suddenly at Lenox Street, and without indication for how cyclists should continue to navigate.



Sharrows on Washington Ave. help guide bicyclists away from the opening doors of parked cars. They also indicate to motorists that the road is a shared space.



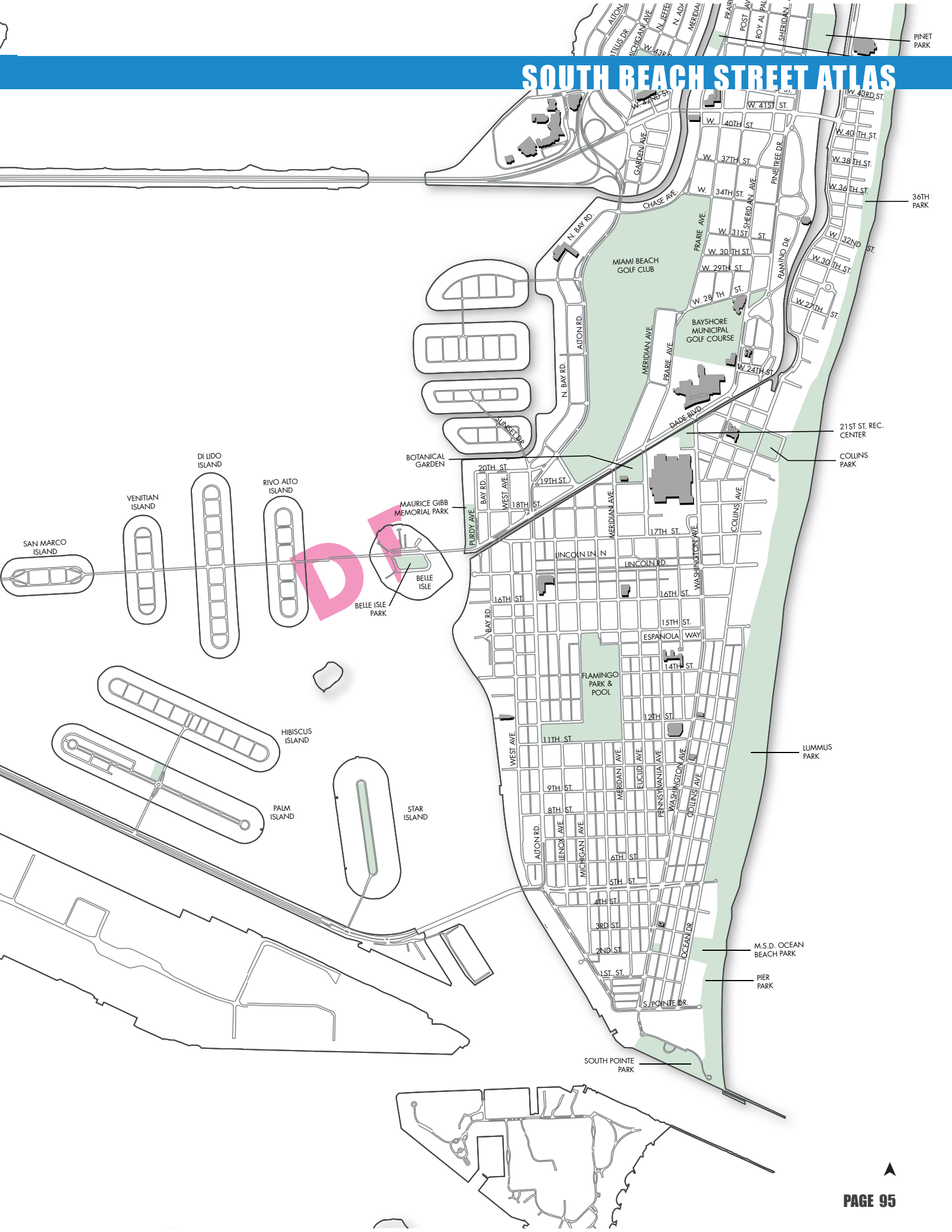
# SOUTH BEACH CRASH DATA

## LEGEND: CRASH DATA

NUMBER OF CRASHES 2012-2014



# SOUTH BEACH STREET ATLAS



PINET PARK

36TH PARK

21ST ST. REC. CENTER

COLLINS PARK

LUMMUS PARK

M.S.D. OCEAN BEACH PARK

PIER PARK




SOUTH POINTE PARK



# FILLING IN GAPS IN PRIORITY CORRIDORS

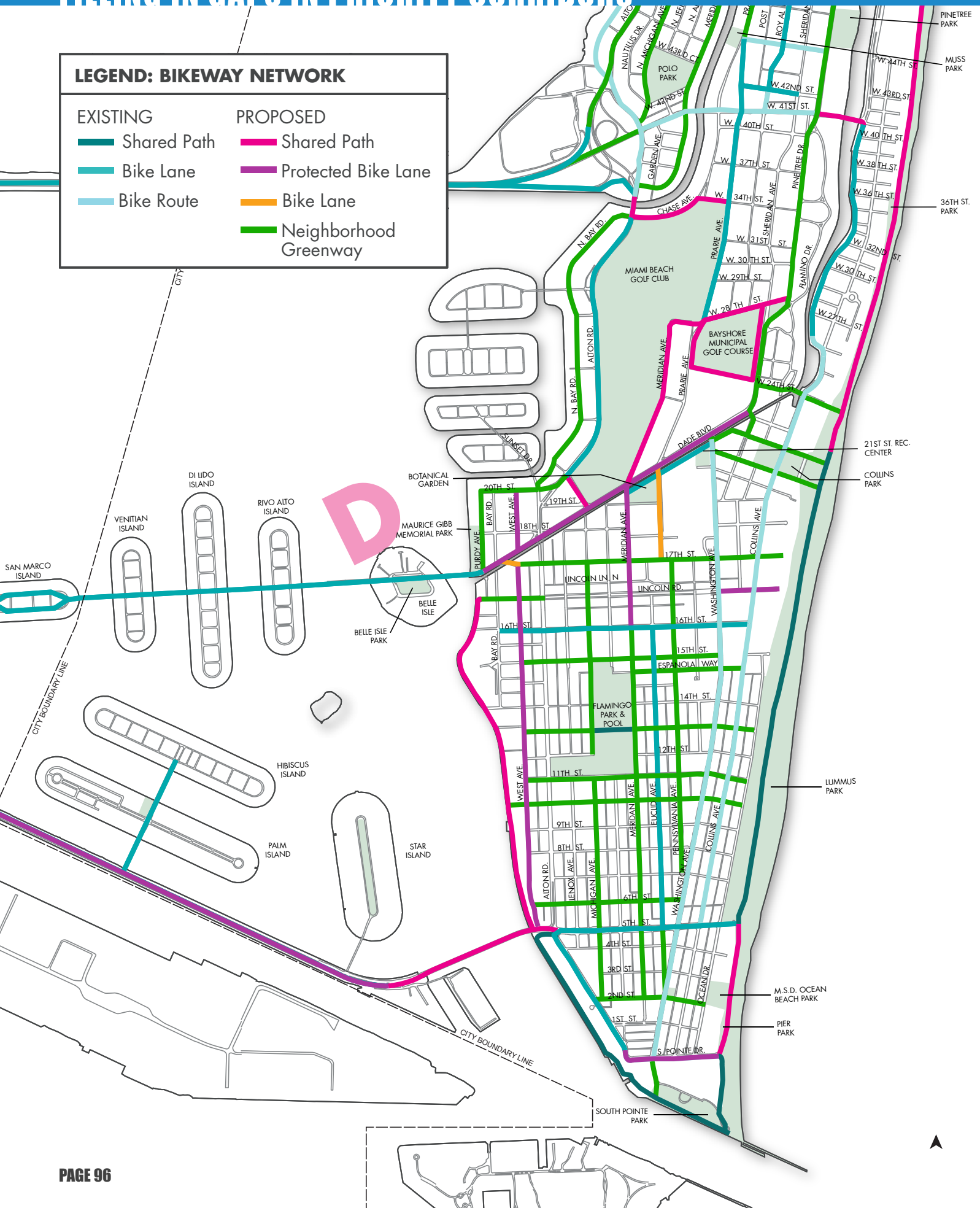
## LEGEND: BIKEWAY NETWORK

### EXISTING

-  Shared Path
-  Bike Lane
-  Bike Route

### PROPOSED

-  Shared Path
-  Protected Bike Lane
-  Bike Lane
-  Neighborhood Greenway





## SHORT-TERM PLAN

The street network in South Beach is one of the best in the world. Despite the challenges presented by over designing the streets for cars, a network of tree-lined residential streets, and a robust bicycle culture, the short-term plan proposes an aggressive expansion of protected paths around South Beach. There are also opportunities to dovetail with upcoming reconstruction projects, such as the case with West Avenue.

Some of the main elements of the plan are:

1. Create a network of protected bike lanes on major corridors: West Avenue, 16 Street, Euclid Avenue, and 5 Street.
2. Create a network of bicycle boulevards through Flamingo Park to prioritize bicycle travel and divert cut through traffic.

We've paid specific attention to these areas because we think workable solutions exist and will help create a viable network for an expanded number of cyclists.



Meridian Avenue attracts bicyclists for several reasons, including its beautiful, consistent tree canopy.



The eastern terminus of the 16th Street bicycle lane directs bicyclists into a row of parked cars.



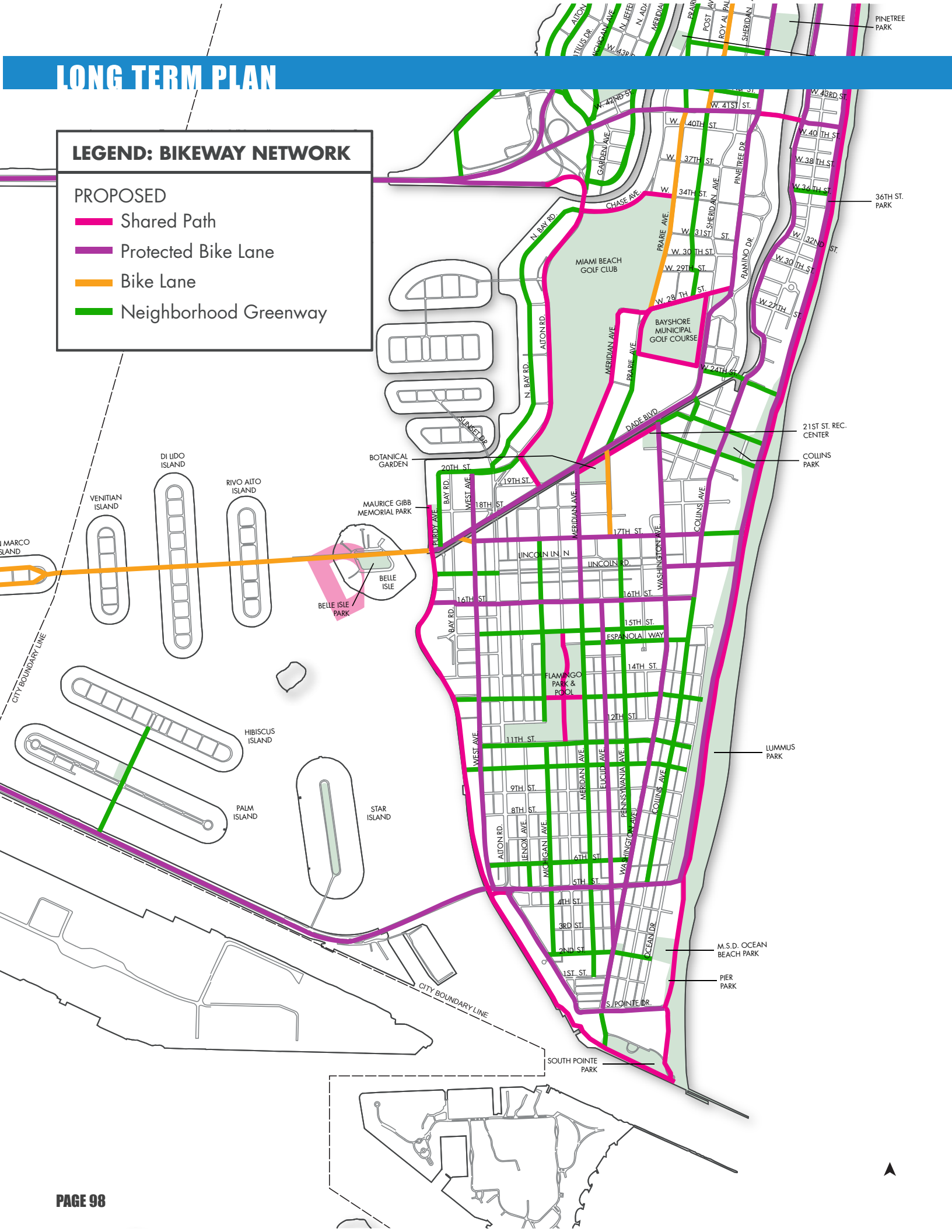
Bicycles are increasingly being used by businesses as an inexpensive, sustainable, and healthy way to deliver and market goods and services.

# LONG TERM PLAN

## LEGEND: BIKEWAY NETWORK

### PROPOSED

- █ Shared Path
- █ Protected Bike Lane
- █ Bike Lane
- █ Neighborhood Greenway



## LONG-TERM PLAN

The longer term view on South Beach sees significant increases in investments in transit infrastructure, and along with them investments in bicycle and pedestrian infrastructure.

Regarding the former, we are looking specifically at three intersections because they are major pinch points for connectivity between the hospitals and North Beach/Collins corridor. The intersections are:

1. Redesign Ocean Drive as a shared space.
2. Redesign 5 Street with protected bike lanes and transit.
3. Redesign Washington with protected bike lanes and transit.
4. Continue to foster the creation of a network of protected bike lanes on major corridors: West Avenue, 16 Street, Euclid Avenue, and 5 Street.
5. Consider redesign of Meridian as shared space.
6. Finish the Baywalk
7. Protected bike lanes on MacArthur, connecting facilities.
8. Upgrade Venetian Causeway facilities and entrance.
9. Create protected lanes on 17 Street (remove lanes).
10. Create protected lanes on Collins south of 26 Street, upgrade to protected bike lanes north of 26 Street.



A short segment of Euclid Avenue now includes bicycle lanes, curb extensions/rain gardens, and enhanced crosswalks.



DecoBike is one of the most successful bicycle sharing programs in the country. The City Hall DecoBike station is shown above.

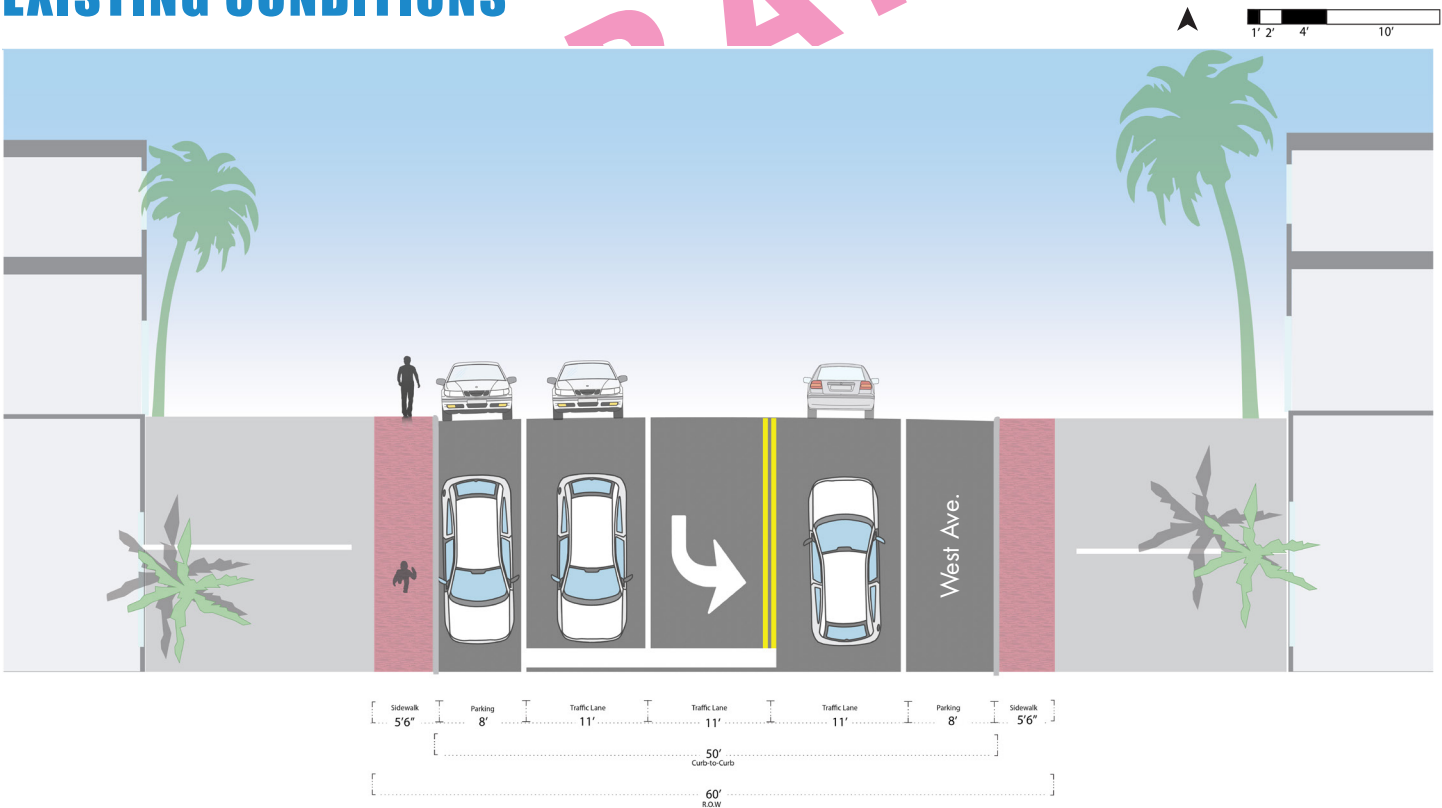


Miami Beach Community Bike Ride participants set off down Washington Avenue.

# WEST AVENUE

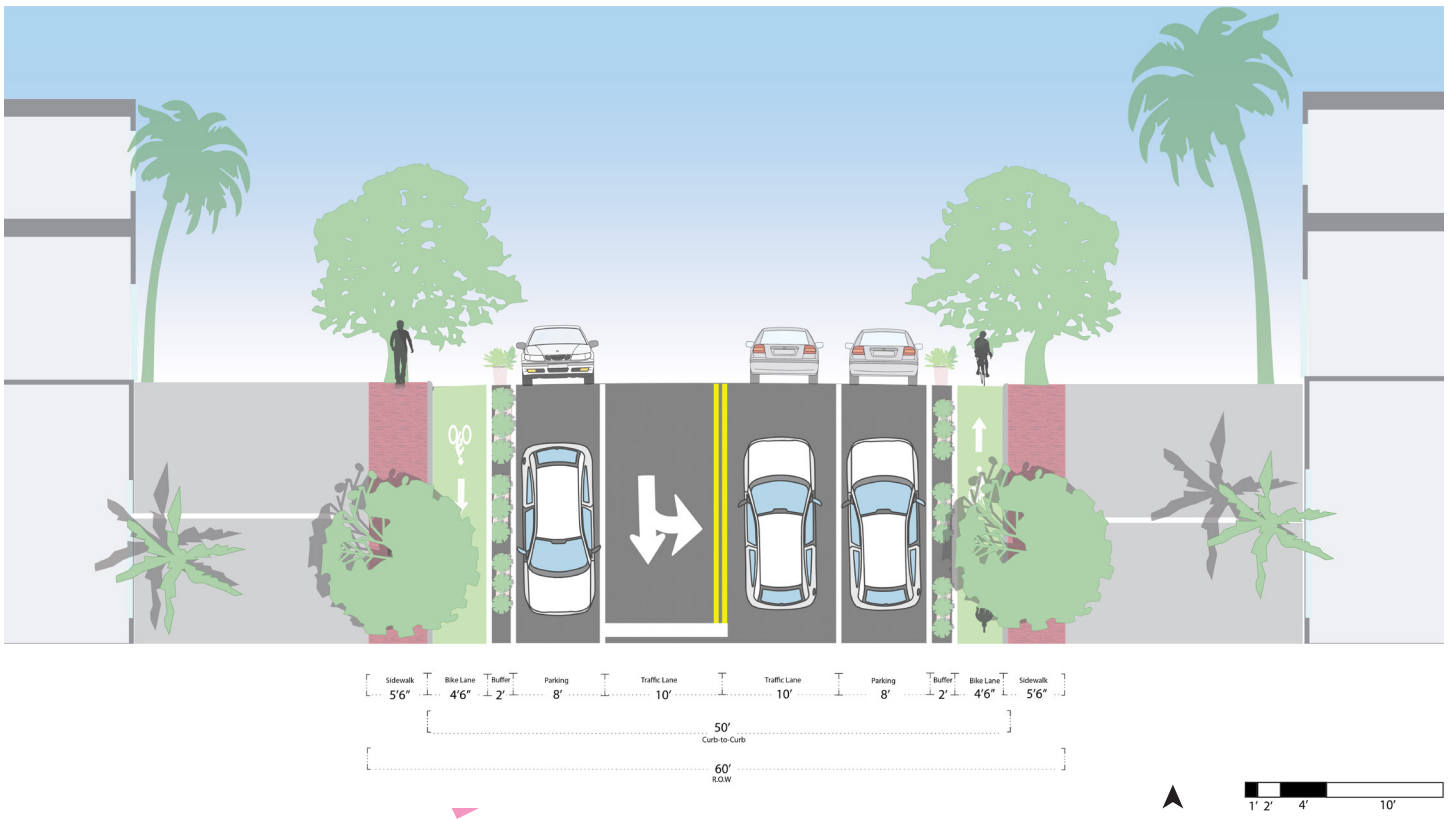
STREET DATA	
Public Right-of-Way Width	60'
Pavement Width	50' typical
Posted Speed Limit	25 mph
Daily Volume	12,000 ADT
Project Limits	Between 20 Street and 5 Street
Project Length	Approximately 7,600', 1.43 Miles
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Lincoln Road, Miami Beach Convention Center
Impact on modeshare	high
Upcoming Public Works Project	Yes - CIP

## EXISTING CONDITIONS



West Avenue is one of the most popular bicycle routes in Miami Beach. Making it as safe as possible, and attracting even more people to ride on this street is one of the best opportunities the city has to encourage a robust bicycle network.

# WEST AVENUE PROTECTED BIKE LANE



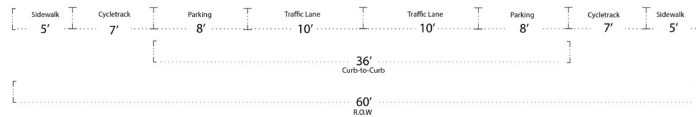
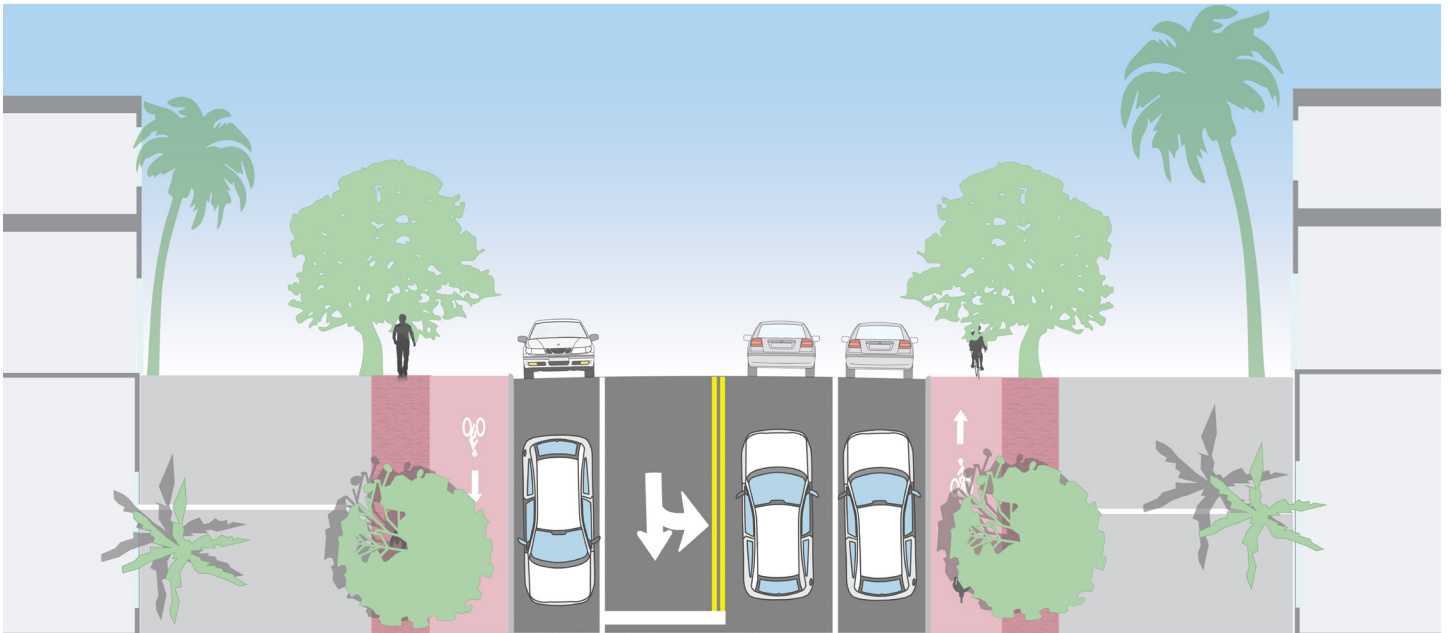
Alternative A, above, shows a parking protected bike lane with green pavement markings. As designed, these new lanes will stretch from just north of 6th Street to Dade Boulevard (inclusive of a new bridge spanning the Collins Canal). In order to fully connect to 5th Street the plan may look to include sharrows between 5th street and the start/end of the bicycle lanes. Additional east-west connections will also be made between the West Avenue neighborhood and Flamingo Park.

Below, Alternative B, shows a sidewalk level protected bike lane, also with pavement treatment to differentiate it from the sidewalk, and Alternative C is a conventional bike lane. In each scenario, the travel lanes are narrowed, and additional street trees added to the corridor. Existing parking supply is preserved.

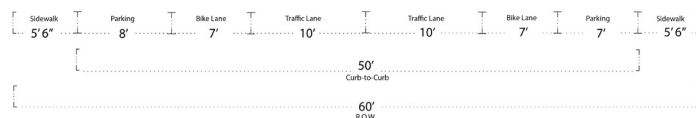
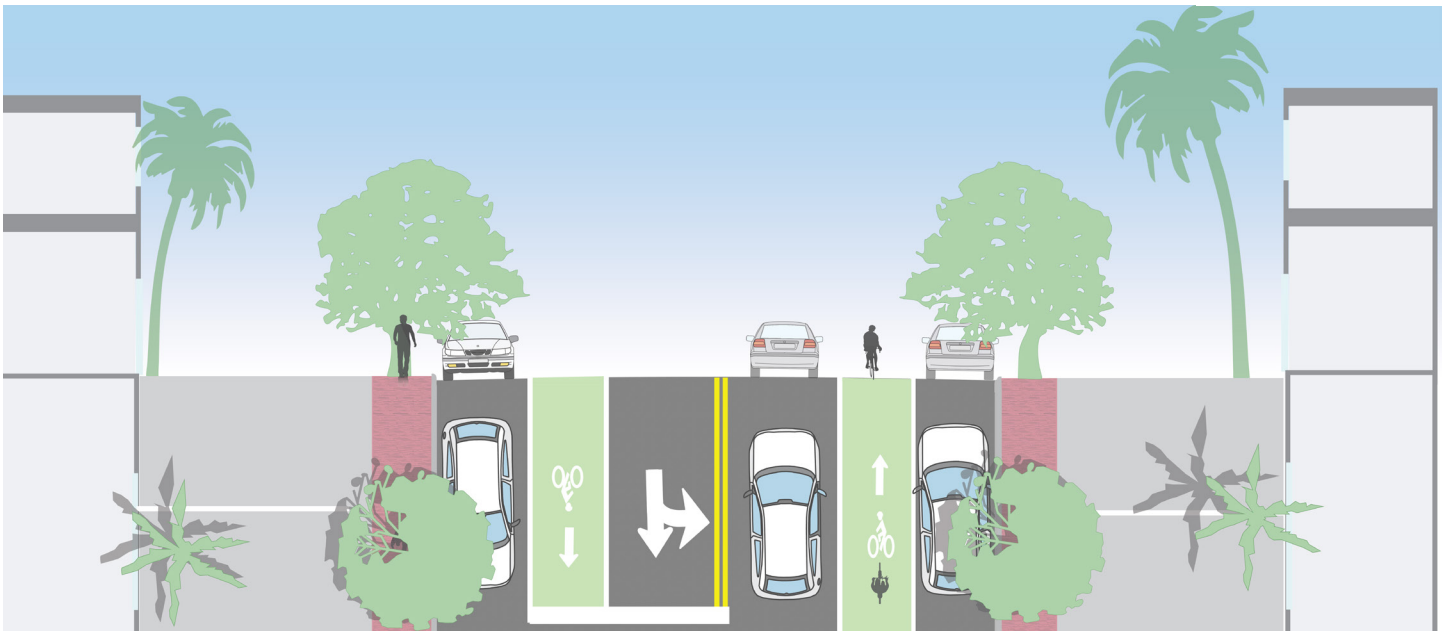
One point of discussion with County staff revealed that the center turn lane might be removable. In such a case, there are additional opportunities for additional street treatments.

# WEST AVENUE

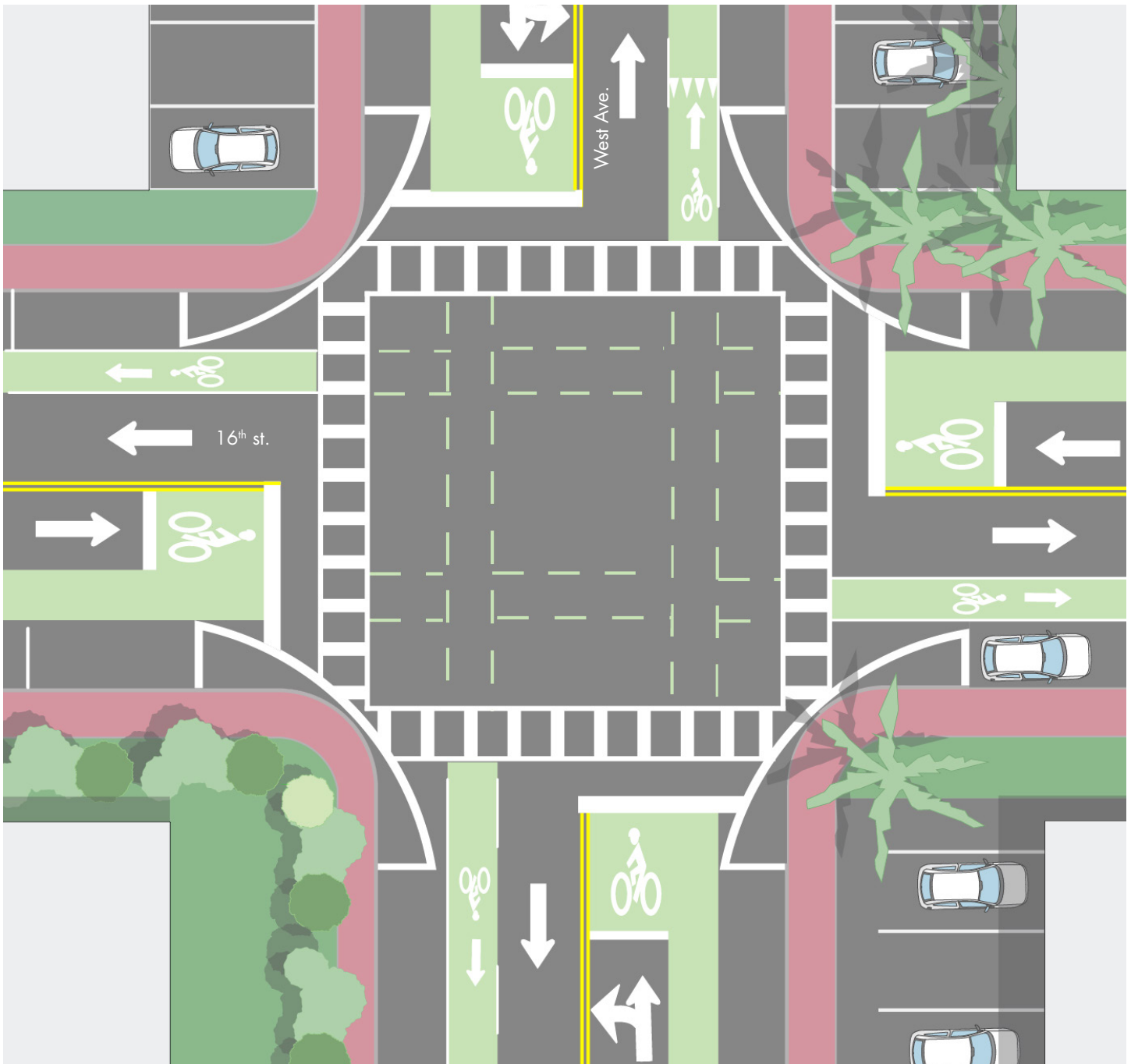
## PROTECTED BIKE LANE (SIDEWALK)



## BIKE LANE



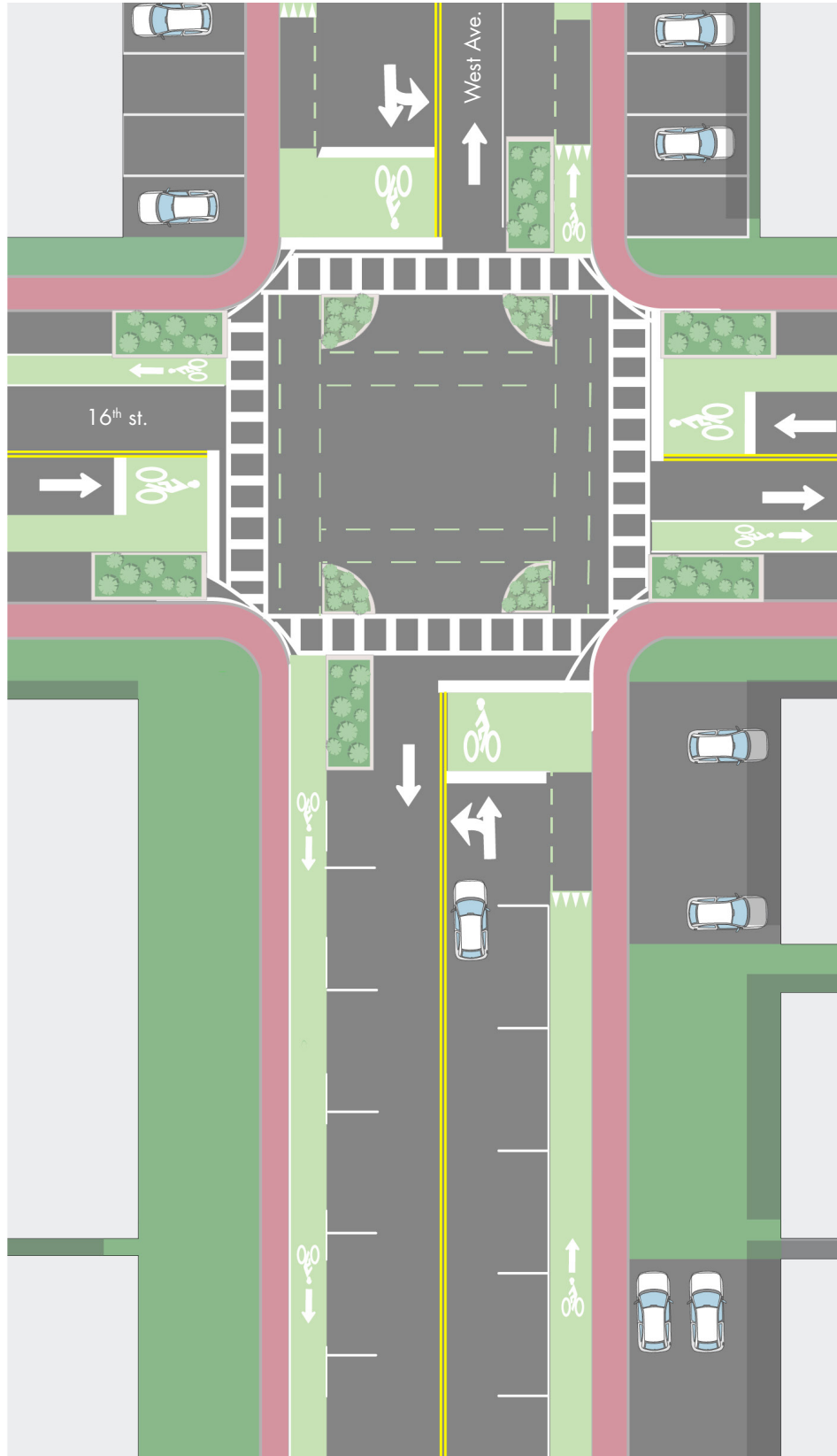
## INTERSECTION TREATMENT - BIKE LANE BIKE BOX



The drawings shown above and to the left show how a protected bicycle facility might go through an intersection. In this case, the intersection of 16 Street and West was chosen to demonstrate. In version 1, a pavement level parking protected bicycle passes through the intersection adjacent to the sidewalk and landscaped planters (B). A stop bar and bicycle signal indicate to the cyclist that they have to stop at the pedestrian crosswalk (A). The bike lane is marked to show the continuity of the lane through the intersection. Maintaining a tight curb radius is key to slowing traffic and providing a safe crossing for pedestrians (C).

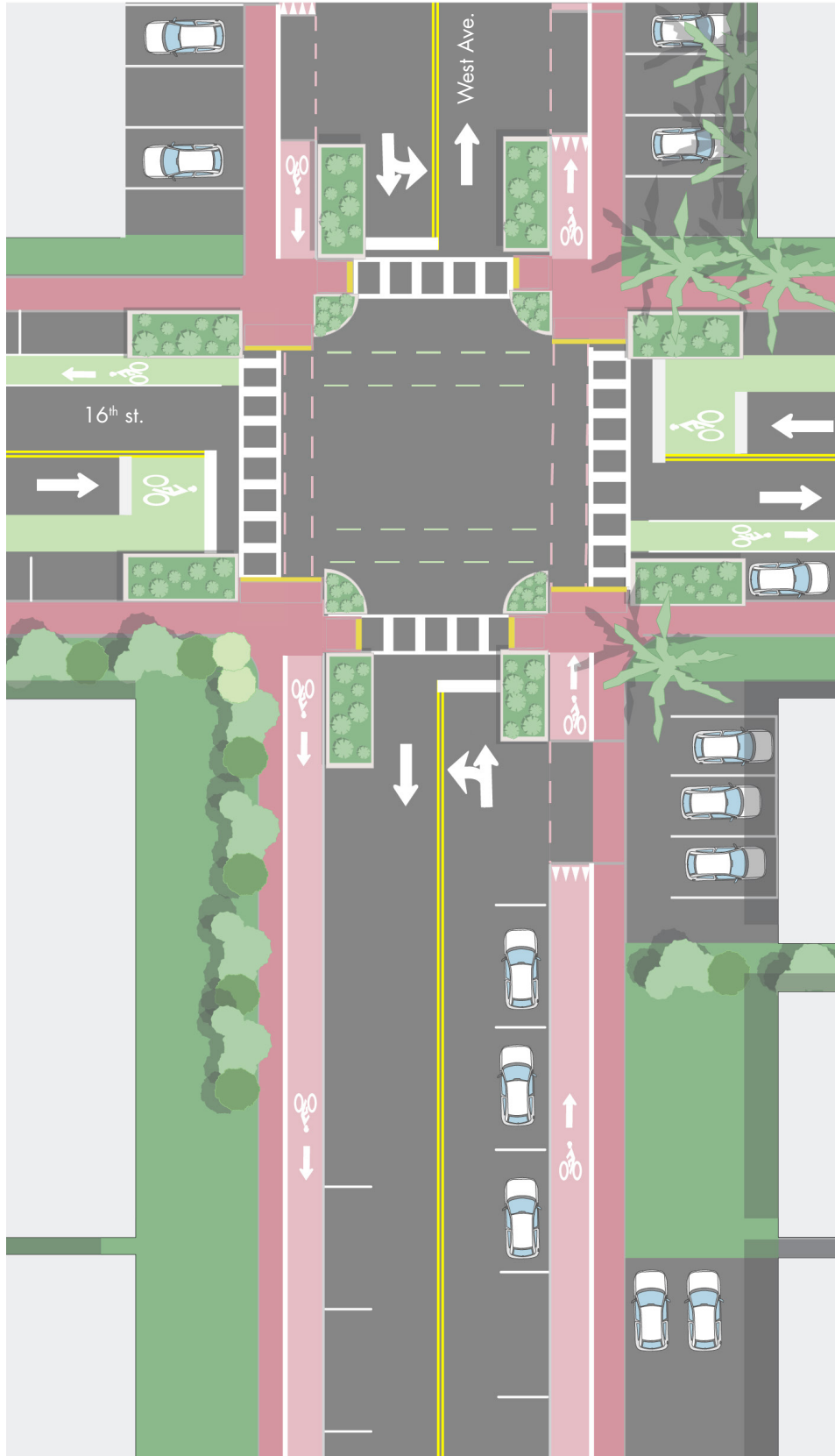
# WEST AVENUE

## PROTECTED BIKE LANE INTERSECTION TREATMENT





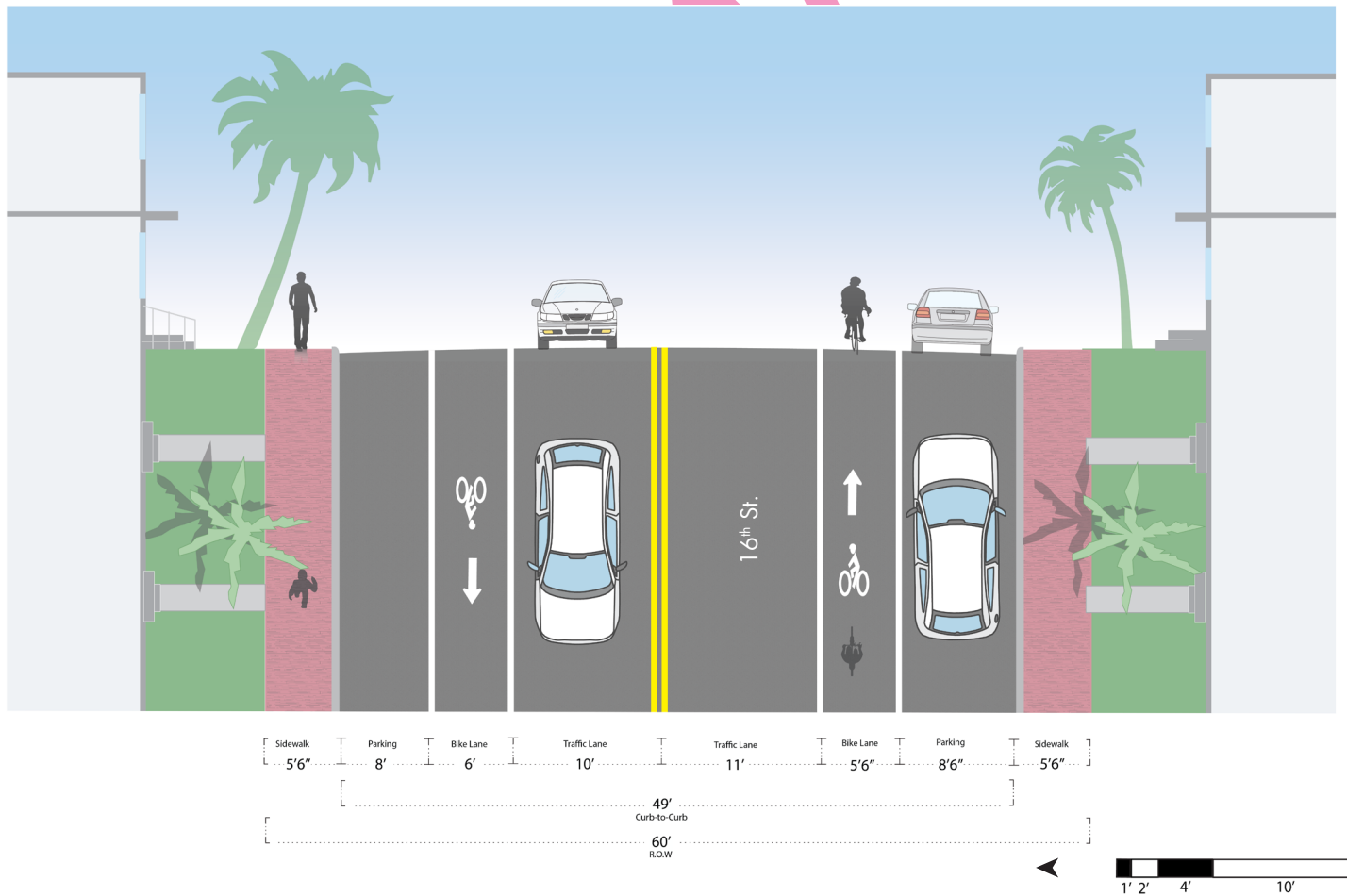
PROTECTED BIKE LANE INTERSECTION TREATMENT



# 16<sup>TH</sup> STREET

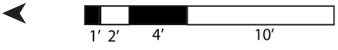
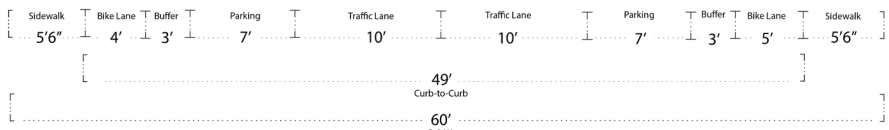
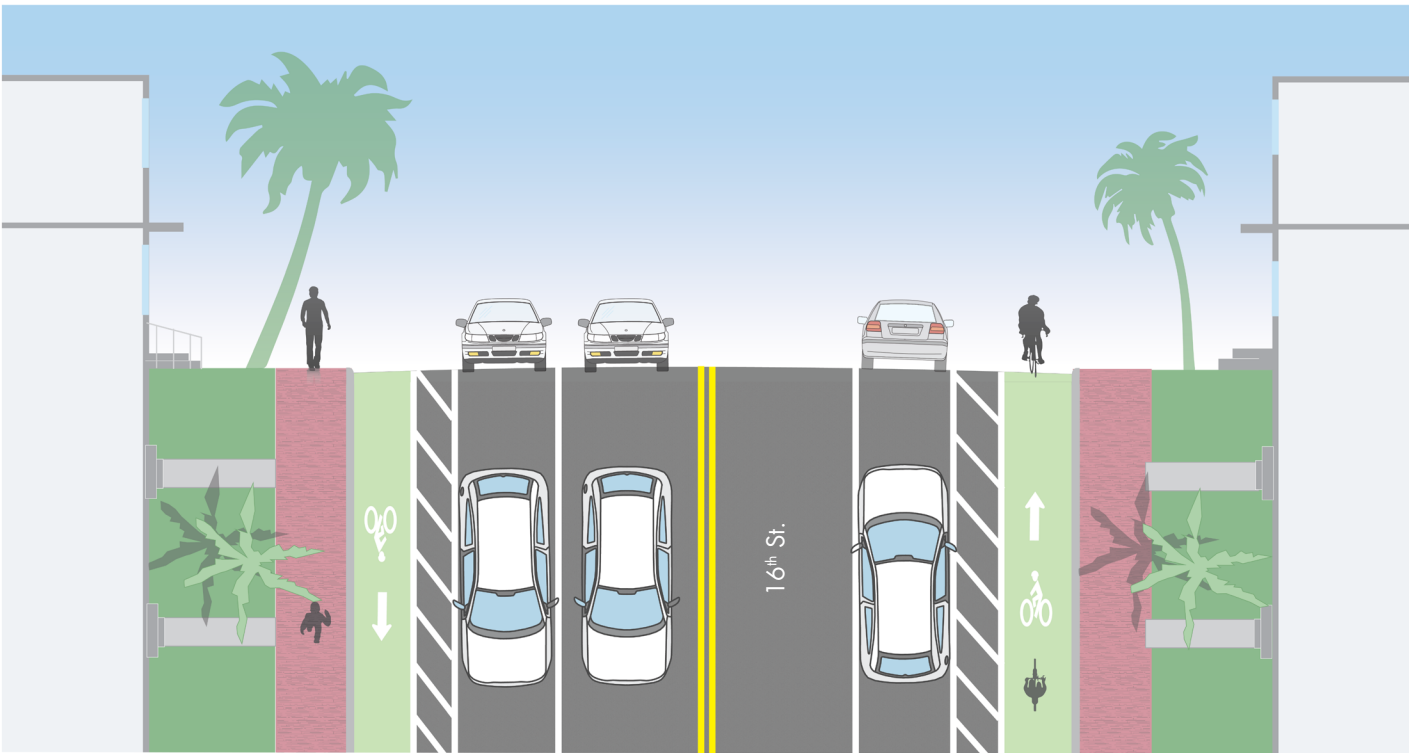
STREET DATA	
Public Right-of-Way Width	60'
Pavement Width	49' typical
Posted Speed Limit	25 mph
Project Limits	Between Alton Road and Washington
Project Length	Approximately 3,500', 0.66 Miles
Daily Volume	NOT LISTED
Predominant Land Use	multifamily residential
Predominant Development Pattern	Compact urban apartment types
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	with a conventional bike lane, 16 Street is one of the most heavily used bike corridors in the city.
Impact on modeshare	high
Upcoming Public Works Project	Yes - CIP

## EXISTING CONDITIONS



16 Street is one of the most popular bicycle routes in Miami Beach. Making it as safe as possible, and attracting even more people to ride on this street is one of the best opportunities the city has to encourage a robust bicycle network.

# 16<sup>TH</sup> STREET PROTECTED LANE

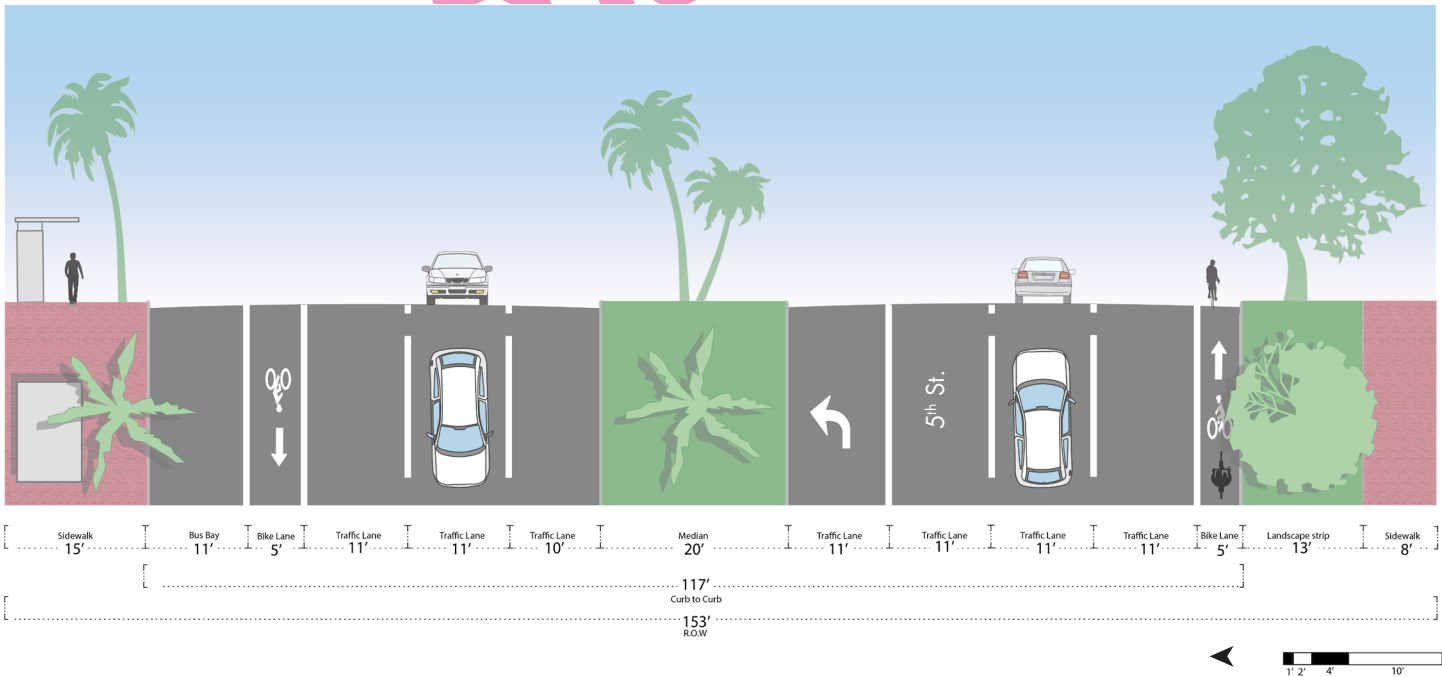


Creating a parking protected bike lane on 16 Street should be a priority. Either at the sidewalk level or street level, the volume of cyclists on this route warrant a higher level of service.

# 5<sup>TH</sup> STREET

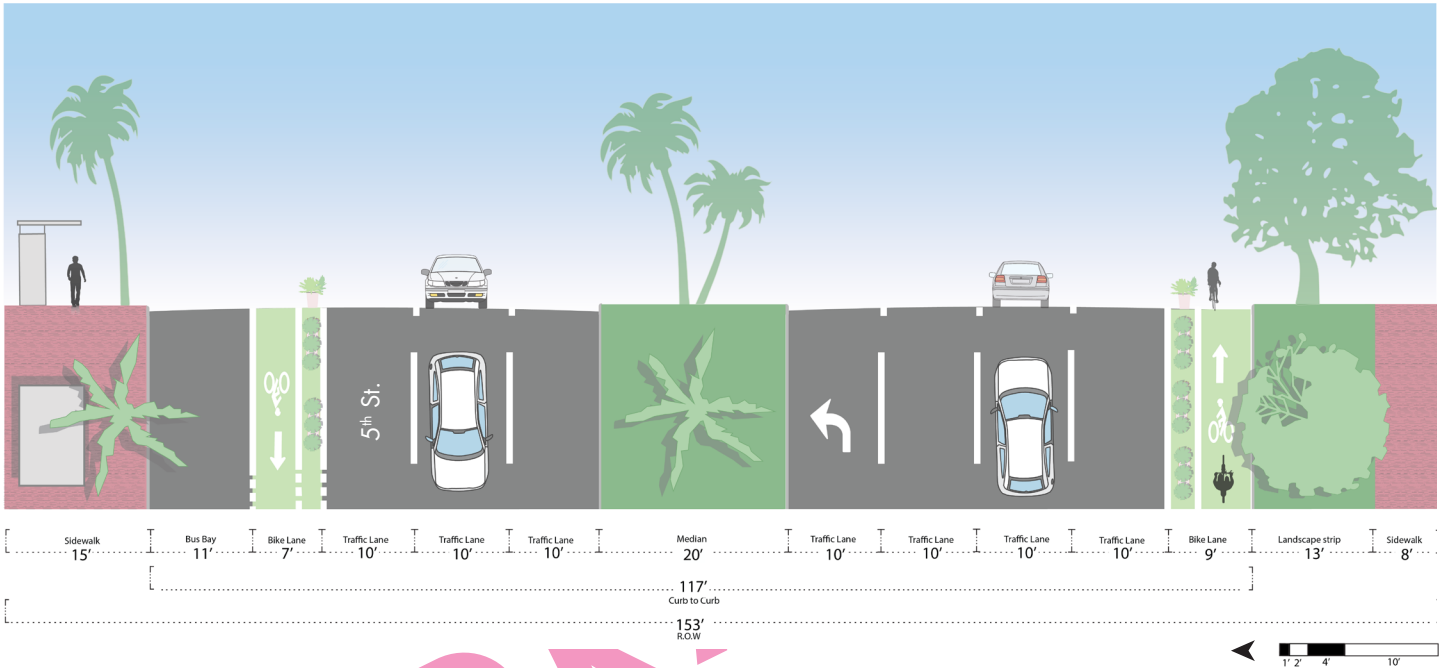
STREET DATA	
Public Right-of-Way Width	153'
Pavement Width	117' typical
Posted Speed Limit	35 mph
Daily Volume	67,050 ADT
Project Limits	Between Alton Road and Ocean Drive
Project Length	Approximately 3,000', 0.56 Miles
Predominant Land Use	commercial
Predominant Development Pattern	high density, low scale commercial
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Main entrance to Miami Beach; regional connection on MacArthur
Impact on modeshare	high
Upcoming Public Works Project	Yes - Baylink

## DRAFT EXISTING CONDITIONS



5 Street is the main entrance for most visitors to Miami Beach. It is a wide six lane, palm tree lined boulevard. It currently has on-street bicycle facilities. Given the high volume of traffic and high speeds, upgrading this corridor to a protected facility should be prioritized in the near term. Over the long term, the addition of transit along this corridor will provide an opportunity to implement protected bicycle facilities, more street trees and reduced car capacity.

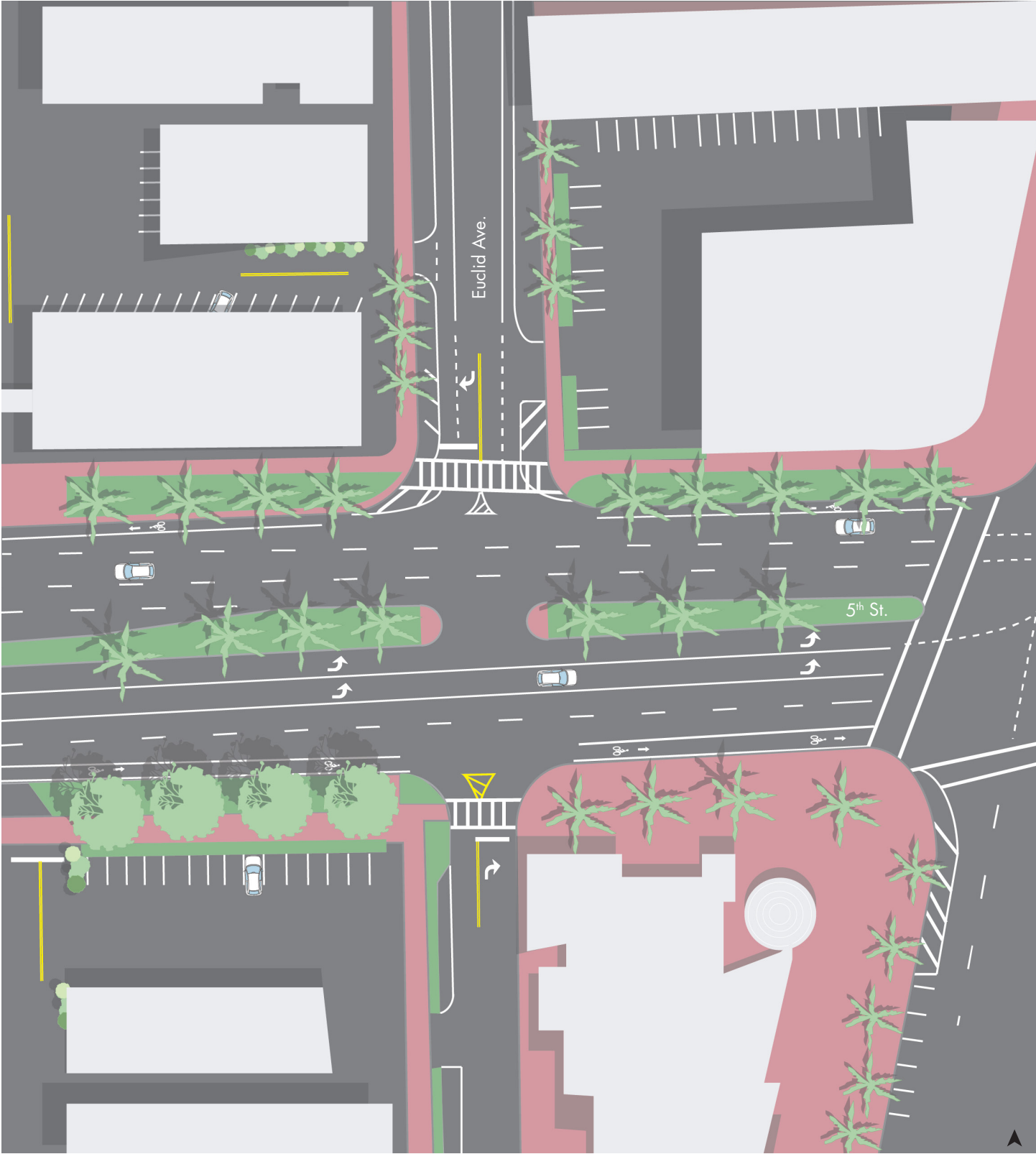
PROTECTED LANES

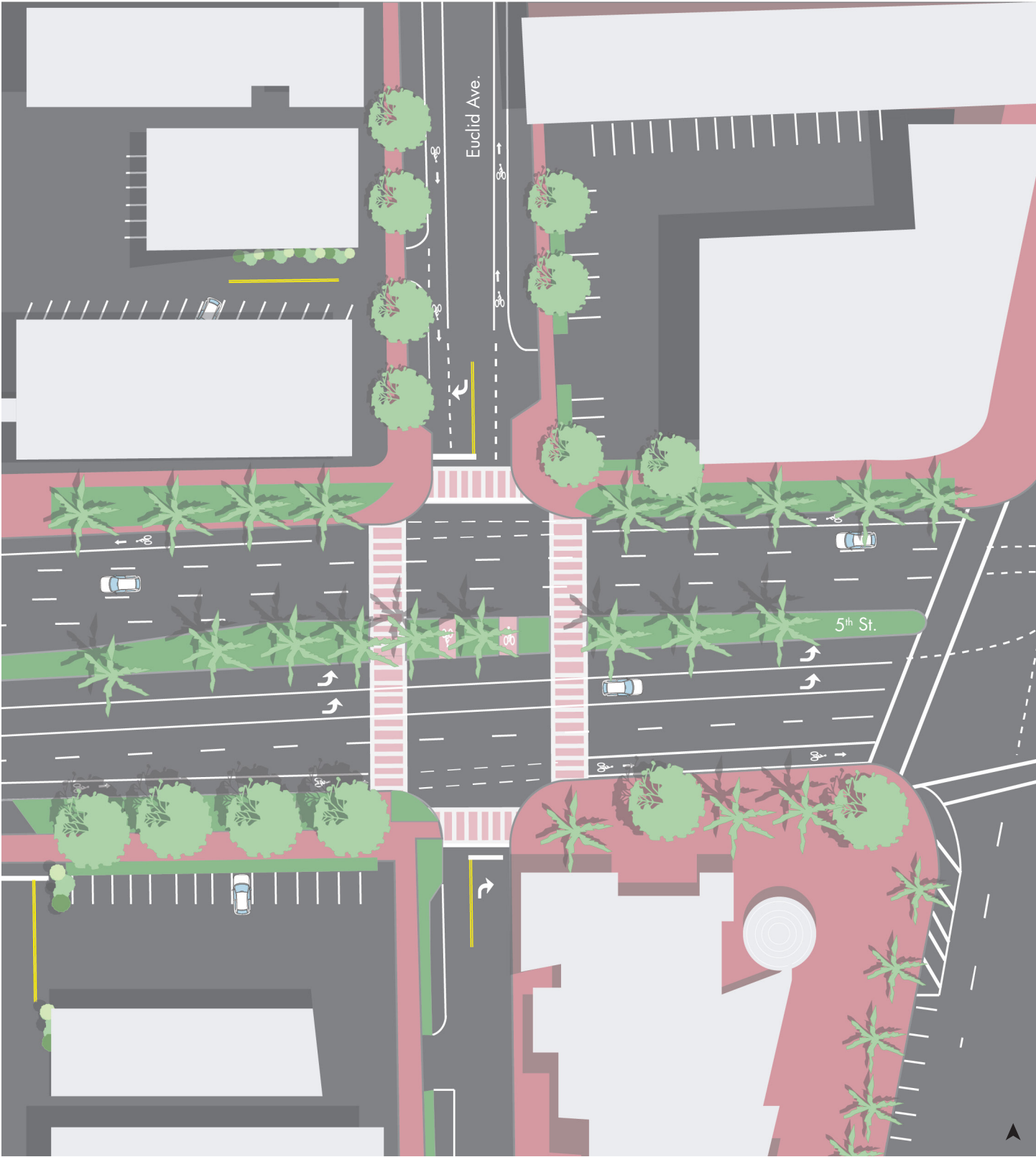


**DA**  
**PROTECTED BICYCLE LANES WITH LIGHT RAIL**



# 5<sup>TH</sup> STREET

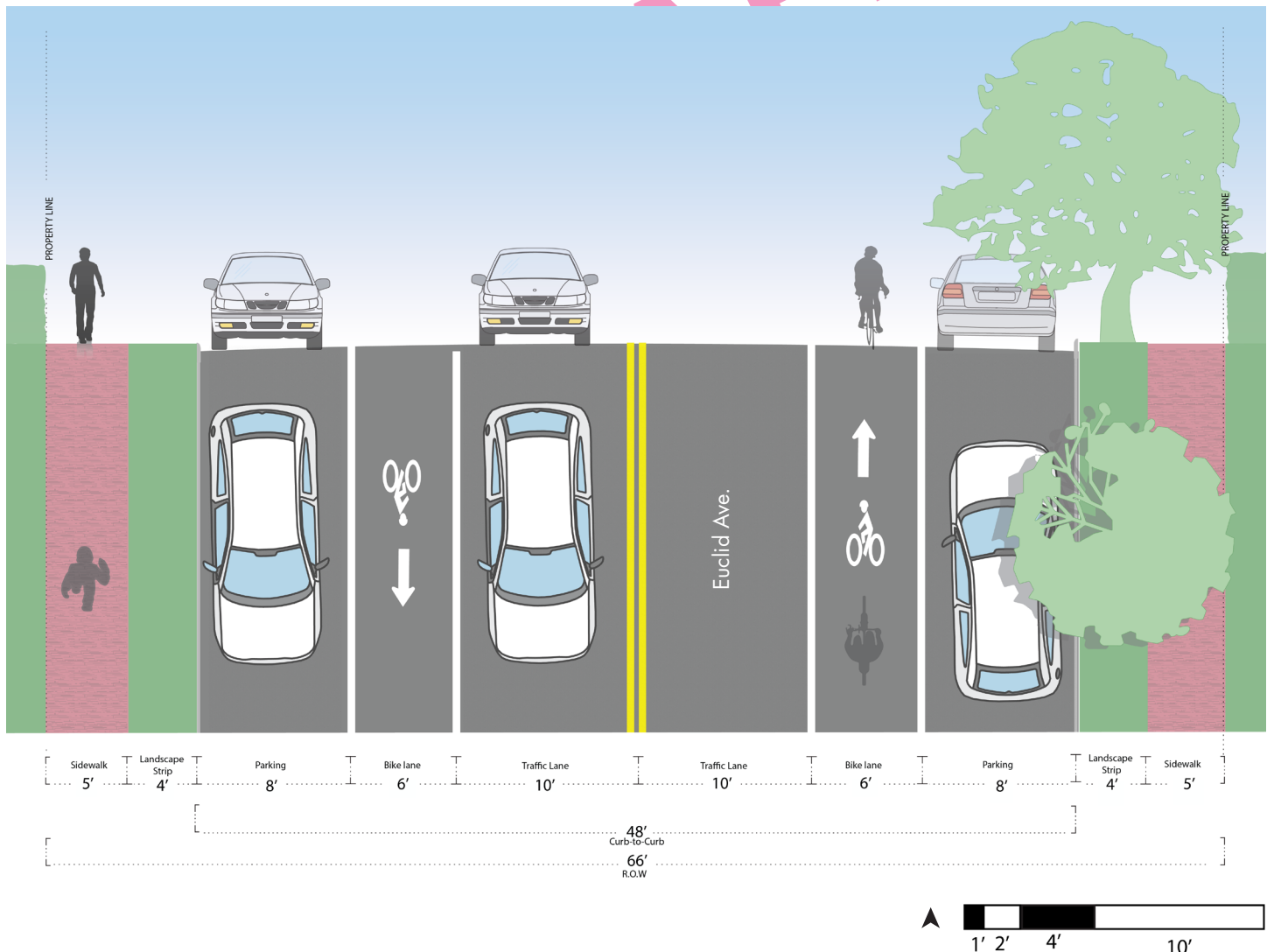




# EUCLID AVENUE

STREET DATA	
Public Right-of-Way Width	66'
Pavement Width	48' typical
Posted Speed Limit	25 mph
Daily Volume	NOT LISTED
Project Limits	Between 17 Street and 5 Street
Project Length	Approximately 6,500', 1.23 Miles
Predominant Land Use	multifamily Residential
Predominant Development Pattern	Compact urban apartment types
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	
Impact on modeshare	moderate
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS

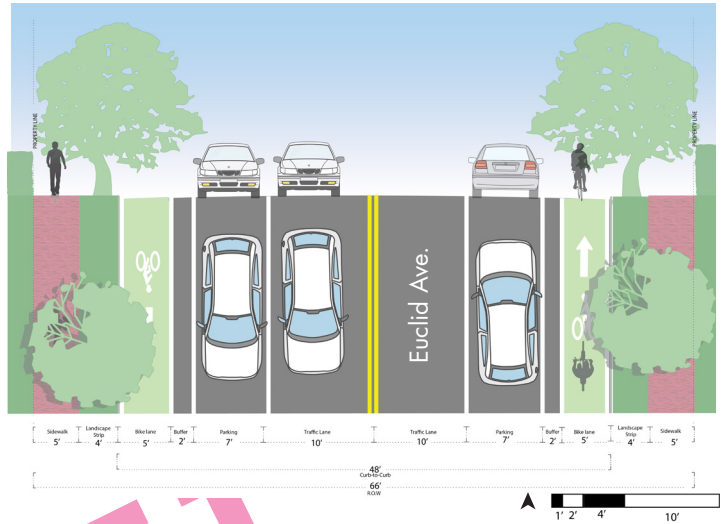


Euclid Avenue is one of the most popular bicycle routes in Miami Beach. Making it as safe as possible, and attracting even more people to ride on this street is one of the best opportunities the city has to encourage a robust bicycle network.



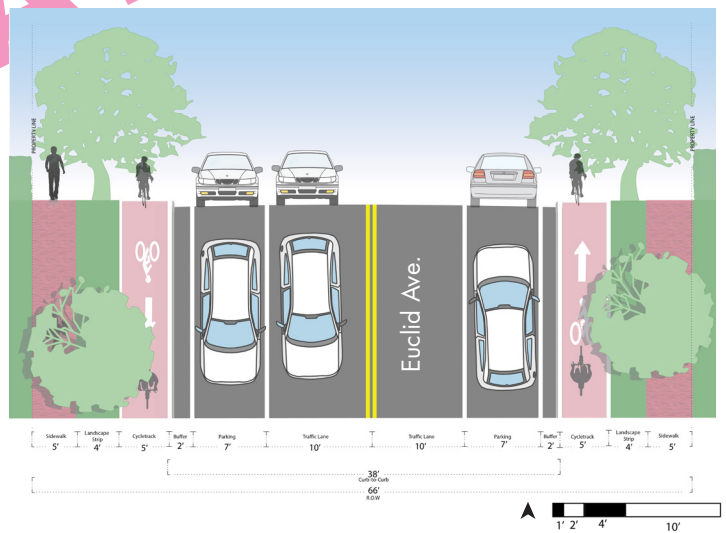
# EUCLID AVENUE PROTECTED LANE

Initially, a parking protected bicycle facility should be installed along Euclid. This facility would form part of a larger network of protected bicycle facilities around Miami Beach.



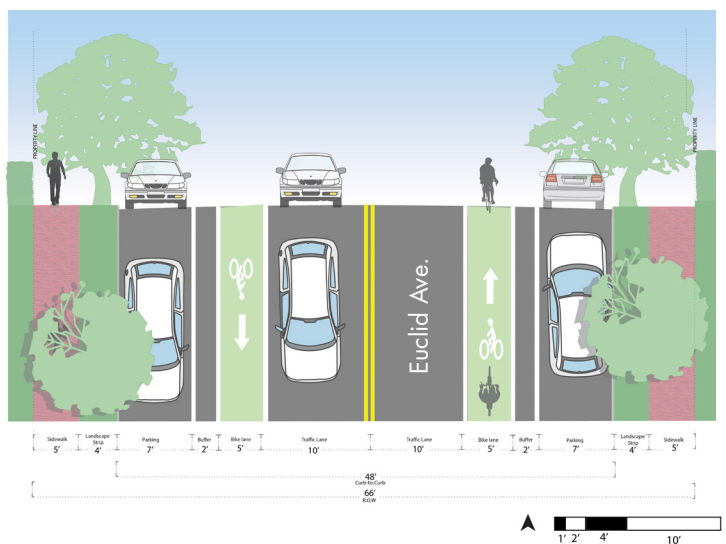
Over the long term, Euclid should be narrowed as much as possible, and the sidewalk expanded to provide additional street trees. The widened sidewalk area can be designated as a protected bicycle facility or not. With a narrow cross section, low volumes, and a bicycle priority designation, Euclid would also make for easy on-road cycling.

# CYCLETRACK



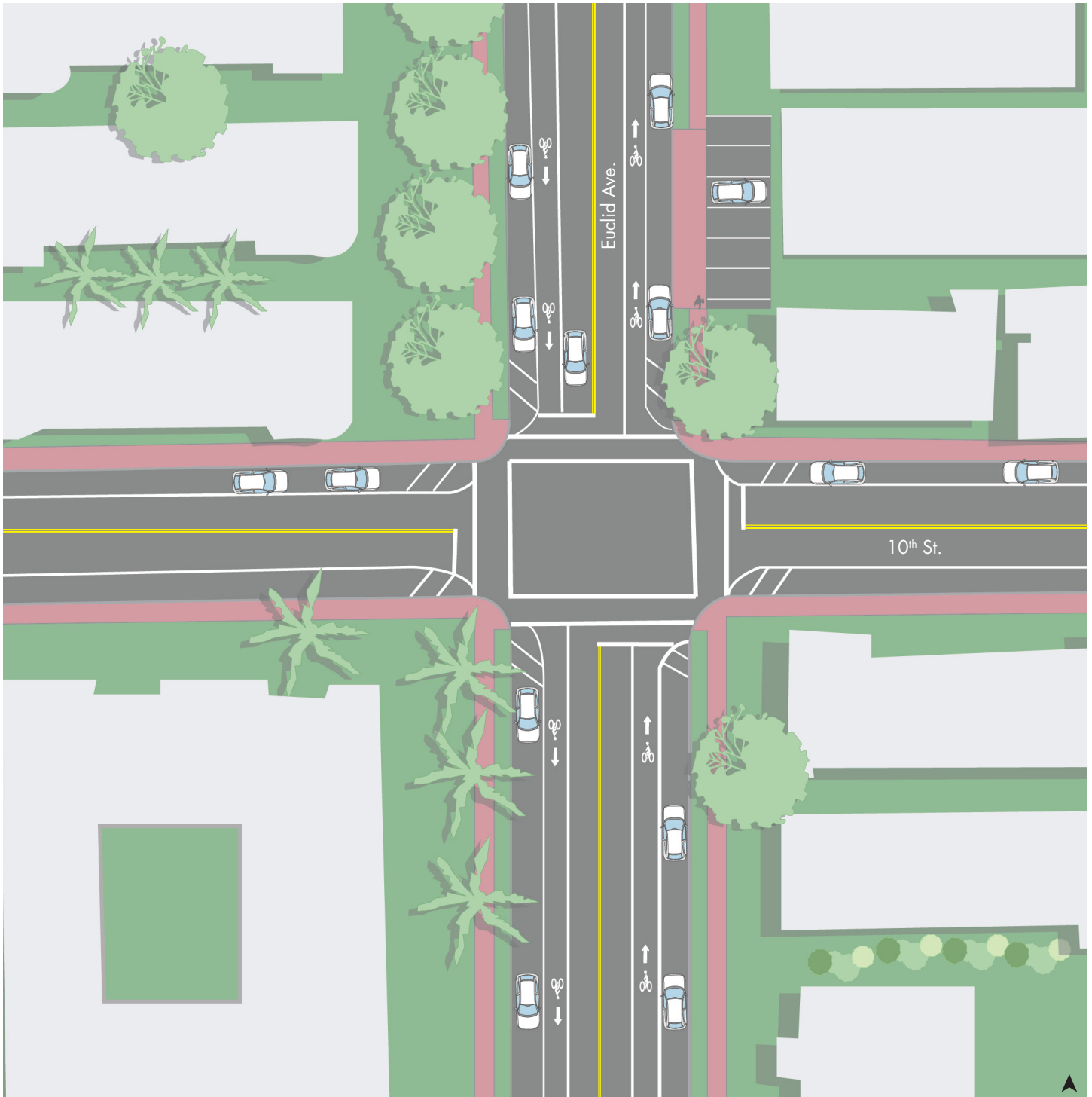
# BUFFERED BICYCLE LANE

Another quick fix to the existing conditions is to create a door-zone buffer space between the bike lane and parked cars.

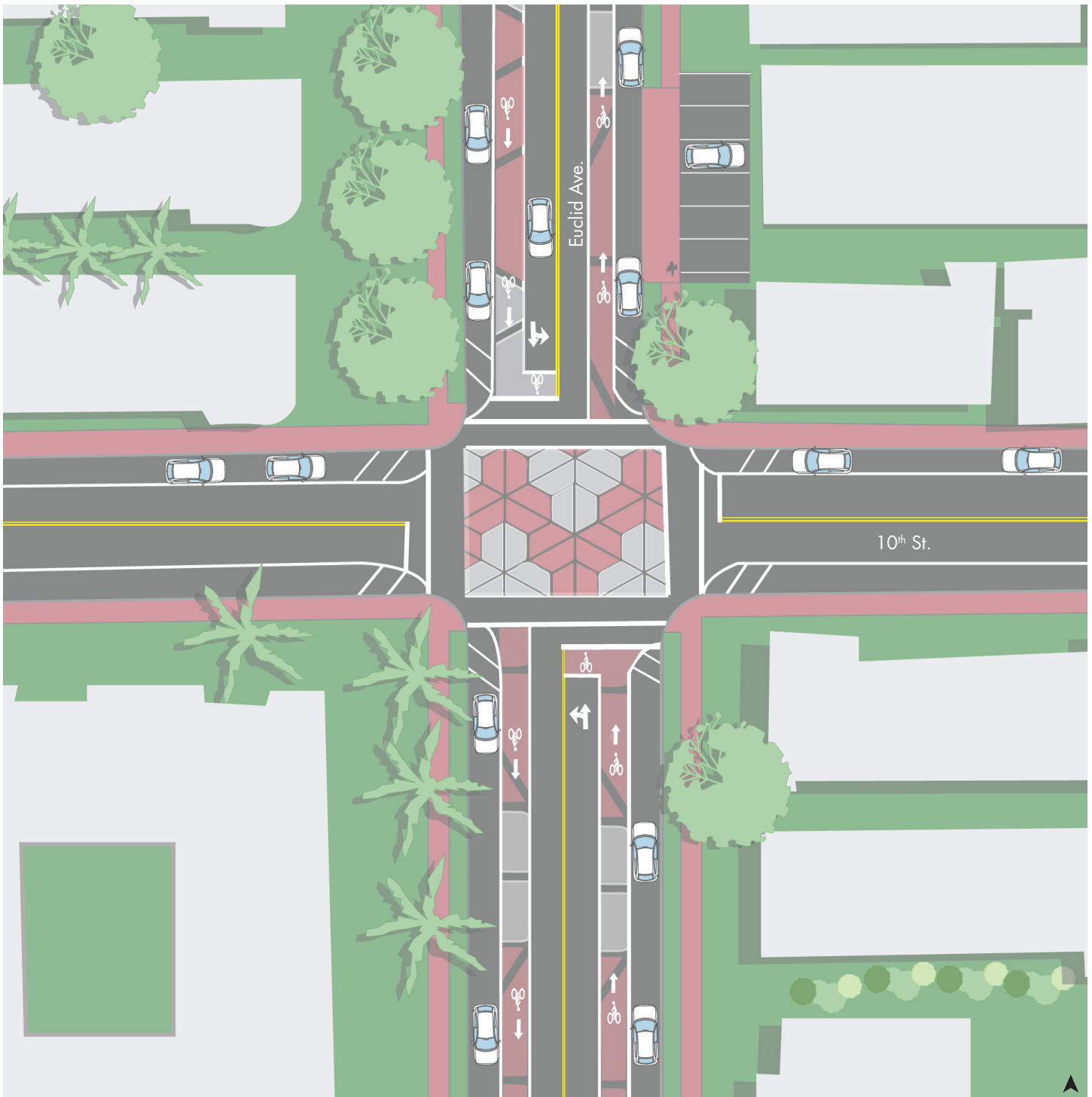


# EUCLID AVENUE

## EXISTING EUCLID AVE. AND 10<sup>TH</sup> ST. INTERSECTION



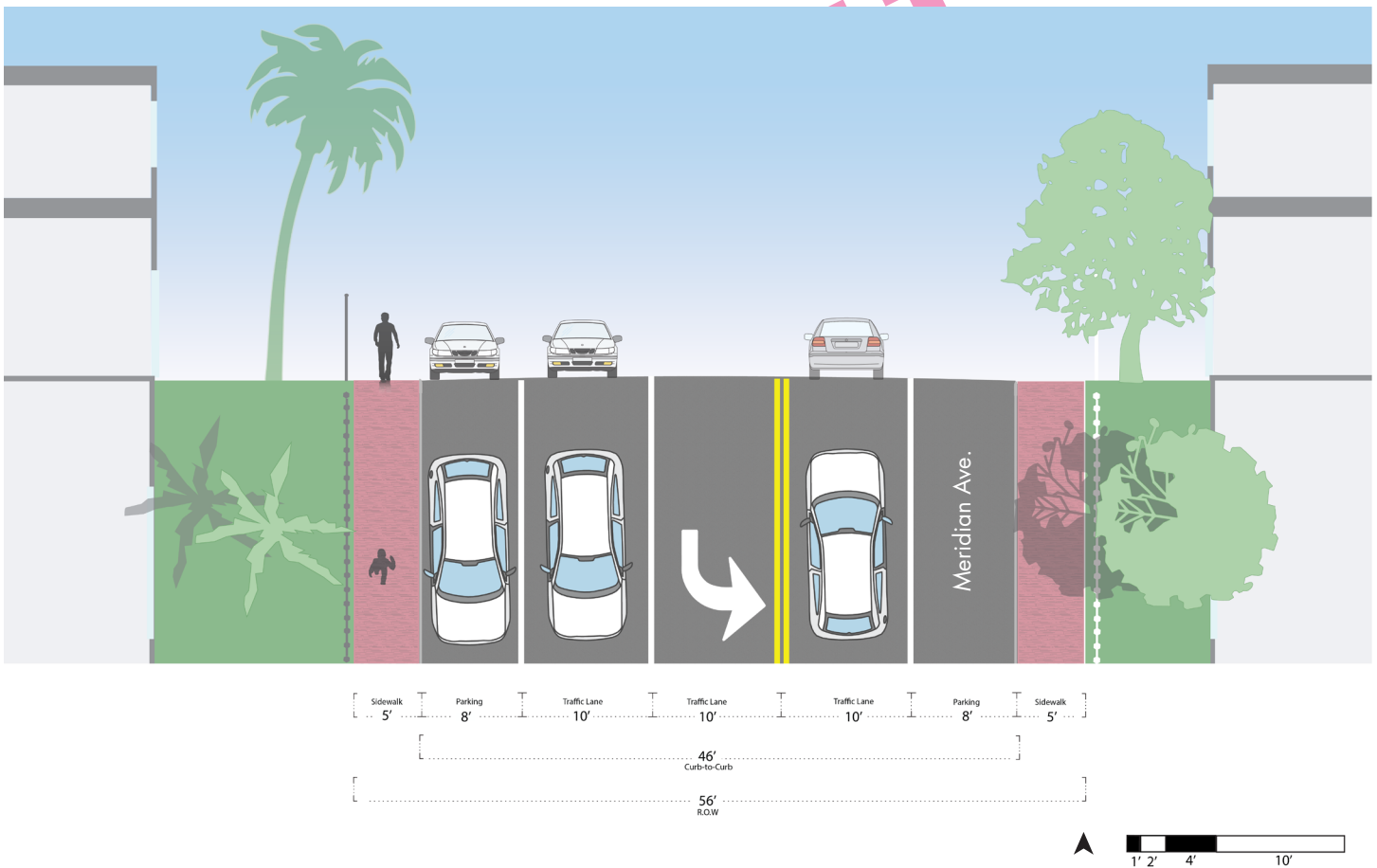
## PROPOSED EUCLID AVE. AND 10<sup>TH</sup> ST. INTERSECTION



Intersections throughout Flamingo Park could have colorful designs painted in them. This safety measure would not only provide for improved pedestrian visibility, but would also encourage drivers to slow down as they pass through the intersection.

# MERIDIAN AVENUE

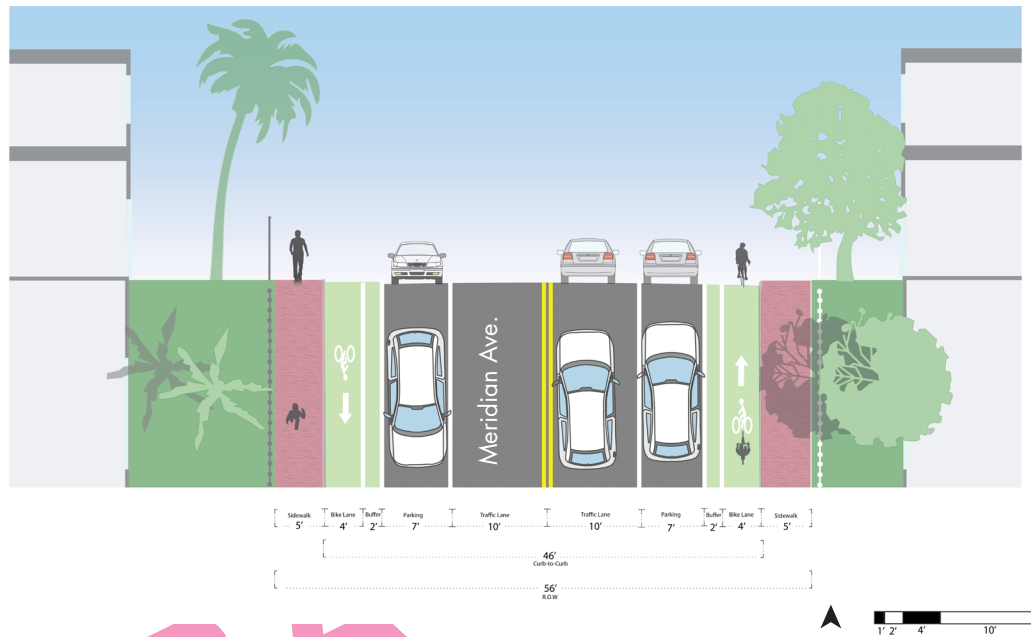
STREET DATA	
Public Right-of-Way Width	56'
Pavement Width	46' typical
Posted Speed Limit	25 mph
Daily Volume	9,600-12,000 ADT
Project Limits	Between Dade Boulevard and 4 Street
Project Length	Approximately 3,000', 0.56 Miles
Predominant Land Use	Multifamily Residential
Predominant Development Pattern	Compact urban apartment types
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Lincoln Road, Flamingo Park



Meridian Between Dade Boulevard and 5 Street is another one of the main bicycle corridors in Miami Beach. The Crash data shows that it is one of the corridors with the most crashes over the past two years. The context of the street goes from mixed-use with a center turn lane in the north, to medium density residential with no center turn lane. Each has its own approach.

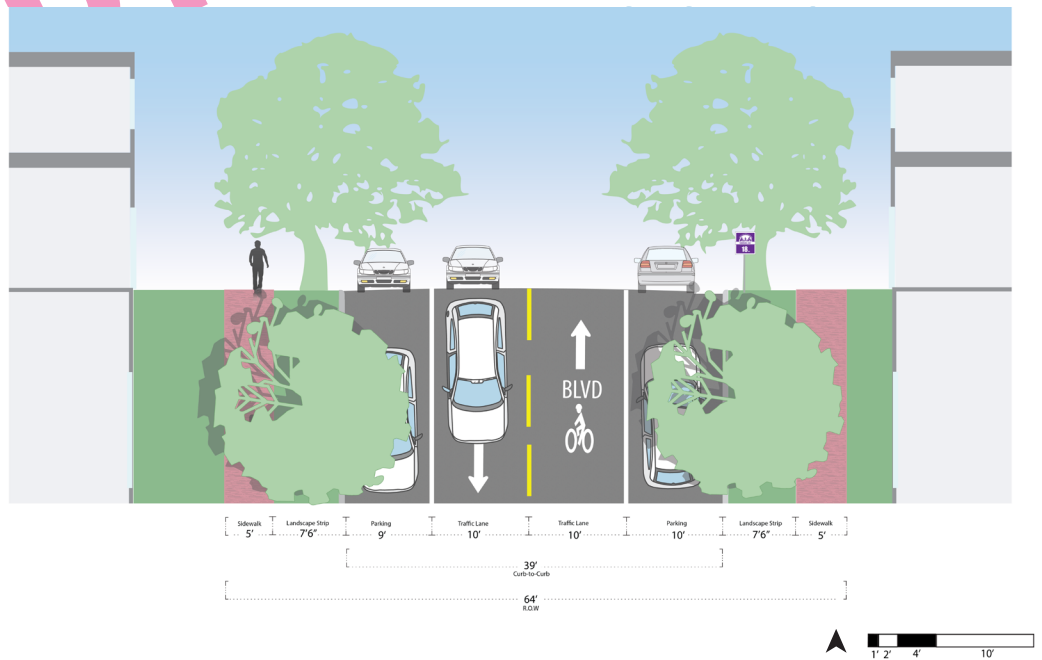
# MERIDIAN AVENUE PROTECTED LANE

In the northern section of Meridian, where it currently has a center turn lane, a parking protected bike lane has been implemented.



DRW

Further south, traffic would have to be diverted from this corridor to prioritize bicycle travel in the street. Already compact conditions call for an on-street bicycle boulevard.

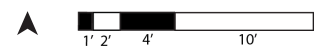
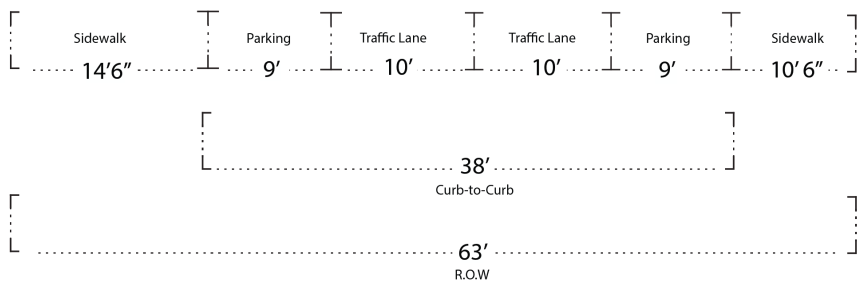
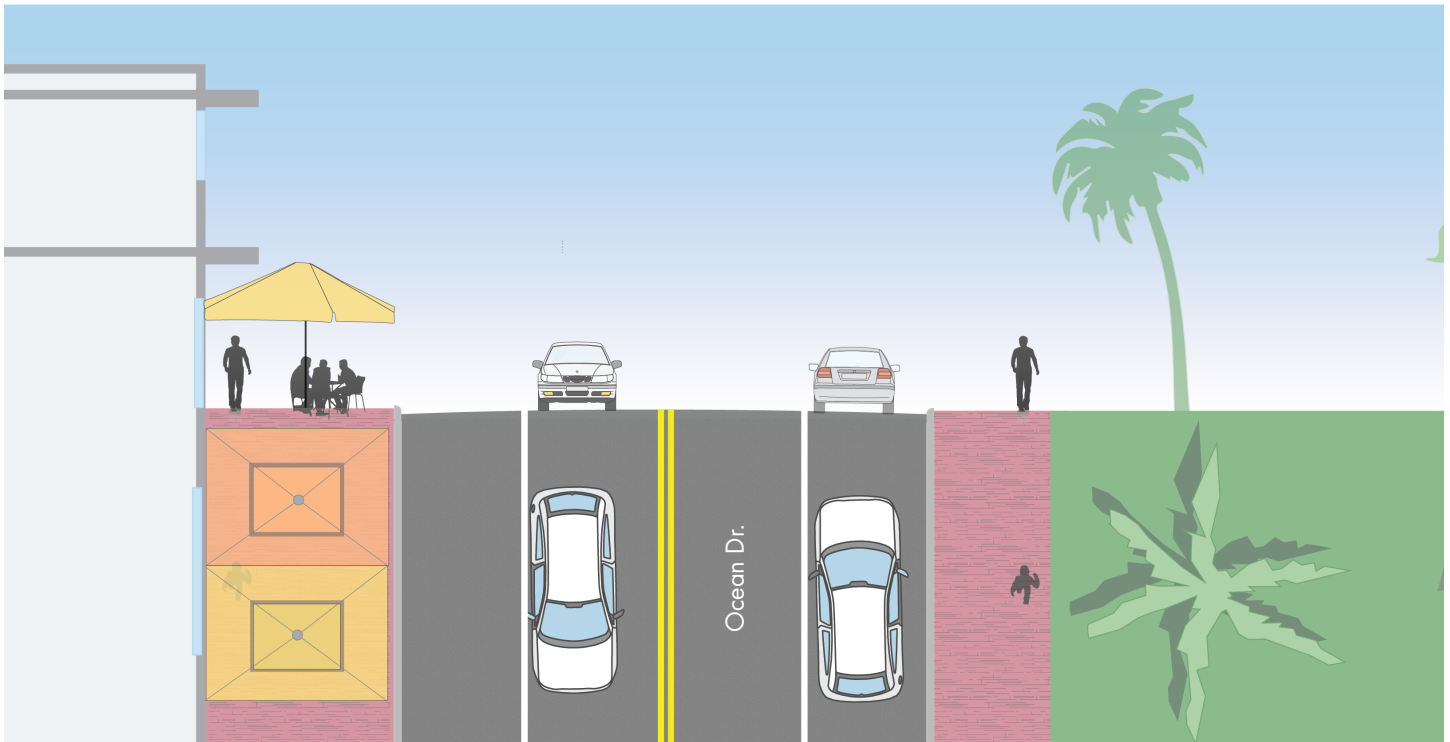


# OCEAN DRIVE

STREET DATA	
Public Right-of-Way Width	63'
Pavement Width	38' typical
Posted Speed Limit	25 mph
Project Limits	Between 15 Street and 5 Street
Project Length	Approximately 5,000', 0.94 Miles
Daily Volume	9,600 ADT
Predominant Land Use	3-12 story hotels with sidewalk cafe.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The beach!
Impact on modeshare	low
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS

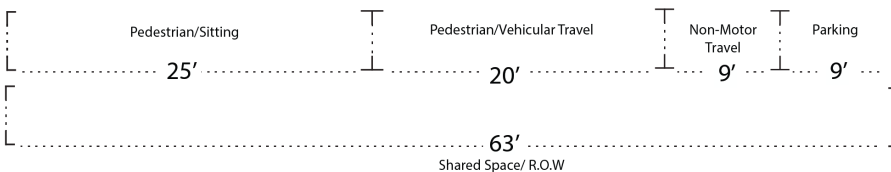
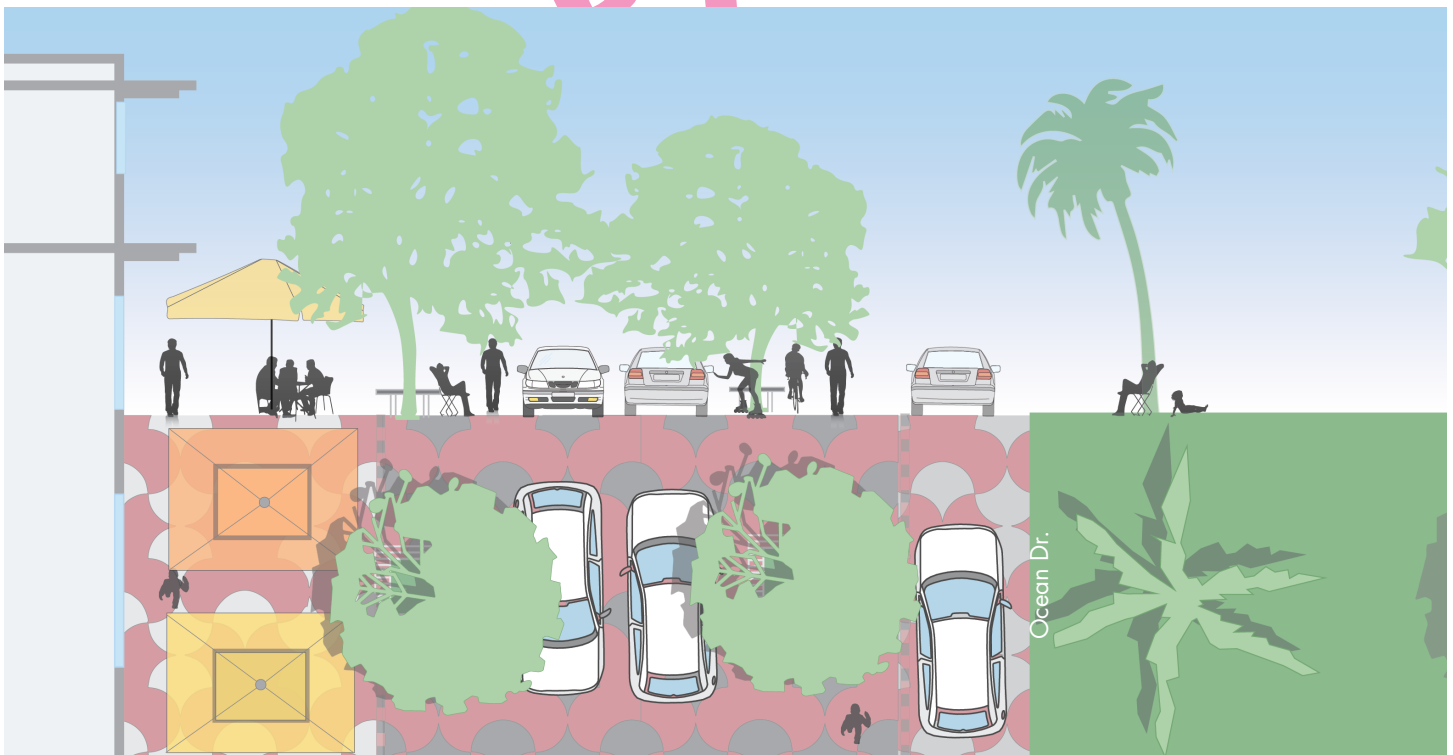
CAFÉ



## SHARED SPACE

Ocean Drive is the city's main public space. Recognisable the world over, it is one of the reasons people come to visit South Florida. The city's main 'drag' has been discussed recently as the candidate for a street redesign. The proposal made here is for the entire ROW to be designed as a shared space. As such there would be minimal pavement markings, and total priority would be given over to pedestrians. There would be more space for sidewalk cafe's and the speed limit would have to drop to 20 MPH or less. In addition the design of the pavement would give the corridor a unique identity. In much the same way that Lincoln Road s one of the premier pedestrian corridors in the world, so too can Ocean Drive elevate its status as one of the great streets of the world with a shared space treatment.

DRAFT

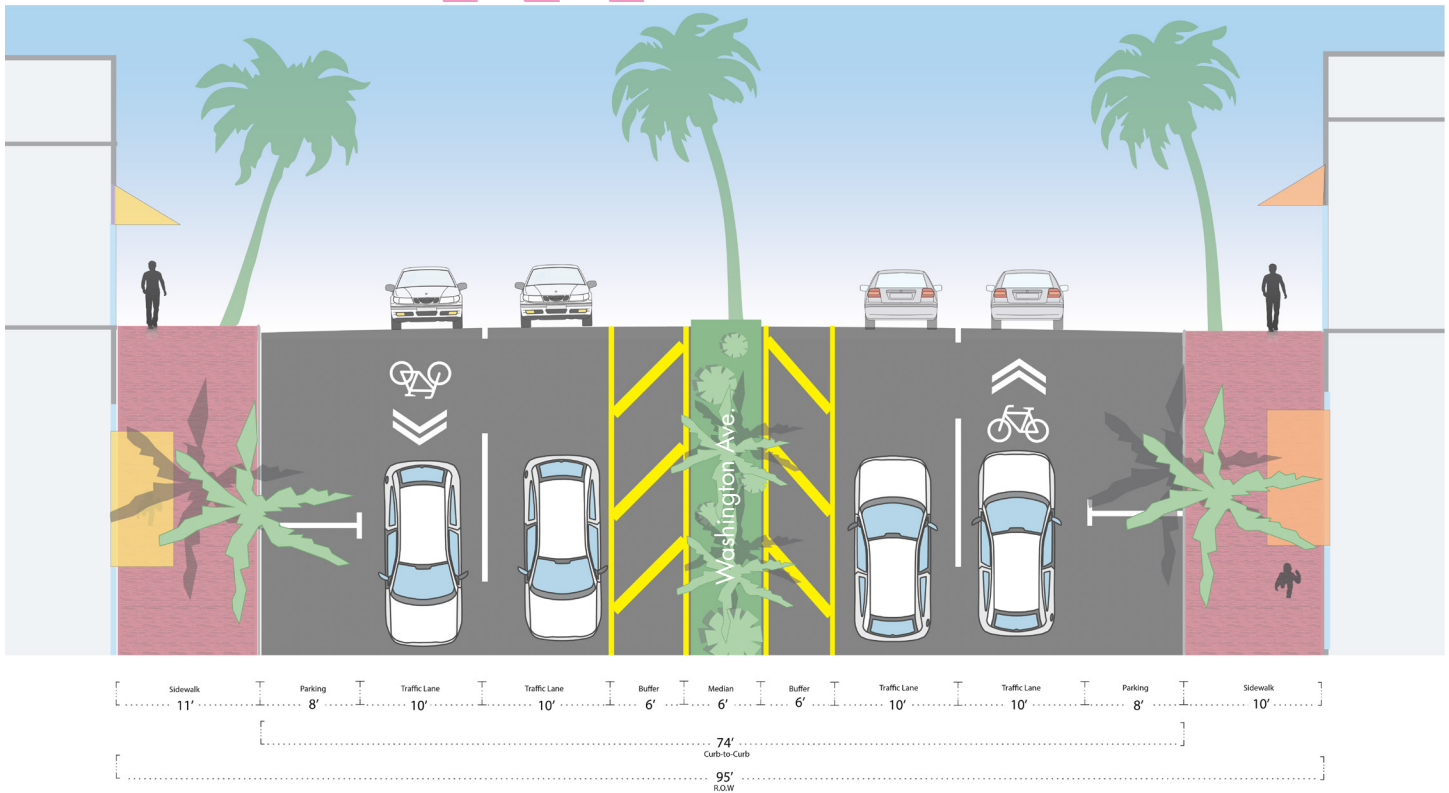
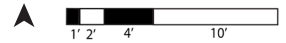


# WASHINGTON AVENUE

STREET DATA	
Public Right-of-Way Width	95'
Pavement Width	74' typical
Posted Speed Limit	25 mph
Daily Volume	32,550 ADT
Project Limits	Between 15 Street and Dade Boulevard
Project Length	Approximately 9,000', 1.7 Miles
Predominant Land Use	mixed use commercial
Predominant Development Pattern	small scale main street, larger hotels
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Miami Beach, commercial, civic uses
Impact on modeshare	high
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS

DRAFT

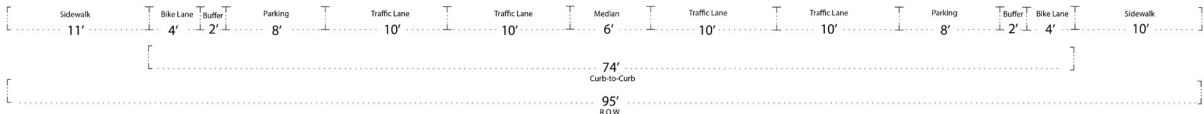
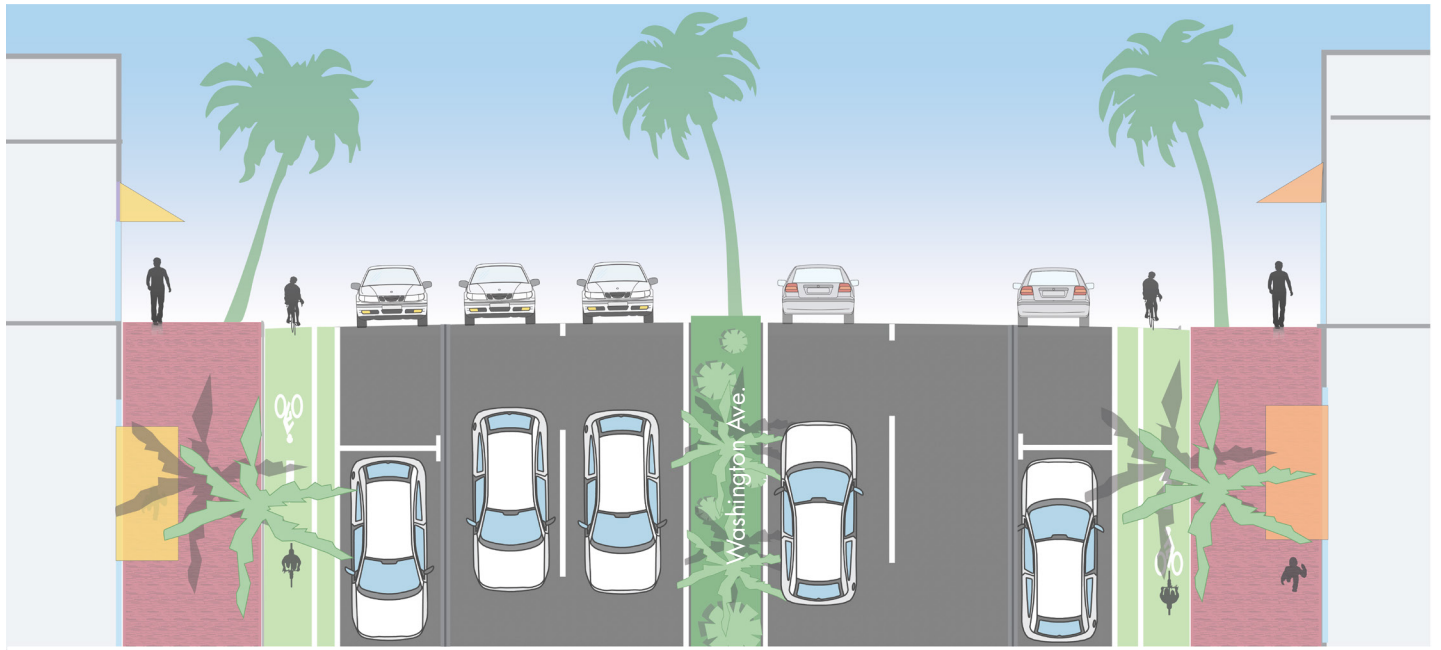


Washington Avenue is another of the iconic Miami Beach Streets. It is also a major transit corridor and a major contributor to bicycle and pedestrian crashes. The proposals on the following page show the short term addition of protected bike lanes by restriping the street, and the long term addition of premium transit down the middle of the street.

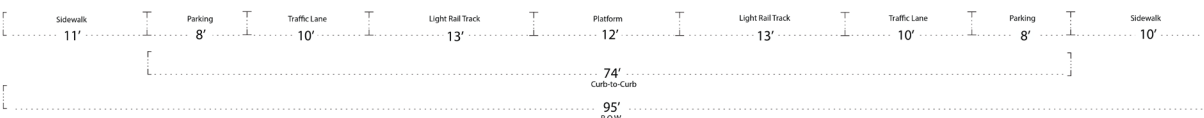
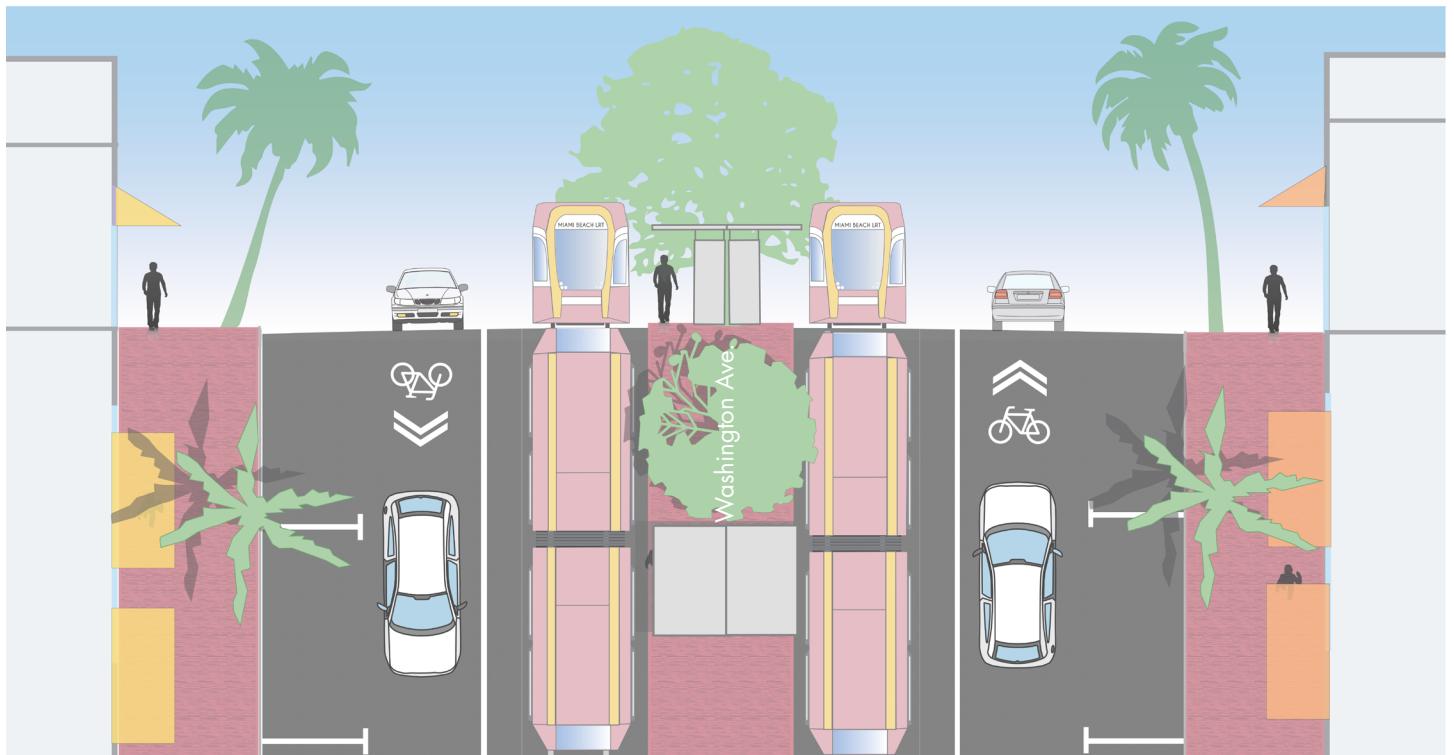


# WASHINGTON AVENUE

## PROTECTED LANE



## TRANSIT OPTION



In order to obtain the goals set forth in this plan, the City of Miami Beach should work with residents, local property owners, business tenants, and government partners to offer more expansive bicycle parking options, including bicycle parking shelters, in-street bicycle parking corrals, and seriously consider the viability of a bicycle commuter center and decorative public art doubling as bicycle parking. Recommendations for improving supply and integrating new types of facilities throughout Miami Beach are described and illustrated in the pages ahead.

# BICYCLE PARKING

# BICYCLE PARKING // EXISTING CONDITIONS



600+

BICYCLE PARKING LOCATIONS

89

CITIBIKE LOCATIONS

6

BICYCLE PARKING TYPES

## INTRODUCTION

The provision of accessible, attractive, and safe bicycle parking options for both short and long-term use is critically important to supporting bicycling as a viable mode of transportation in Miami Beach. In recent years, the City of Miami Beach, private property owners, and business owners have installed hundreds of new, well-designed bicycle racks, particularly for short-term use. This bicycle parking plan makes recommendations for developing high quality, plentiful, and visible bicycle parking options serving residents and visitors for years to come.

## EXISTING CONDITIONS

Today, there are more than 600 publicly accessible short-term bicycle parking spaces in Miami Beach, and more being added each year. As the map at left indicates, these spaces are created by a variety of bicycle parking types found throughout the city. Yet, analysis reveals that that supply is not meeting the current and coming demand. And in many locations, existing bicycle parking facilities are often undersupplied and/or poorly sited, which detracts from their usefulness and viability.

Unsurprisingly, most of the city's current bicycle parking supply is found where

# BICYCLE PARKING // EXISTING CONDITIONS

demand is high. These locations include public parks, at civic buildings, and along commercial streets like Washington Avenue, Lincoln Road, 41st Street, and 71st Street.

The bicycle parking intensity use map this page demonstrates where demand is concentrated. In many of these locations, the supply but also the quality of the infrastructure needs to be increased.

For example, bicycle parking at key destinations, like gyms, pharmacies, restaurants, and bars is often oversubscribed or in some cases underused because of a poor selection in bicycle parking type and/or placement. Both conditions cause people to choose to lock their bicycles to other vertical elements, like street signs, parking meters, and fences. When this occurs, the city's high number of pedestrians are inconvenienced and made less comfortable as they navigate around bicycle-strewn sidewalks.

In addition, long-term bicycle parking options, for say three hours or more, are few and far between. Bicycle parking of this kind —covered, high security, easily accessible — is needed within residential neighborhoods and at transit hubs, schools, large residential and commercial developments, and employment hubs. Such facilities will encourage more people to bicycle for transportation.

Without an increase in supply, quality, and type, it will be difficult for Miami Beach to obtain the bicycle mode share goals set forth in this plan. A more detailed analysis is found in the pages ahead for South Beach, Mid-Beach, and North Beach.



## BICYCLE PARKING // EXISTING CONDITIONS



*The inverted U-rack is an excellent bicycle parking type, yet the above location could be improved.*



*Well placed, high-quality short-term bicycle parking provides for a clear and accessible public sidewalk in mid-Beach.*



*Without adequate supply and visibility, bicyclists will lock their bicycles to the nearest vertical element serving their destination.*



*The bicycle park type is not preferred, but it does provide*



*The "comb rack" is not desired because they are difficult to use and do not bicycles efficiently.*



*Bicycle parking needs to be supplied for bicycles of all shapes and sizes.*

**+804** NEW LOCATIONS

**+5** NEW PARKING TYPES

## PROPOSED BICYCLE PARKING

The bicycle parking plan illustrated at right identifies 804 new locations for bicycle parking. The locations were determined by analyzing land use and urban characteristics, demand, and available space. Each location was then matched with an appropriate type of parking to serve as many users as possible. The analysis revealed that many of the short-term racks found throughout the city do not meet best practice specifications (see [page X](#)) and that long-term parking is almost non-existent. Thus, the following five short and long-term parking facilities types are being recommended.

### Short-term Parking Types

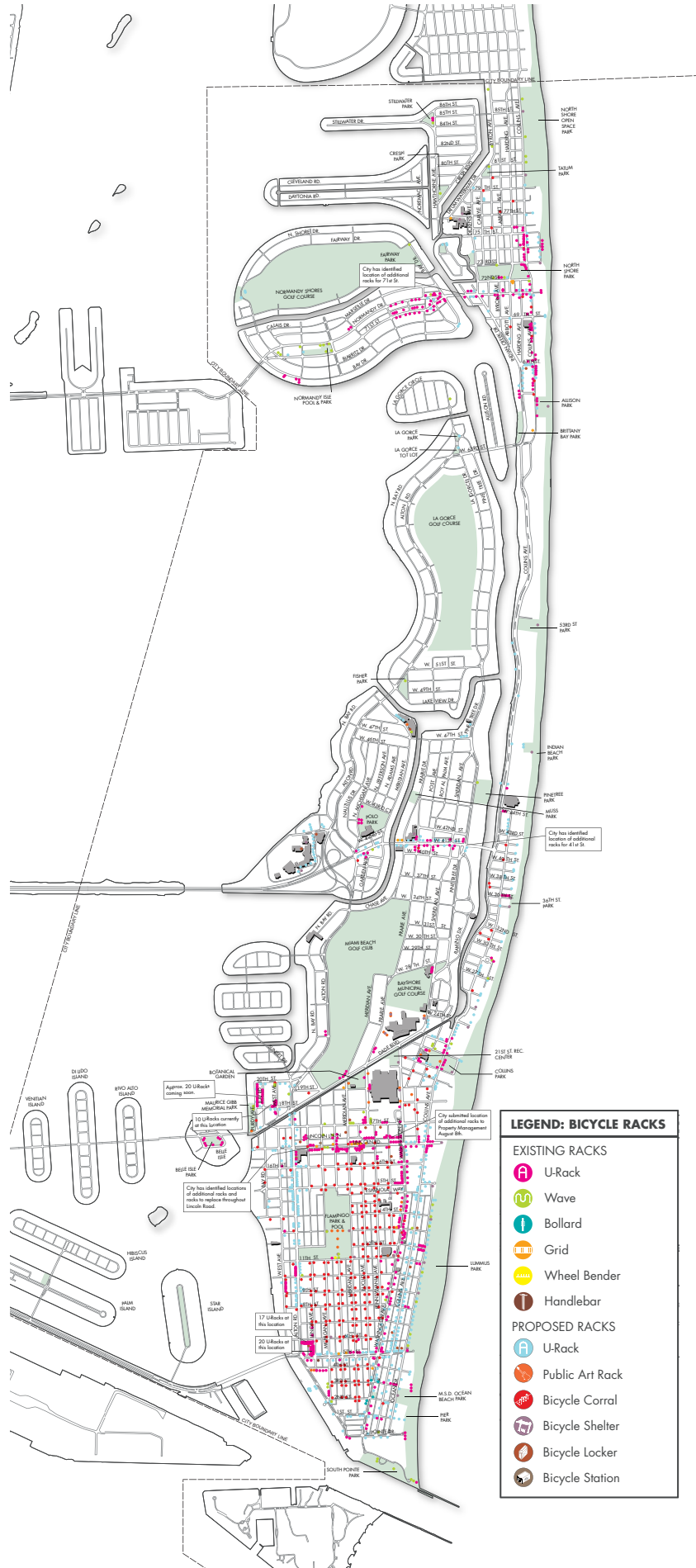
- Bike Corral
- Public Art Rack

### Long-term Parking Types

- Bicycle Shelter
- Bicycle Locker
- Bicycle Station

These five types, plus the city's standard inverted-u rack, should comprise the bulk of the city's parking in the future. A definition of short and long-term bicycle parking is located on [page X](#), and a visual guide to current and proposed parking types is found on [page X](#).

More detailed recommendations for South, Mid, and North Beach may be found on the following six pages.



# BICYCLE PARKING // SOUTH BEACH PLAN



*Bicycle parking is often oversubscribed and poorly sited, such as the above example limiting pedestrian comfort.*

## EXISTING CONDITIONS SUMMARY

Despite hundreds of new bicycle racks, bicycle parking is still in high demand but in low supply. This may be observed by walking along commercial thoroughfares like Collins Avenue, Washington Avenue, 5th Street, Lincoln Road, Ocean Drive, and Alton Road, among others. In these places, bicycle racks, street signs, and parking meters are often jammed with bicycles, which makes the city's most heavily trafficked sidewalks a challenge to navigate on foot. Moreover, bicycles affixed to poorly sited and many a makeshift rack are often unable to be locked properly and subject to damage or theft.

Bicycle parking is also a desired amenity within the neighborhoods of South Beach. The residential streets feature narrow sidewalks with little room to store bicycles, while the area's historic art deco buildings were not initially designed to incorporate this needed amenity. Thus, the prospect of hauling a bicycle in and out of an apartment building, or the threat of theft from poorly sited and poorly selected outdoor racks likely deters many people from making trips by bike.

With few options, bicycle storage has become an issue that needs to be addressed for thousands of residents living in the city's most bicycle-friendly neighborhoods.



*Motorcycle parking is often allowed adjacent to curb cuts and intersections. Bicycle parking should be an additional option.*

## PROPOSED PARKING SUMMARY

Numerous opportunities exist for upgrading the supply and quality of bicycle parking in South Beach. In the short-term, the City of Miami Beach can continue to add its high-quality silver inverted-u racks to the city's streets. The same rack type should be used for short-term parking in parks, public spaces, and schoolyards throughout South Beach.

Given the area's density, physical constraints, and high-bicycle use, one of the big opportunities for increasing supply is to use street space more efficiently. This may be done by adding bicycle racks either within select areas that currently limit automobile parking, but often allow motorcycle parking. These in-street bicycle corrals may be used for short-term parking, or be provided with shelters to add more utility to longer-term use. There are more than 100 hundred such opportunities throughout South Beach and they should be taken advantage of so that more bicycle parking may be added. In select spaces, where demand is the highest as in Crunch Gym at 1259 Washington Avenue, automobile parking may be removed in favor of providing more bicycle parking. This re-allocation of space not only helps build complete streets, but helps retailers, residents, and visitors find more parking conveniently.

# BICYCLE PARKING// SOUTH BEACH PLAN

**397+**  
**+497**

**BICYCLE  
PARKING  
LOCATIONS**

**NEW  
LOCATIONS**





# BICYCLE PARKING // MID-BEACH PLAN



*Covered bicycle parking at Mount Sinai's Heart Center's parking garage on Meridian Avenue/West 48th Street.*



*Prairie Avenue at 41st Street would be a good place to add an in-street parking corral to serve local businesses.*

## EXISTING CONDITIONS SUMMARY

Due to a large amount of single-family housing and the presence of two golf courses, bicycle parking in Mid-Beach is largely concentrated along the 41st Street commercial corridor. Numerous inverted u-racks have been installed in recent years, attracting more bicycle use to this important destination. That said, there is a growing need to implement more parking along the corridor and the half blocks to the north and south that feature commercial land uses. This will only become more important as the bicycle network is strengthened to the north and to the south.

In addition to 41st Street, Mount Sinai's two hospital campuses make Mid-Beach an important employment and service hub for the region. There are currently few safe ways to bicycle to each hospital campus and bicycle parking at both needs to be upgraded to include much more short and long-term parking options.

Finally, there are few bicycle parking options along the Collins Avenue corridor. Specifically, there is a need for more short-term bicycle parking serving the eastern terminus of numerous streets that serve as access points to the beach beach walk, and parks that line the beach.

## PROPOSED PARKING SUMMARY

Bicycle parking in Mid-Beach should be concentrated in four distinct locations: The 41st Street corridor, Collins Avenue and the streets that terminate at the beach/beachwalk/parks, and at the two Mount Sinai hospital campuses. On 41st Street, a small amount of low-lying landscaping could be removed for short-term bicycle parking facilities. With limited space along 41st Street, additional bike parking should be placed along the intersecting streets, such as the north and south side of Prairie Avenue (adjacent to North Beach Elementary School and Montefiore) where underutilized street space could be better used for in-street parking corrals (short-term) or bicycle shelters (long-term).

Both hospital campuses should consider a district-wide bicycle parking plan, one that adds short-term parking along walkways, sidewalks, and in other open spaces near building entrances. The plan should also include bicycle lockers for long-term parking, which could be placed judiciously within select parking lots and garages.

Finally, bicycle racks, in-street corrals and a few bicycle shelters should serve residents, shoppers, and beach visitors along or near Collins Avenue.



# BICYCLE PARKING // NORTH BEACH PLAN



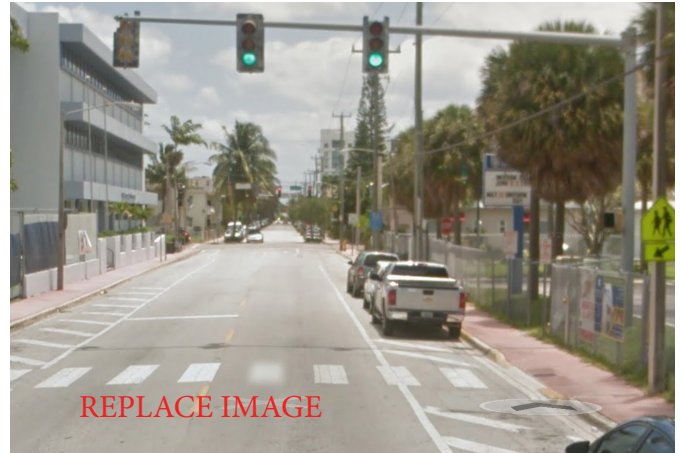
*Located along Ocean Terrace, the above rack should provide two parking spaces, but due to its location, it only provides one.*

## EXISTING CONDITIONS SUMMARY

North Beach is comprised of several different neighborhoods, many of which are in need of additional bicycle parking. While many short-term parking spaces have been added to the 71st/Normandy Drive and Collins Avenue commercial district, more may be implemented, especially between Indian Creek Drive and Collins Avenue, and 63rd Street and 75th Street.

With a residential density similar to that of South Beach and a growing bicycle network, there is also a need to add much more bicycle parking within the area bounded by 72nd Street to the south, Collins Avenue to the east, Tatum Waterway Drive to the west, and the city boundary to the north at 87th Terrace.

Access points to North Beach open space network would benefit from additional bicycle parking, or an upgrade in type. Locations include the Normandy Shores Golf Club, Fairway Park, Normandy Isle Park and Pool, North Shore Park, Parkview Island Park, North Shore Open Space Park, Allison Park, Brittany Bay Park, and the many connection points between east-west streets and the entrance to the beachwalk.



*Lehrman Drive bisect two schools and a daycare facility. Visible, safe bicycle parking is needed for staff and students.*

## PROPOSED PARKING SUMMARY

Diversifying the type and increasing the supply of bicycle parking throughout North Beach should be viewed as a short-term implementation priority. More specifically, the addition of inverted u-racks and bicycle corrals to commercial streets will bring more customers and help declutter the relatively narrow sidewalks in the area's business districts. Moreover, in-street corrals may also be inserted in select residential neighborhoods so that residents and visitors find it easier to park.

At select parking lots or garages, bicycle lockers or covered bicycle parking could serve as a long-term storage or intermodal commuter option. The new garage on 67th and Indian Creek Drive is one such location.

Allison Park, North Shore Open Space and others would be great places to add well-designed and highly visible bicycle parking shelters, perhaps integrated with bus stops. This would provide a longer-term parking option for intermodal commuters, as well as a safe place semi-protected from the weather to store bicycles for those spending a day at the beach.

Finally, school sites like Lehrman Community Day School and Biscayne Elementary Community School should provide more accessible and sheltered parking for students and visitors.

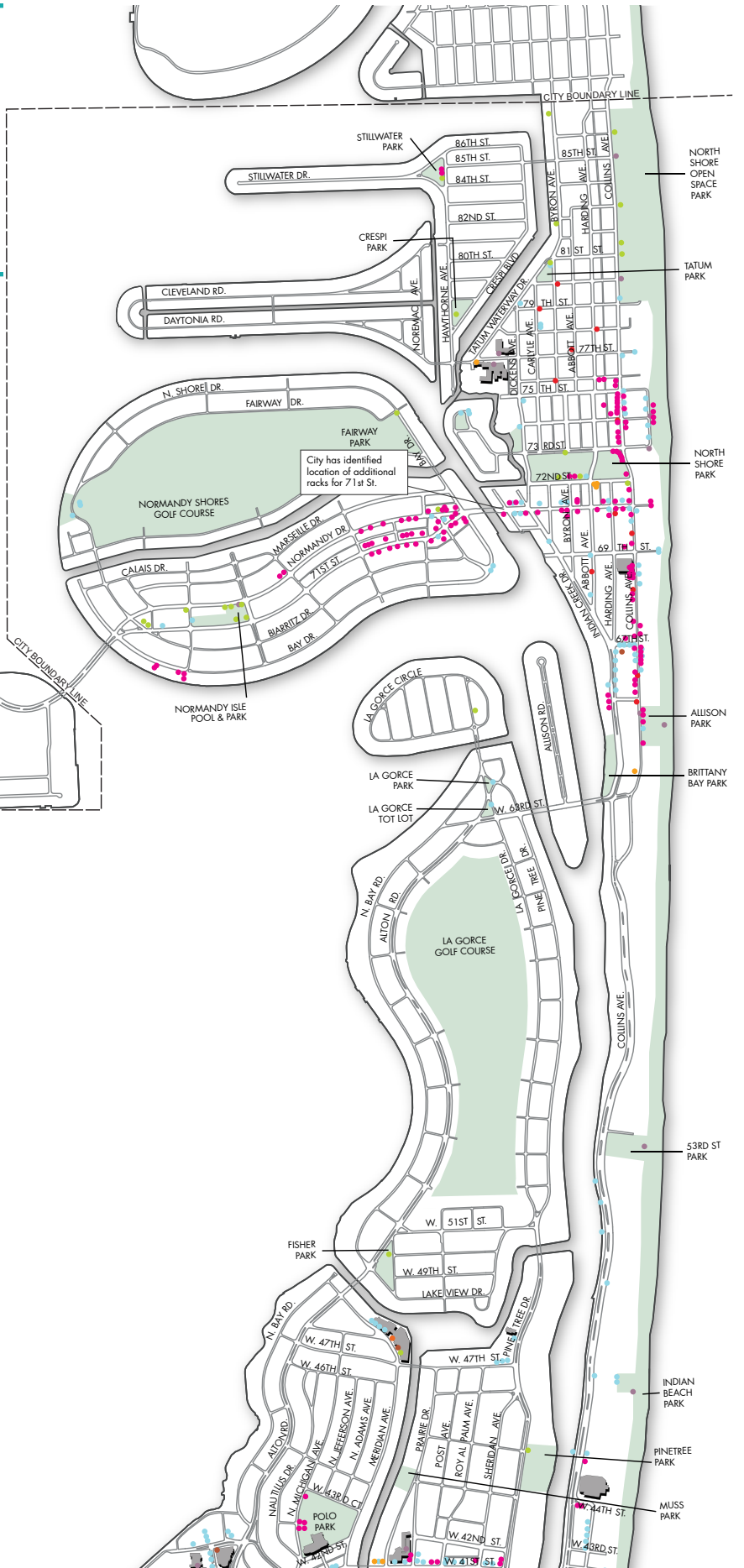
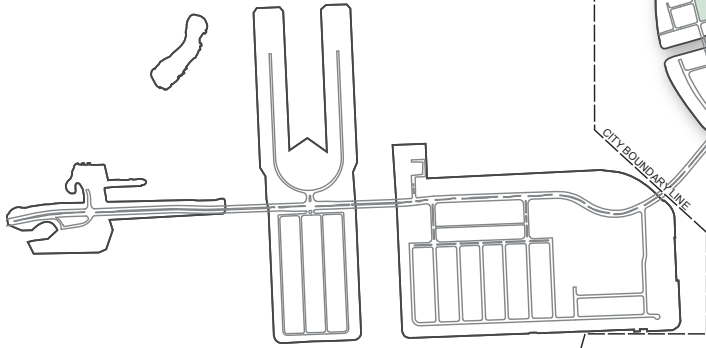
# BICYCLE PARKING // NORTH BEACH PLAN

# 146+

## BICYCLE PARKING LOCATIONS

# +75

## NEW LOCATIONS



### LEGEND: BICYCLE RACKS

#### EXISTING RACKS

- U-Rack
- Wave
- Bollard
- Grid
- Wheel Bender
- Handlebar

#### PROPOSED RACKS

- U-Rack
- Public Art Rack
- Bicycle Corral
- Bicycle Shelter
- Bicycle Locker
- Bicycle Station

# BICYCLE PARKING // BICYCLE PARKING TYPES

## BICYCLE PARKING TYPES

Bicycle parking types range from basic bicycle racks to semi-enclosed bicycle shelters, to full “bike stations” that provide a combination of amenities that include indoor bicycle storage, repair facilities, showers, lockers, changing rooms, rentals, and even café/social gathering spaces. While countless bicycle parking designs and configurations exist, they may be described as two overarching types: short- and long-term parking. Each of these types is explained below.

Short-term parking facilities consist of standard bicycle racks, 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 land use context is not difficult, but requires an analysis of the following conditions.

- intended bicycle user group
- length for which bicycles are likely to be parked
- proposed location and surrounding land uses
- local climate considerations (shade, rain)
- ability of the proposed facility to provide orderly, safe, and attractive bicycle parking
- basic performance standards and parking site guidelines

At present, a range of short-term bicycle parking types serve the needs of bicyclists in Miami Beach with various levels of success. These types are illustrated on the opposite page. Currently, the City of Miami Beach offers no long-term parking facilities.

## SHORT-TERM BICYCLE PARKING

The majority of bicycle parking facilities are intended for short-term use, generally less than

three hours. Short-term bicycle parking is generally associated with commercial/retail, civic, and/or recreational land uses. As a result, proximity to destination is often prioritized over protection from weather and absolute security. Beyond the use of a personal bicycle lock and the quality of the rack, passive surveillance — otherwise known as “eyes on the street” — is the only security provided.

## BICYCLE RACKS

Bicycle racks allow for the temporary storage of bicycles in a safe and organized manner. The most effective types are those which are easy to identify visually, efficient in their ability to accommodate the intended amount of parked bicycles, allow for easy bicycle maneuverability in and out of the designated bicycle parking space, enable the bicycle to be secured properly by providing at least two points of contact with the bicycle frame, and allow both the frame and the wheel to be secured to the bicycle rack.

Two simple and recommended forms that meet these standards are the inverted “U” Rack and the “Post and Ring.” The former comprises the standard Miami Beach city rack.

## STANDARD BICYCLE RACK RECOMMENDATION

It is recommended that Miami Beach continue to use its standard silver inverted “U-rack.” However, certain contexts may allow or dictate a different parking facility or design type, as described below. In particular, the addition of bicycle corrals may require the city’s existing racks to be placed on ground rails.

## BICYCLE RACKS LOCATION RECOMMENDATIONS

It is recommended that the city’s standard bicycle racks be considered as a replacement to those locations where bicycle racks do not currently

# BICYCLE PARKING // BICYCLE PARKING TYPES

## EXISTING BICYCLE PARKING TYPES

SHORT-TERM



**A** INVERTED U-RACK (RECOMMENDED)



**W** WAVE RACK (NOT RECOMMENDED)



**B** BOLLARD RACK (NOT RECOMMENDED)



**G** GRID RACK (NOT RECOMMENDED)



**W** WHEELBENDER RACK (NOT RECOMMENDED)



**H** HANDLEBAR RACK (NOT RECOMMENDED)

## PROPOSED BICYCLE PARKING TYPES

SHORT-TERM



**A** INVERTED U-RACK



**C** BICYCLE CORRAL



**A** ART RACK

LONG-TERM



**S** BICYCLE SHELTER



**L** BICYCLE LOCKER



**S** BICYCLE STATION

# BICYCLE PARKING



*Bicycle parking corrals help maintain a clear sidewalk, increase overall parking supply, and often become social spaces.*

meet the design standards included in this plan. For design standards, see [page XX](#), for specific location recommendations, see [page XX](#).

## **BICYCLE CORRAL RECOMMENDATIONS**

The bicycle corral is an increasingly common type of short-term bicycle parking type used where bicycle parking demand is high and sidewalk space is either limited or duly accommodates high volumes of pedestrian traffic. Bicycle corrals most commonly replace automobile parking spaces or are placed within site triangle visibility zones, which still allow for motorists a clear

view yet also allow the added amenity of bike parking to be added. Depending on the configuration, a single motor vehicle parking space may yield between six and 12 bicycle parking spaces within a single corral.

## **PUBLIC ART BICYCLE RACKS**

The City of Miami Beach standard bicycle rack is already an attractive element in the streetscape. That said, neighborhood, civic, district, non-profit, institutional, or business groups located within Miami Beach should be encouraged to pursue bicycle parking facilities that reinforce an



*The above bicycle parking is well-spaced, properly oriented parallel to the curb, and a safe distance from the tree and the curb.*

existing cultural, historical, business, or social character. In such instances, custom or public art bicycle racks can creatively address bicycle parking needs while simultaneously enhancing the profile of bicycling and the destination served by such racks. While custom bicycle racks do cost more than off-the-shelf racks, they raise the profile and visibility of bicycling in general, and improve the public perception regarding city or organizational/business values. They also bring positive attention to bicyclists for making sustainable and healthy transportation choices.

That said, many art rack designs unintentionally undermine the intended function, often resulting in inefficient, unrecognizable, and undesirable bicycle parking facilities that are avoided by users. Therefore, the provision of art racks must meet or surpass the guidelines and performance standards set forth in this Plan.





*Adding a bike valet can help attract hundreds of cyclists who might have otherwise driven.*



*Adding a bike valet can help attract hundreds of cyclists who might have otherwise driven.*

## **BICYCLE RACK SAFETY AND PERFORMANCE STANDARDS**

To prevent theft and to ensure public safety, all bicycle racks should meet the following design guidelines:

- support the frame of the bicycle in at least two locations;
- allow the frame and one wheel to be locked to the rack when both wheels remain 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 the use of cable, chain, and U-shaped locks;
- be securely anchored to the ground;
- be usable by bicycles with bottle cages, panniers, etc.;
- - be usable by a variety of bicycle sizes and types (children’s bicycles; tricycles, 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 or screwdrivers. Bicycle racks and the bicycles secured to them should not create a tripping hazard or barrier for pedestrians and the visu-

ally impaired (see location standards on page x). Finally, all outdoor bicycle racks and any related facilities should be well-lit and highly visible at night so that users feel safe using them at all hours.

## **EVENT-BASED VALET BICYCLE PARKING**

Miami Beach is home to an incredible amount of events that draw thousands and thousands of people to concentrated points. One way to manage the stress on the street network is to encourage other forms of transportation, such as cycling. In many instances, doing so could overwhelm the existing bicycle parking infrastructure. Thus, another option is to seek out organizations, like the Green Mobility Network, to help staff, manage, and promote temporary event bicycle parking.

ADD IMAGE

## **LONG-TERM BICYCLE PARKING**

Long-term bicycle parking facilities are intended for use that generally exceeds two hours (see Table 2). 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 the final 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 periods of two-hours or more. Such places include, but are not limited to, employment centers, transit stops, civic buildings, parks, and schools.

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.

The spacing between individual bicycle racks and/or other streetscape elements must be taken into account and should follow the general bicycle parking performance and location standards found on

## BICYCLE PARKING // LONG-TERM

page X. Likewise, bicycle shelters should be easily identifiable, well lit at night, and sufficiently protect bicycles from the elements.

Developers of property in Miami Beach may consider pursuing the implementation of bicycle shelters in strategic locations, such as within the grounds of the project. Doing so will raise the profile of bicycling and provide a parking amenity for residents and visitor that provides shelter for longer parking stints.

### **BICYCLE SHELTER SAFETY AND PERFORMANCE STANDARDS**

To ensure public safety and high performance, all bicycle shelters should:

- include bicycle racks that support the frame of the bicycle in at least two locations and
- meet all other bicycle rack performance standards as discussed in this Plan.
- include a roof span of at least eight feet in width to ensure adequate bicycle coverage
- be located to ensure pedestrian sidewalk clearance (six feet minimum)
- be located to maintain adequate visibility clearance at intersections (fifteen minimum)
- comply with local building code requirements
- provide adequate illumination for night-time use

### **BICYCLE LOCKERS**

Bicycle stations are intended to serve as a local/regional hub for all bicycling activities. Such facilities 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.

ADD IMAGE

ADD IMAGE

ADD IMAGE



## BICYCLE STATIONS

Bicycle stations are intended to serve as a local/regional hub for all bicycling activities. Such facilities 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 long-term and frequent use, and will elevate the visibility and viability of bicycling in Miami Beach.

Bicycle stations are most appropriate in 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, Santa Monica, CA, Cambridge, MA, Washington DC, Berkeley, CA, and Long Beach, CA all provide working models.

It is recommended that the City of Miami Beach pursue a bicycle station-like facility in South Beach, within the center city. An ideal location would be within a short distance of Lincoln Road where such a facility would be highly visible and of utility to bicyclists cycling to work. The exact location, programming, and construction timeline will require further study, but some ideas include a facility within a municipal parking garage, built within a municipal parking lot, or even in a leased storefront.

# BICYCLE PARKING // DESIGN STANDARDS



## GENERAL BICYCLE PARKING LOCATION AND PERFORMANCE STANDARDS

The use of bicycle parking and other end-of-trip facilities is largely dependent on their location. 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, should be located as close as possible to the destination(s) they serve. 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 for vehicle parking is for the motorist.

Long-term parking, such as bicycle stations or shelters, should also be as convenient as possible. However, the protection from inclement weather and the enhanced level of safety/service that such facilities provide often compensates for lack of immediate proximity. Similarly, shower, changing rooms, and locker facilities need not be located inside the destination they serve, but should provide

enough access and measurable convenience that commuting by bicycle is as easy as possible for the greatest number of people. Employers unable to provide such facilities may consider negotiating access with nearby fitness gyms for their bicycling employees.

Short- and long-term bicycle parking facilities should adhere to the following location and standards.

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
- not obstruct pedestrian traffic in any way by providing at least 5 feet in clear path.
- 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

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. 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, a large, single bicycle rack cluster should not serve an entire urban block. Rather, it is preferable to place several smaller rack clusters, or even single bicycle racks in multiple, convenient locations along the sidewalk.

When considering the implementation of bicycle parking facilities in Miami Beach, the following location guidelines should be followed.

## **SIGNS**

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

## **CLEAR PATH**

Bicycle racks, shelters, lockers, and bicycle sharing stations must allow a minimum clear path of five feet in width so that pedestrians and disabled people may move past without obstruction. (Image of bad and good example)

## **CURB CLEARANCE**

If located parallel to the thoroughfare, all bicycle racks must be placed at least 24 inches from the curb. Those placed perpendicular to the curb, however, must locate the nearest vertical component of the rack at a minimum of 48 inches from the curb's edge. Both dimension requirements will help prevent bicycles from being struck by car doors or moving motor vehicles.

## **DISTANCE BETWEEN RACKS**

Bicycle racks aligned parallel to each other must be at least 36 inches apart. This includes racks that are sold as multiple rack units, which may be attached together. Racks that are aligned end-to-end should be at least 96 inches apart.

## **DISTANCE FROM WALLS/MAINTAIN PEDESTRIAN AISLE**

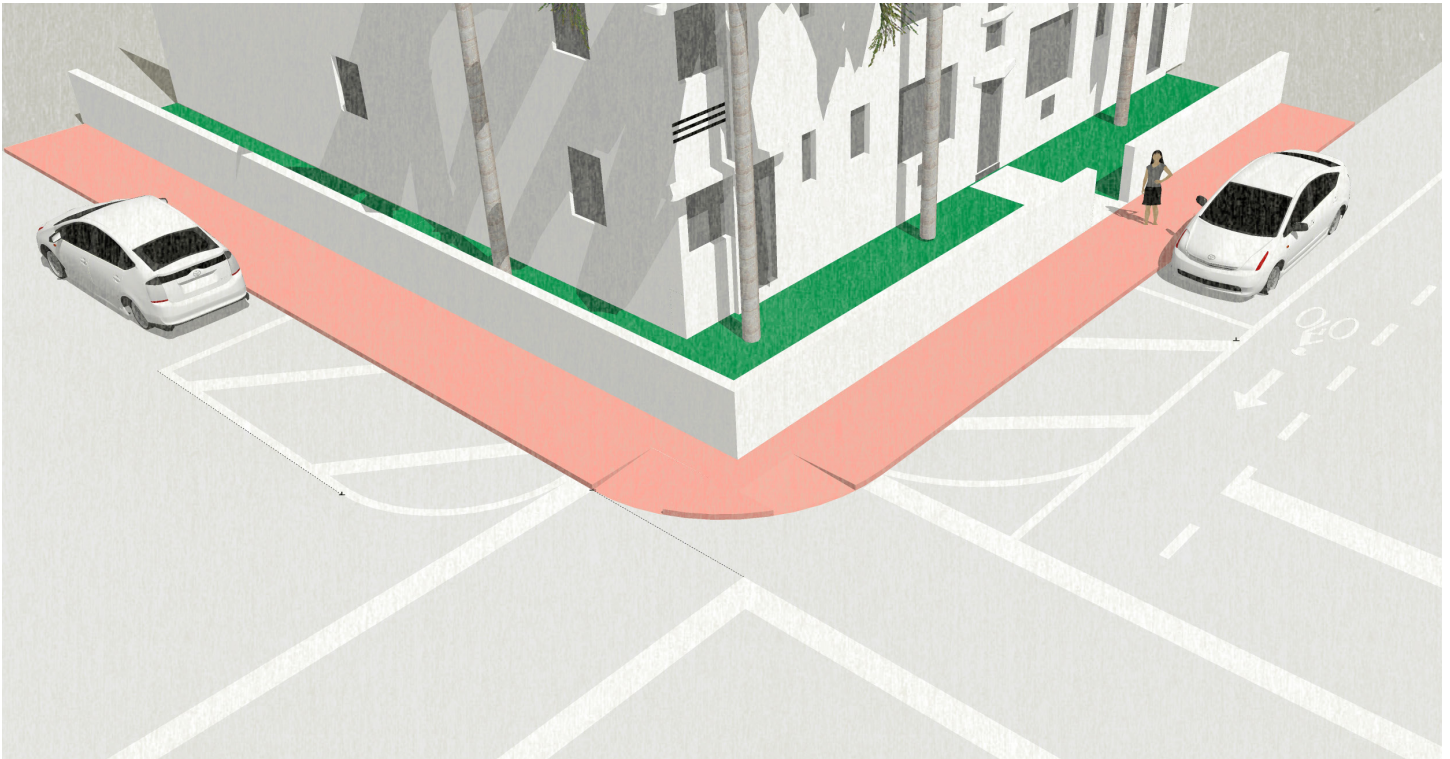
To ensure safe maneuvering and circulation, bicycle racks placed perpendicular to a wall must be at least four feet from the wall to the nearest vertical component of the rack. Bicycle racks placed parallel to a wall must be at least three feet from the wall. For indoor racks placed in groups, an adequate pedestrian aisle must be provided so that bicyclists can access and maneuver their bicycles in and out of the parking position. Bicycle racks placed perpendicular to a pedestrian aisle must be at least four feet from the aisle. Pedestrian aisles should be at least five feet wide wherever possible.

## **OTHER RECOMMENDED SITE DISTANCES (DIAGRAM)**

To ensure safety and convenience, bicycle racks should be located:

- 15 feet from fire hydrants, bus stops, taxi stands, hotel loading zones, transit stops, newspaper kiosks, etc.
- 10 feet from intersections/driveways/curb cuts
- five feet from any standpipes, or above-ground vertical structures like signs, meters, lights, mailboxes, planters, public bathrooms, pay phones, etc.
- three feet from tree pit edges, grates, utility covers, etc.

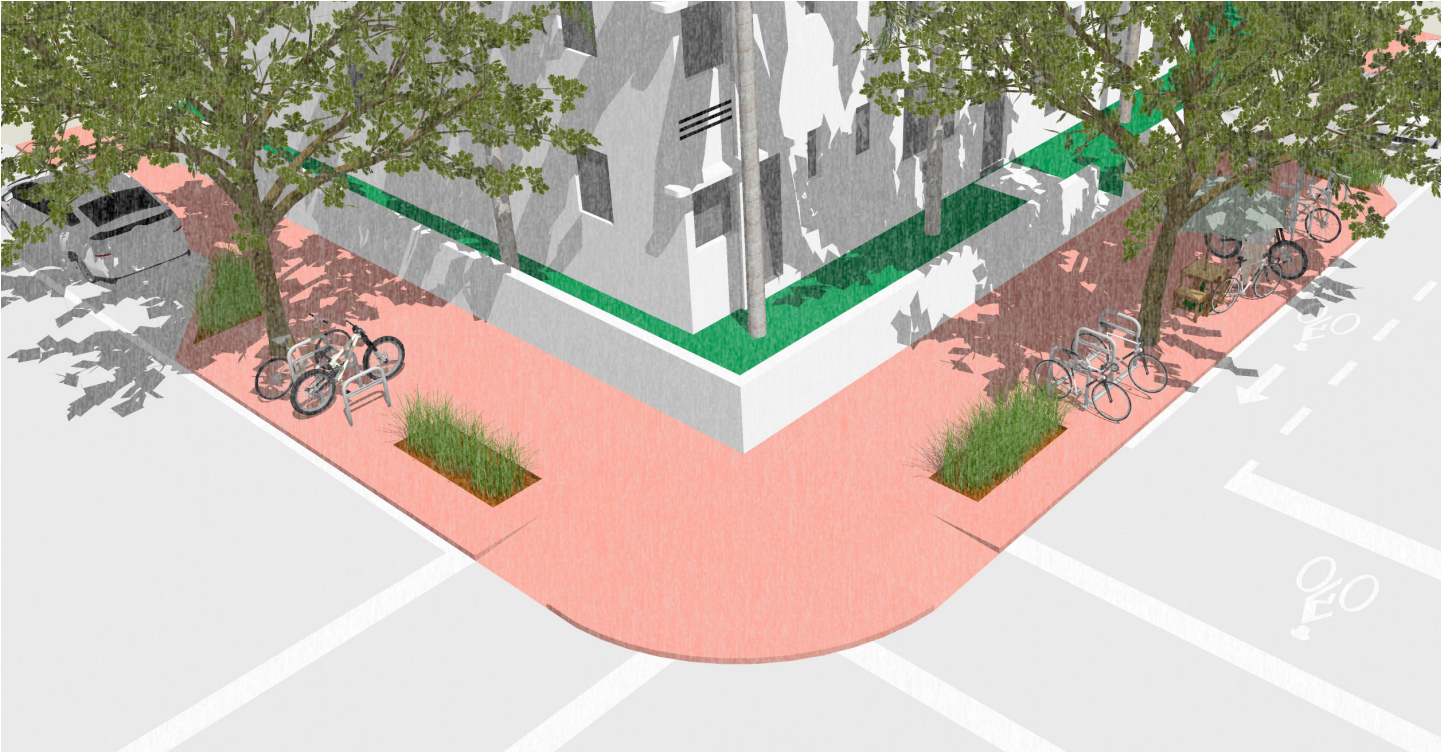
## ALTERNATIVE CURBSIDE USE - RESIDENTIAL STREET



**1** Within residential neighborhoods, underutilized curbside space may be put to more efficient use.



**2** In the short-term, temporary and low-cost materials may be used to provide landscape and bicycle parking amenities, while also maintaining visibility at the intersections for people driving.



**3** The temporary materials may be moved to another location and replaced by more permanent infrastructure, such as wider sidewalks, rain gardens, trees, public seating, and bicycle parking.



**4** The result is a more environmentally-friendly and amenity laden streetscape for the neighborhoods of Miami Beach.





### UPDATE TO COMMERCIAL CORRIDOR

**1** Within residential neighborhoods, underutilized curbside space may be put to more efficient use.



### UPDATE TO COMMERCIAL CORRIDOR

**2** In the short-term, temporary and low-cost materials may be used to provide landscape and bicycle parking amenities, while also maintaining visibility at the intersections for people driving.



## UPDATE TO COMMERCIAL CORRIDOR

- 3 The temporary materials may be moved to another location and replaced by more permanent infrastructure, such as wider sidewalks, rain gardens, trees, public seating, and bicycle parking.



## UPDATE TO COMMERCIAL CORRIDOR

- 4 The result is a more environmentally-friendly and amenity laden streetscape for the neighborhoods of Miami Beach.

# BICYCLE PARKING // IMPLEMENTATION

## POLICY + IMPLEMENTATION

It is the intent of this Bicycle Parking Plan to foster bicycling as a viable, safe, and sustainable form of recreation and transportation. Implementing bicycle parking and other end-of-trip facilities plays a key role in realizing this goal.

This Miami Beach Bicycle Parking Plan is conceived at the scale of the city, but will ultimately be implemented at the block and individual building scale as property is developed and redeveloped, and as requested by property and storeowners. Specific site analysis should be undertaken so that bicycle parking remains convenient, visible, and located properly in relation to the destinations and bicyclists it serves.

Like the overall bicycle network plan, the bicycle parking must be implemented in cooperation with a number of inter-related city, county, state, and private entities that have jurisdiction over the governance and physical development of Miami Beach and its public right-of-ways.

## OPT-IN PROGRAMS

Many municipalities have created bicycle parking programs that encourage public and private partnerships that reduce the cost of purchasing and installing bike racks while simultaneously expanding the supply. For example, 50-50 match bicycle parking implementation programs encourage businesses to partner with the municipality to help cover the cost that ultimately serves them well. Such programs are worth researching and potentially adapting to certain contexts within Miami Beach.

Encouraging bicycle parking means inviting local property and business owners to help expand the supply to meet their tenant, employee, and customer needs. Please see X for the inclusion of bicycle parking as an element that may be requested by willing partners. In some instances, upgrading bicycle



parking facilities will be needed. Should property owners currently supply facilities that are less than desirable then this program should help them re-allocate their

## MAINTENANCE

Once implemented, bicycle parking facilities of all types must be well maintained. All facilities should be kept clean, orderly, free of abandoned bicycles, bicycle locks, and other debris. These steps will help ensure that bicycle parking is used safely and frequently.

To remain attractive and functional, areas around the bicycle parking facility—whether it be a rack, shelter or otherwise—must remain well-paved, mown, plowed, or otherwise tended and cared for so that bicyclists are not deterred from using the facility. The security of bicycle racks and other long-term parking facilities should be checked periodically so that each remains free from vandalism. This includes checking the function of lighting, enclosure conditions, and changing key codes or key fittings after facility use turnover.

Failing to meet basic maintenance standards will deter use and create additional opportunities for theft.

The responsibility for maintenance should be

**POLICY PAGE**

## BICYCLE PARKING // RATIOS



### BICYCLE PARKING RATIOS

The City of Miami Beach does not currently require bicycle parking to serve new development. It should. The bicycle parking ratio table on the opposite page is intended to inform the inclusion of bicycle parking into the city's zoning code. Doing so will help the city meet current and future demand, support the ongoing viability of two-wheel travel, and ultimately help the city to obtain the mode share goals set forth in this plan. The bicycle parking ratios are organized by short and long-term parking types and are keyed into the city's land use categories using square footage, employee, and/or org building function to guide implementation. Peer cities with excellent bicycle parking requirements include Santa Monica, CA, Cambridge, MA, and Portland, OR.

This guidance is intended to aid the city so long as its bicycle mode share remains at or below 10 percent. That said, Miami Beach is a very dynamic place. New development and changing land uses are common, with some serving as major bicycle trip generators. Thus, in some locations the supply may need to be increased and the parking type changed. For example, frequently oversubscribed bicycle racks on a sidewalk may be removed in favor of an in-street bicycle corral so as to serve the demand better and lessen the clutter for people walking on the sidewalk. Bicycle parking ratios and requirements should be reviewed in conjunction with each bicycle master plan update, or at least every five years.

# BICYCLE PARKING - BICYCLE PARKING RATIOS

LAND USE	SHORT-TERM BIKE PARKING	LONG-TERM BIKE PARKING
<b>Single-Family Residential</b> (RS-1, RS-2, RS-3, RS-4,TH)	No spaces required	No spaces required
<b>Multifamily Dwelling</b>		
a) RM-1, RM-2, RM-PRD1, RPS-1, RPS-2	0.05 spaces/bedroom, min. 4 spaces	0.5 spaces/bedroom, minimum 4 spaces
b) RM-3, RMPS-1, RM-PRD2, RPS-3, RPS-4	0.1 spaces/bedroom, min. 8 spaces	0.75 spaces/bedroom
<b>Civic and Government Use</b> (GU, CCC, WD2, MR)		
a) assembly (church, stadium, convention center etc.)	1 space/20 persons of allowed capacity	1 space/10 employees
b) non-assembly (library, marina, government building etc.)	1 space/8,000 s.f. of floor area, min. 4 spaces	.25 space/15 persons of allowed capacity
<b>Education</b> (GU,SPE, CD-1, CD-2, CD-3)		
a) public/private day-care centers for 15 or more children	1 space/20 students of planned capacity, min. 2 spaces	1 space/10 employees, min. 1 space
b) public/private nursery schools, kindergartens, elementary schools (grade 1-4)	1.0 space/20 students of planned capacity, min. 2 spaces	0.5 space/per classroom, min. 1 space
c) public/private junior high (grade 5-8), and high schools (grade 9-12)	1.5 space/20 students of planned capacity	1 space/10 employees, AND 1 space/20 students of planned capacity
d) college or university	1.5 space/10 students of planned capacity	1 space/10 students, OR 1 space/20,000 s.f. of floor area, whichever is greater
<b>Hospitals/Healthcare Institutions</b> (HD)		
	1 space/5,000 s.f. of floor area, min. 4 spaces	1 space/10,000 s.f. of floor area, or 1/10 employees, whichever is greater, min. 4 spaces
<b>Transit Hub</b>		
a) rail station and high-use bus stops	Consider spaces for 1.5% of a.m. peak period daily ridership	Consider spaces for 10% of projected a.m. peak period daily ridership
b) off-street parking lots/garages available to the general public, with or without fees	Minimum of 6 spaces or 1 per 20 auto spaces. Unattended surface parking lots excepted.	1 space for each 20 automobile spaces* Unattended surface parking lots excepted.
<b>Commercial</b> (CD-1,2,3, RO, CPS-1,2,3,4 TC-1,2, TC-3,TC-3c, MXE)		
a) restaurant (restaurant, coffee shop, cafe etc.)	1 space for each 2,500 s.f. of floor area, min. 2 spaces	1 space/10 employees, min. 2 spaces
b) general food (grocery, convenience store, etc.)	1 space for each 5,000 s.f. of floor area, min. 2 spaces	1 space/10 employees, min. 2 spaces
c) general retail (clothing, souvenirs, electronics etc.)	1 space for each 1,000 s.f. of floor area, min. 2 space	1 space/10 employees, min. 2 spaces
d) office	1 space for each 8,000 s.f. of floor area, min. 2 spaces	1 space/10 employees, min. 2 spaces
<b>Urban Light Industrial</b> (I-1)	1 space for each 10,000 s.f. of floor area, minimum of 4 spaces	1 space/15,000 s.f. of floor area, minimum of 2 spaces



The Capital Improvement Plan Analysis has identified over 30 different intersections and roadway segments that have been calibrated using Street Design Standards which provide for improved bicycle and pedestrian safety and access. Among the locations identified (organized by neighborhood):

**BAYSHORE**

Alton Road @ 27 Street  
North Bay Road  
Royal Palm Avenue  
Meridian Avenue  
Dade Boulevard @ Meridian  
Dade Boulevard @ 19 Street  
18 Street  
20 Street  
Purdy

**WEST AVENUE**

INTERSECTION @ 16 Street

**FLAMINGO/LUMMUS**

Euclid Avenue  
Euclid @ 16 Street  
16 Street  
5 Street

**LA GORCE**

Alton Road @ 63 Street  
63 Street  
Pine Tree Drive  
La Gorce Drive  
51 street  
Pine Tree / La Gorce @51 Street  
Pine Tree / La Gorce @ 63 Street

**NAUTILUS**

Alton Road  
Intersection @ 195/Alton

**OCEANFRONT**

Collins  
Beachwalk

**NORTH SHORE**

Byron Avenue  
72/73 Street  
Harding



# GOALS

## **Goal 1: Engineering Provide a citywide network of safe, convenient and accessible bicycle and pedestrian facilities for all users.**

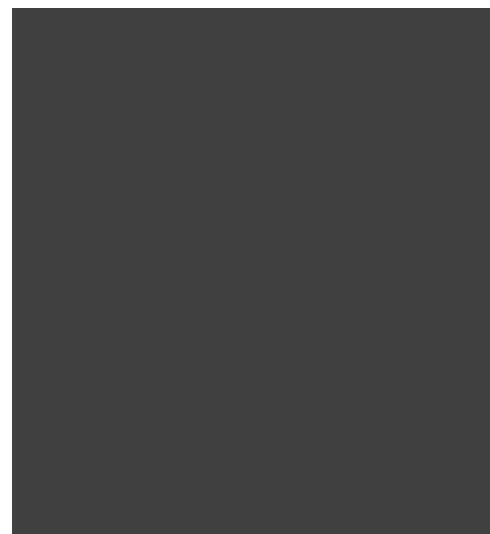
- Objective 1.1: Strive to develop a network of bicycle and pedestrian facilities that can serve major trip generators within the city and regionally, linking residential and employment centers, educational and health care centers, civic, and cultural and resources.
- Objective 1.2: Strive to ensure 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 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.



Street Plans conducted part of the Handlebar Survey along side residents during a Saturday morning ride.



**Goal 3: Implementation Promote long term implementation and evaluation of bicycle and pedestrian planning and development.**

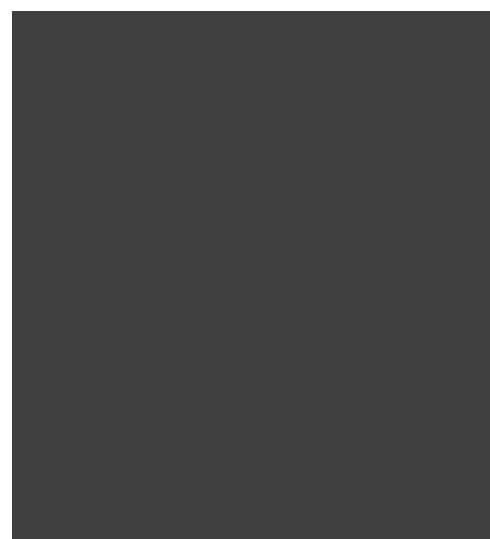
- Objective 3.1: Establish permanent bicycle and pedestrian planning functions within the city government, including a Bicycle/Pedestrian Coordinator within the Public Works Department.
- Objective 3.2: Provide a forum for bicycle and pedestrian planning and discussion through an official bicycle committee, to include the stakeholders responsible for this document, in addition to representation from city parks and recreation staff, and 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 Miami Beach 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.



Street Plans conducted part of the Handlebar Survey along side residents during a Saturday morning ride.



**DRAFT**

## HEARD ON THE STREET

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Name: Chad Blaize  
Age: 33  
Resident of Miami Beach  
Commutes primarily by: Bicycle  
Perception of bicycle safety in Miami Beach(daytime): 3

"I feel drivers have no respect for pedestrians, they feel they own the road. I use the bike lanes when I travel and I think we should have more. Euclid and 16 are the two bike lanes I use the most. The most desirable place I would ride my bike would be Meridian because of the shade but that just isn't possible with the amount traffic."

"I think West Avenue should have a bike lane. Also, the Share-road on Washington Avenue gives a false impression of rider security. I don't feel safe at all when riding along Washington."



Name: Erick Hernandez  
Age: 19  
Works in Miami Beach / DecoBike user.  
Commutes primarily by: Bus  
Perception of bicycle safety in Miami Beach(daytime): 5  
Perception of bicycle safety in Miami Beach(night time): 1

"I think they(bike/pedestrian conditions)fine the way they are now, but if I had to do something I would make the streets wider and include more bike lanes. They also should improve the condition of the CitiBikes."

"I Most often I use the bus, when I have time I like to ride bike to and around the beach because it's no nice out here. "



Name:Monica Ribera  
Age:39  
Miami Beach resident  
Commutes primarily by: Car and bus  
Perception of pedestrian safety in Miami Beach(daytime): 5

"I like the bike lanes and cross walks along Collins Avenue, and they should have more of that on the western part of the city. I think there should be more bike lanes and dog parks. I also don't like seeing all the trash, I see trash everywhere and I don't see any trash bins around. (She points to trash along the bus stop bench)"

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William Zalquett  
Age: 49  
Miami Beach resident for 20 years  
Commutes primarily by: Bike  
Perception of bicycle safety in Miami Beach(daytime): 0

I don't feel safe at all. I don't ride on the streets, I prefer the sidewalks. I do my best to be courteous of pedestrians and I realize that I should be on the street, but I just don't feel safe when on the street. I think driver's education is the main problem. I also feel Miami Beach visitors are more respectful than the residents are. Education to residents needs to be improved including littering. Miami Beach is very dirty. The police and city officials should be dedicating resources to enforcing the rules. Tow truck companies are a mafia and it makes it very unpleasant to be living here."



Name: Steve Pierre  
Age: 28  
Miami Beach resident for 3 years  
Commutes primarily by: Bike and bus

Perception of bicycle/pedestrian safety in Miami Beach(daytime): 2  
"I feel generally safe, but I don't feel like drivers respect us on bikes, I think bike lanes and sidewalks should be widened".



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(UPDATED)

# EXISTING PROGRAMS

## DECO BIKE

The DecoBike bicycle share program has been embraced by City of Miami Beach residents in an unprecedented manner since it launched in 2011. According to the DecoBike Blog, DecoBike ridership between March 2011 and June 2012 accomplished the following:

- Made 1,003,520 trips
- Covered 2,950,808 miles
- Logged 17,704,848 minutes of ride time
- Offset 2,550,000+ pounds of harmful CO<sub>2</sub>
- Burned 100,000,000+ calories

In August 2012, the Environmental Coalition of Miami and the Beaches (ECOMB) recognized DecoBike with the 2012 Emerald City award for their efforts to promote sustainable practices in the community.

In addition, in October 2013 the program generated over 3,000,000 rides making it the busiest bike share fleet in the country per bike.

Bike Share programs like DecoBike, attract tourism without adding parking and congestion to the streets, making getting around the city enjoyable and safe for tourists and residents alike. DecoBike Miami Beach was featured on Discovery Network's TLC Latin America as one of the "Miami Hip & Trendy" amenities that is a must-do for locals and visitors.

In addition to offering a healthy and sustainable alternative to getting around town, DecoBike partnered with Discovery Miami Beach in 2012 to offer self guided audio tours of the Art Deco district. Visitors can now discover the rich architectural history of Miami Beach while exercising at their own pace.

Most recently, DecoBike has extended their partnership to local businesses through DecoRewards, through which BEACHPASS members get perks and rewards around the city.

